CEQA PRELIMINARY HYDROLOGY/DRAINAGE STUDY

Otay Business Park

TM 5505

Environmental Log No. 93-19-006AA

May 4, 2010

Prepared for:
Otay Business Park, LLC
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KHA No. 095529000

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DECLARATION OF RESPONSIBLE CHARGE

I, hereby declare that I am the Civil Engineer of Work for this project. That I have exercised responsible charge over the design of the project as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with current standards.

I understand that the check of project drawings and specifications by the County of San Diego is confined to a review only and does not relieve me, as Engineer of Work, of my responsibilities for project design.

_____ _____

Matthew Barlow R.C.E. 62906 Date

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and Associates, Inc.

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1.0 Introduction

The proposed project involves the development of 161 acres in the East Otay Mesa area of San Diego. The project site is located southeast of the future intersection of Alta Road and Airway Road and immediately north of the U.S./Mexico border. The site involves the mass grading of approximately 59 "mixed industrial" pads, half width improvements of Alta Road fronting the project and extending approximately 2600' to the north, and extending Siempre Viva Road and Airway Road approximately 1200' to the west.

2.0 Existing Drainage Conditions

The existing site has two tributary drainage basins as the drainage divide runs down the middle of the parcel in a north/south direction. The drainage basins are identified as the east and west basins. The total tributary area contributing runoff flows to the west basin is 309 Ac., approximately 78 Ac. of this area is within the project boundary and conveyed through a natural swale in a southwesterly direction and passes into Mexico via six 7' wide by 4' high box culverts. The total tributary area contributing runoff flows to the east basin is 711 Ac. and conveyed through a natural swale in a southeasterly direction and also passes into Mexico via six 7' wide by 4' high box culverts. It should be noted, approximately 73 Ac. of this area is within the project boundary. Due to the proposed condition bisecting the tributary area it imposes a break within the hydrology model that keeps the area under one square mile, that would validate the use of the rational method for the existing offsite hydrology. Please see **Exhibit B** for the delineation of existing drainage basins and existing drainage flow paths.

The site currently consists of open fields with medium vegetation and was previously used for agricultural purposes. Existing runoff is currently conveyed in a series of existing drainage swales in a natural flow condition across the site and eventually into an existing drainage channel described above just south of the site. Per the County of San Diego Hydrology Manual, June 2003 the soil classification for the site is Soil Type D. For modeling purposes an existing runoff coefficient of 0.35 was assumed.

3.0 Proposed Drainage Conditions

The proposed project will provide several locations to pick up offsite flows from the north. These locations are denoted as Node 202, 402, 602, and 1010 on **Exhibit C-Proposed Condition Drainage Exhibit.** The flows captured at Node 200, 402, and 602 will be conveyed in an underground drainage system in Alta Road. This underground drainage system has been provided to bypass offsite flows through the proposed site separating proposed onsite flows from the offsite runoff.

Offsite flows captured at Node 1010 will be conveyed through the site using a natural lined channel. The natural lined channel will only be used to convey offsite flows separating the proposed onsite flows from the offsite flows.

Curb inlets and desilt basins will be used to capture onsite flows. A series of underground drainage systems will be provided to route flows to two detention basins located at the southwest and southeast corners of the project. The detention basins will be used to detain the developed flows back to existing conditions. The detained flows will be released offsite to the south maintaining the original drainage flow path and avoiding diversion of flows.

Please refer to Exhibit C-Proposed Condition Drainage Exhibit for the proposed drainage system design.

Two detention basins have been proposed for this project. They have been sized to detain the 10, 50, and 100-year storm events, and to mitigate the proposed discharge not to exceed the existing condition discharge. The proposed discharge from the site will actually be significantly less than the existing condition discharge to meet hydromodification criteria. Please refer to Table 4.3 for a table comparing the pre-development and post-development discharge. This information is also reflected on the proposed condition drainage exhibit in Exhibit C.

4.0 Design Criteria and Methodology

Runoff calculations are based on the requirements in the County of San Diego's Hydrology Manual and Drainage Design Manual (June 2003). The proposed storm drain system will be sized for the 100 year storm.

Runoff calculations for the 10, 50, and 100 year storms were performed using the Rational Method Computer Program Package (AES). The method calculates times of concentration and runoff volumes using criteria specified in the County of San Diego's Hydrology Manual (June 2003). The existing conditions and proposed conditions hydrology were analyzed and the results of the 100 year storm are presented in **Appendix B.** In addition, the existing and proposed 2 and 5 year storms are shown in **Table 4.1** and have also been included in **Appendix B** per the request of the County of San Diego Biological Resources. It should be noted, that it is not a requirement to detain the 2 and 5 year storm events. These flow rates are purely provided to support the request of Biological Resources. Drainage maps are presented in the map pockets in this report.

Table 4.1 – Biological Resources 2 and 5 Year Storm Events

Flow	West Basin	East Basin
2 Year Existing Q (cfs)	22.0	18.4
2 Year Proposed Q (cfs)	130.1	153.3
5 Year Existing Q (cfs)	29.6	25.3
5 Year Proposed Q (cfs)	182.0	207.7

Detention Basin Analysis and Sizing

There are two detention basins that will be constructed with this project. The detention basins have been designed to meet the County of San Diego Hydromodification requirements. The hydromodification analysis has been provided in a separate document entitled "Interim Hydromodification Management Plan for Otay Business Park". Please see the "Interim Hydromodification Management Plan for Otay Business Park" for the hydromodification

analysis. The detention basins have also been analyzed to verify that they detain 10, 50, and 100 year rain providing a minimum of 1 foot of freeboard above the 100 year water surface elevation. The West Detention Basin is located at the southwest corner of the project and receives onsite flows from the western portion of the project. The onsite area tributary to the west detention basin is approximately 91.9 acres. All offsite flows from the north contributing to the west basin basing are being conveyed in a separate underground drainage system from the proposed onsite flows. The offsite flows conveyed in the separate drainage system will be discharged in a location consistent with the existing drainage path. The proposed drainage system has been designed to avoid diversion of flows. For this reason offsite flows will not be routed through the detention basins.

The East Detention Basin is located at the southeast corner of the project and receives onsite flows from the eastern portion of the project. The onsite area tributary to the east detention basin is approximately 73 acres.

All offsite runoff flows contributing to the east basin will be routed through the Otay Business Park using a grass lined drainage channel. The route of the proposed channel is consistent with the drainage path of the existing flows. The proposed drainage system has been designed to avoid diversion of flows.

The existing conditions hydrologic analysis calculated a peak existing onsite runoff of 56.8 cfs for the West Basin and 50.6 cfs for the East Basin for the 100 year storm. The total combined existing flows (including offsite flows) for the West Basin is 226.4 CFS for the 100 year storm. The total combined flows for the existing 100 year storm (including offsite flows) for the East Basin is 522.6 cfs.

In predevelopment conditions, existing topography divides the site into two main sub-basins, an east basin and a west basin. Thus there are 2 concentrated discharge points for the existing site, an east location and a west location, each including future offsite flow and future site flow. The postdevelopment condition proposes 4 concentrated discharge points. Two onsite discharge locations convey site discharge for the onsite portion of the east and west sub-basins. Additionally, two concentrated discharge locations conveying offsite flows around the site are proposed, a location for the east sub-basin, and a location for the west. Appendix E includes a table summarizing peak runoff rates and velocities for predevelopment and postdevelopment conditions.

Hydrographs for the proposed project runoff were generated using the RatHydro computer program that generates a hydrograph based on rational method hydrology data. The inputs into the RatHydro program are listed in **Table 4.2** below for each basin.

Table 4.2 – RatHydro Inputs

Data	West Detention Basin	East Detention Basin
6 Hour Precipitation (in)	3.0	3.0
Time of Concentration (min.)	12.0	8.0
Peak Flow Rate (cfs)	350	403.1
Area (acres)	91.9	73.2
Runoff Coefficient	0.87	0.87

The Hydrograph ordinates were input into the Hydraflow Hydrographs program by Intellisolve. This program performs the stage/storage/discharge calculations for various types of outlet structures. The Hydrograph ordinates and output from RatHydro are presented in **Appendix C**.

The detention basins will have an outlet works that consists of a low flow, intermediate orifices and weir and an emergency spillway capable of passing the 100 year peak in-flow into the basin. The detention basins will detain the 100 year storm and reduce the peak outflow to the existing conditions flow rate.

Table 4.3 below shows the results of the detention analysis. Details of the Hydraflow output including the stage/storage/discharge table are located in **Appendix C**.

Table 4.3 – Detention Analysis / 100-Year Storm		
Flow	West Basin	East Basin
Proposed Condition inflow Q (cfs)	350	403.1
Proposed Condition outflow Q (cfs)	1.4	1.5
Existing Condition Q (cfs)	56.8	50.6

Table 4.4 and 4.5 below present the stage/storage/discharge results for each Detention Basin.

Table 4.4 - West Detention Basin				
Storm Event	Stage (ft)	Storage (acre-feet)	Discharge (cfs)	Ex. Q (CFS)
Peak Outflow 10-Year	4.08	12.6	1.13	35.4
Peak Outflow 50-Year	5.8	18.5	1.37	52.9
Peak Outflow 100-Year	6.1	19.8	1.4	56.8

The West Detention Basin will have a top of embankment 9 feet above the bottom of the basin. The total volume of the basin to the top of the embankment is 32.5-acre-feet. The maximum 100 year stage in the basin is 6.1 feet. This will provide a freeboard of 2.9 feet above the 100 year water surface to the top of embankment. The basin will have a footprint of approximately 4.0 acres.

Table 4.5 – East Detention Basin				
Storm Event	Stage (ft)	Storage (acre-feet)	Discharge (cfs)	Ex. Q (CFS)
Peak Outflow 10-Year	11.0	10.0	1.10	30.6
Peak Outflow 50-Year	14.9	14.7	1.3	46.9
Peak Outflow 100-Year	15.8	15.4	1.53	50.6

The East Detention Basin will have a top of embankment 17.8 feet above the bottom of the basin. The total volume of the basin to the top of the embankment is 18.5 acre-feet. The maximum 100 year stage in the basin is 15.8 feet. This will provide a freeboard of 2 feet above the 100 year water surface to the top of embankment. The basin will have a footprint of approximately 1.4 acres.

The East and West detention basins will produce outflows of 1.4 and 1.5 cfs, respectively. These values were obtained from the hydromodification report associated with this project. Please see the hydromodification report for supporting calculations and backup data.

Offsite Ponding

Offsite ponding at offsite inlets have been reviewed for the 100 year storm. Ponding limits for the 100 year storm were determined using nomograph found on Chart 1B-Headdwater Depth for Concrete Pipe Culverts with Inlet Control. This chart can be found in Appendix C-Culvert Design Nomographs of the San Diego Drainage Design Manual Dated July, 2005. Worksheets used to determine the headwater elevations at each offsite inlet have been provided in **Appendix D** of this report. An exhibit showing the 100 year inundation limits and APN numbers of the offsite owners has been provided see **Exhibit D.**

Erosion

Rip Rap dissipatators will be provided at all outlet points. The Rip Rap Dissipatators will be provided to mitigate the impacts of erosion at the outlets. Rip Rap will be sized and placed in accordance to Section 7 of the San Diego County Drainage Manual dated July 2005 and in accordance to standard detail D-40 of the San Diego Regional Standard Drawings. Preliminary Rip Rap Sizes can be found in Appendix E. All rip rap was sized assuming outlet pipes were designed at minimum slope of 0.5%. Rip Rap will need to be re-designed during final design to accommodate velocities from the actual designed slope of pipe.

A drainage channel on the east side of the site conveys offsite flows through the site. In this proposed onsite grass lined drainage channel, velocities are expected to exceed 6 ft/s in some locations. Where velocies exceed 6 ft/s, the channel will be lined with riprap to prevent erosion. In locations where velocities will not exceed 6 ft/s, erosion is not expected, so a grass lined channel is adequate.

5.0 Conclusion

The proposed Otay Business Park storm drain system has been designed in accordance to the County of San Diego Drainage Manual dated July 2005 and the County of San Diego Hydrology Manual dated 2003. The drainage system has been designed to convey the 100 year offsite flows. The drainage system has been designed to maintain the existing drainage patterns and will not substantially alter the course of runoff through the site. Rip Rap will be provided at culvert outlets during final design to minimize the effects of erosion.

As discussed above the detention basin has been designed to detain the peak 10, 50, and 100 year storm events back to existing conditions and to meet the County of San Diego Hydromodification Requirements. The hydro modification analysis is included in a separate document entitled "Interim Hydromodification Management Plan for Otay Business Park". Hydromodification controlled the design of the detention basins and based on the parameters set by hydromodification, the detention basins are oversized for the 10, 50, and 100 year storms. The detention basins will detain the peak 10, 50, and 100 year storm events back to existing conditions therefore the proposed improvements will not increase runoff.

Offsite ponding is a result of inlet control for water entering concrete pipe culverts. Limits of inundation for the 100 year storm have been shown in **Exhibit D**. The concrete pipe culverts have been designed to provide a minimum of 1' of freeboard below right of way elevations.

Offsite ponding is a temporary condition and would be eliminated/modified as the future lots are developed and storm drain systems are designed to tie into the provided culverts.

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EXHIBITS

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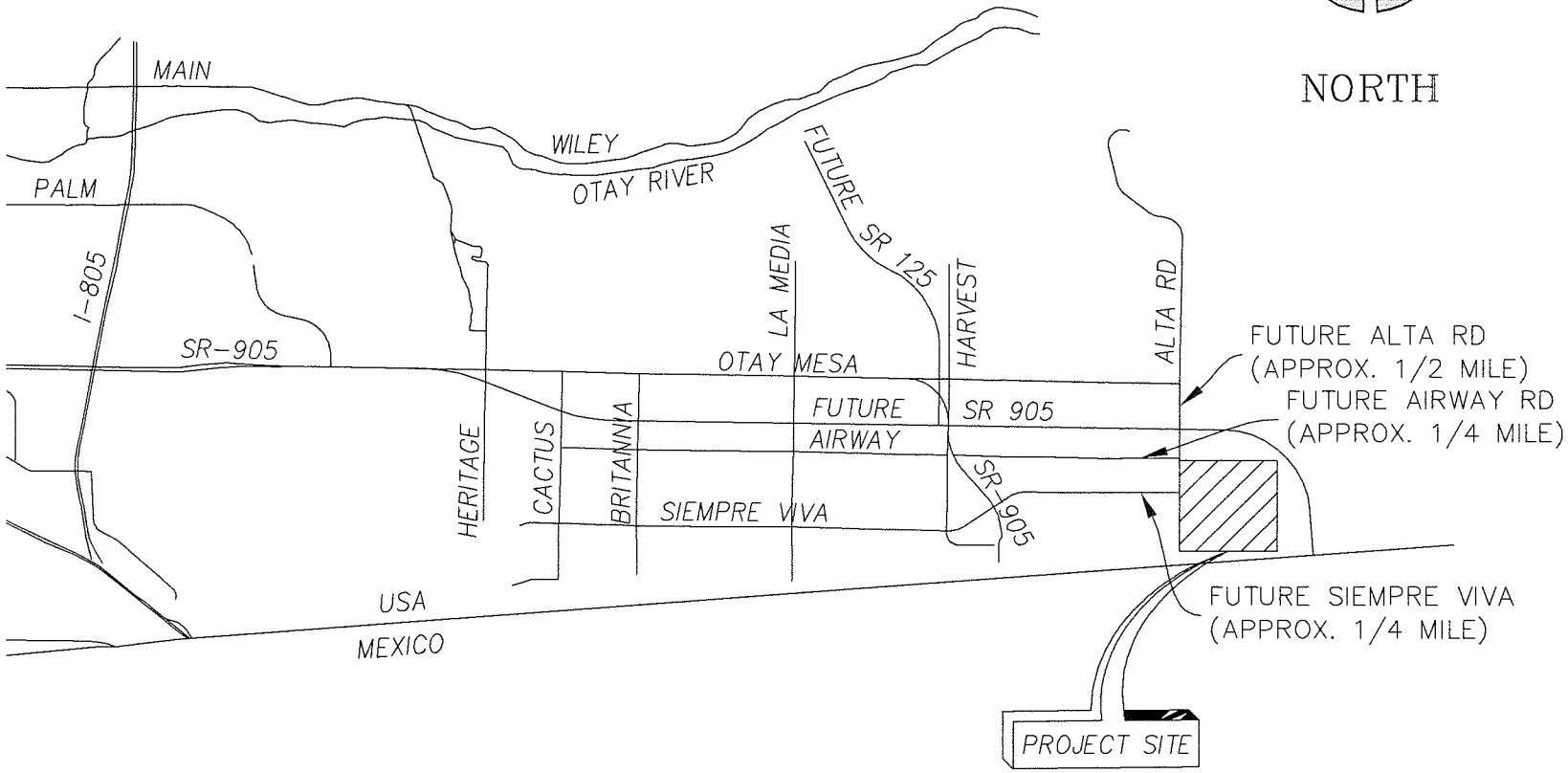
Exhibit A ~ Vicinity Map



VICINITY MAP

NOT TO SCALE

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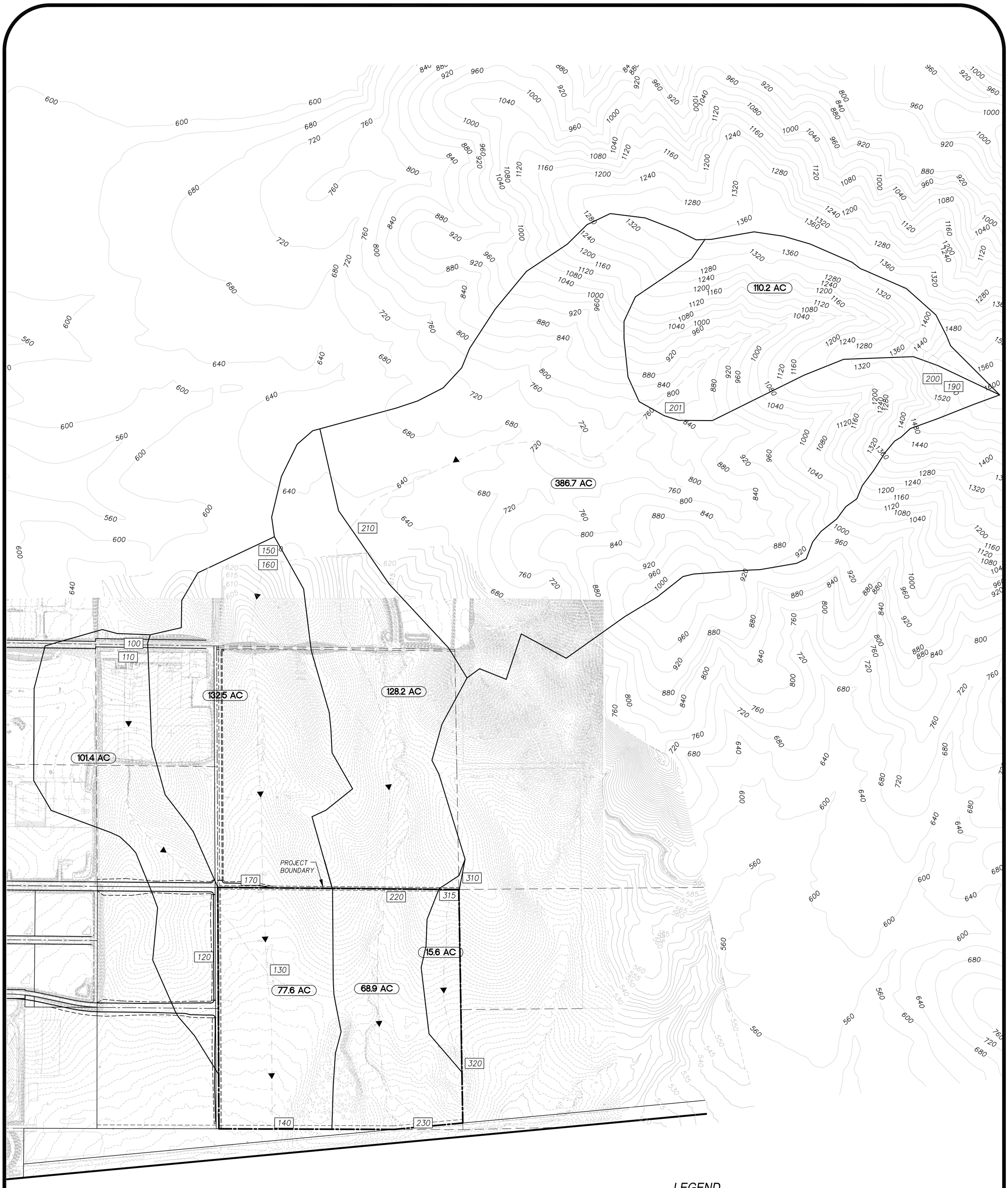
Exhibit B ~ Existing Condition Drainage Exhibit



LEGEND

PROJECT BOUNDARY	
BASIN BOUNDARY	
ACREAGE	XX AC
NODE	###

NORTH

GRAPHIC SCALE

500 0 250 500 1000

(IN FEET)
1 inch = 500 ft.

OTAY BUSINESS PARK

EXHIBIT B
EXISTING CONDITION
DRAINAGE EXHIBIT

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Exhibit C ~ Proposed Condition Drainage Exhibit

NORTH

GRAPHIC SCALE

500 0 250 500 1000

(IN FEET)
1 inch = 500 ft.

OTAY BUSINESS PARK

EXHIBIT C
PROPOSED CONDITION (1 of 2)
DRAINAGE EXHIBIT

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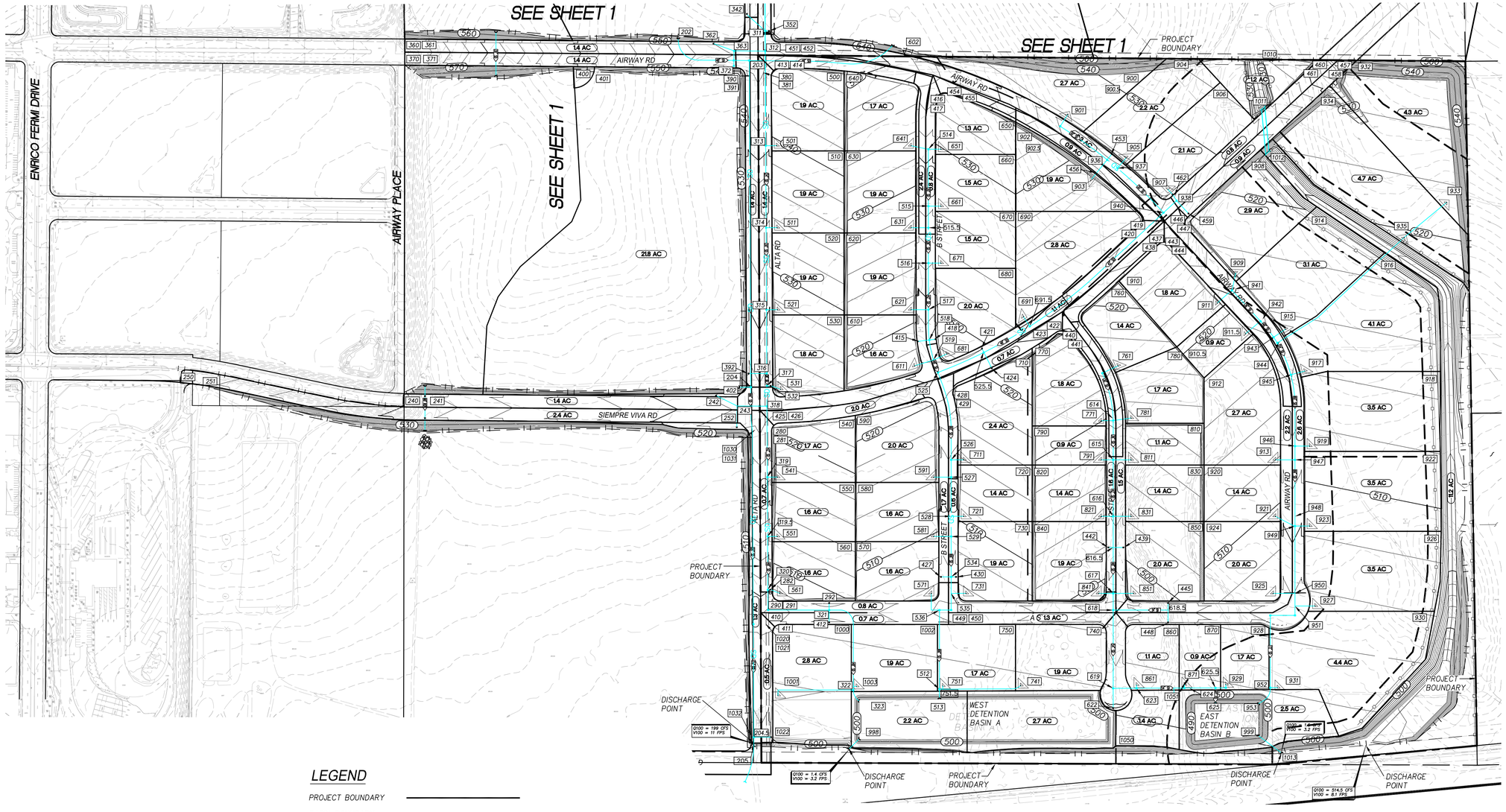

LEGEND

PROJECT BOUNDARY	
BASIN BOUNDARY	
FLOWPATH	
ACREAGE	XX AC
NODE	
PROPOSED RIP-RAP	

NORTH

GRAPHIC SCALE

200 0 100 200 400

(IN FEET)
1 inch = 200 ft.

OTAY BUSINESS PARK

EXHIBIT C
PROPOSED CONDITION (2 of 2)
DRAINAGE EXHIBIT

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Exhibit D ~ Inundation Exhibit

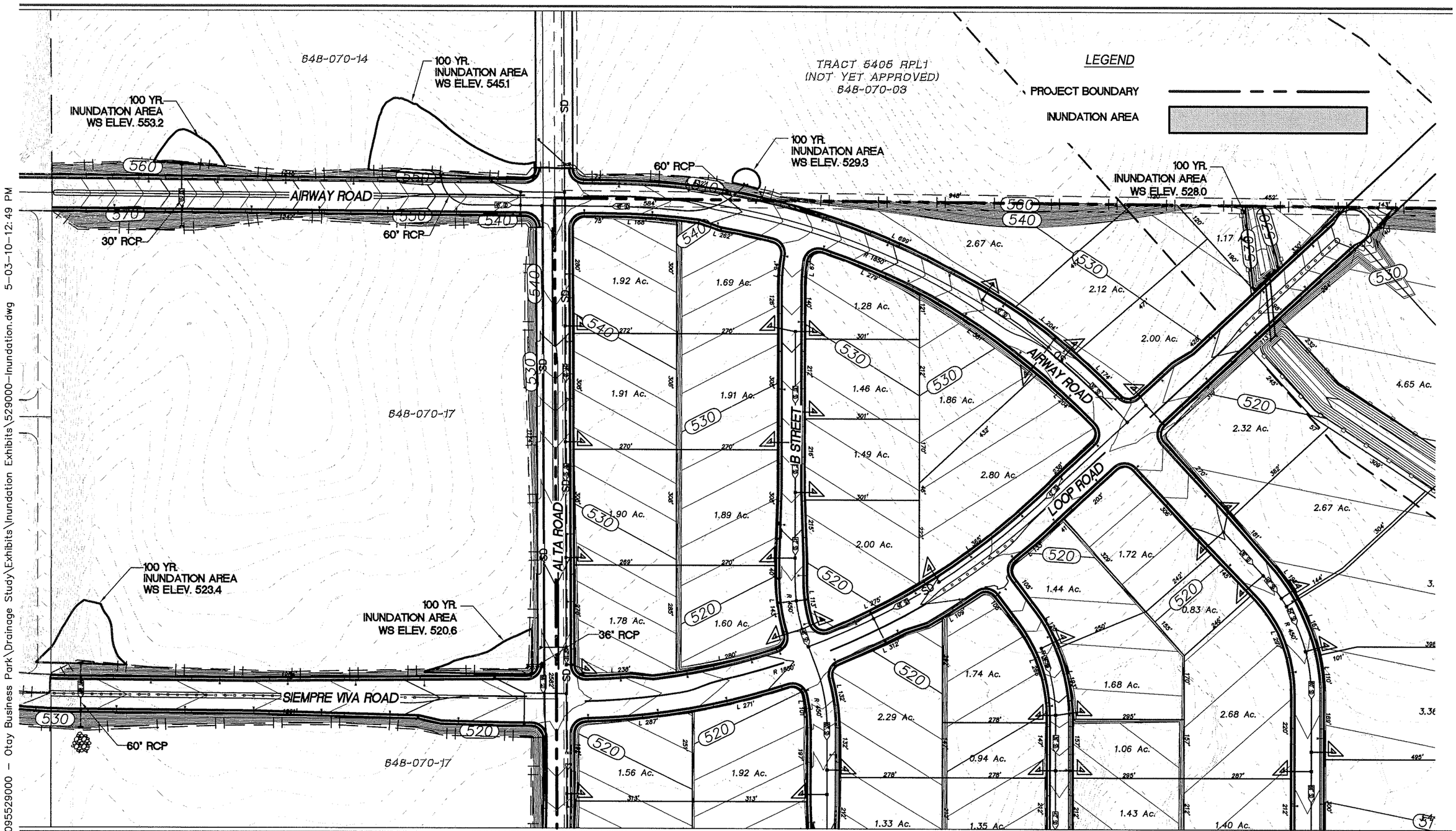

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EXHIBIT D - INUNDATION EXHIBIT (1 OF 2)

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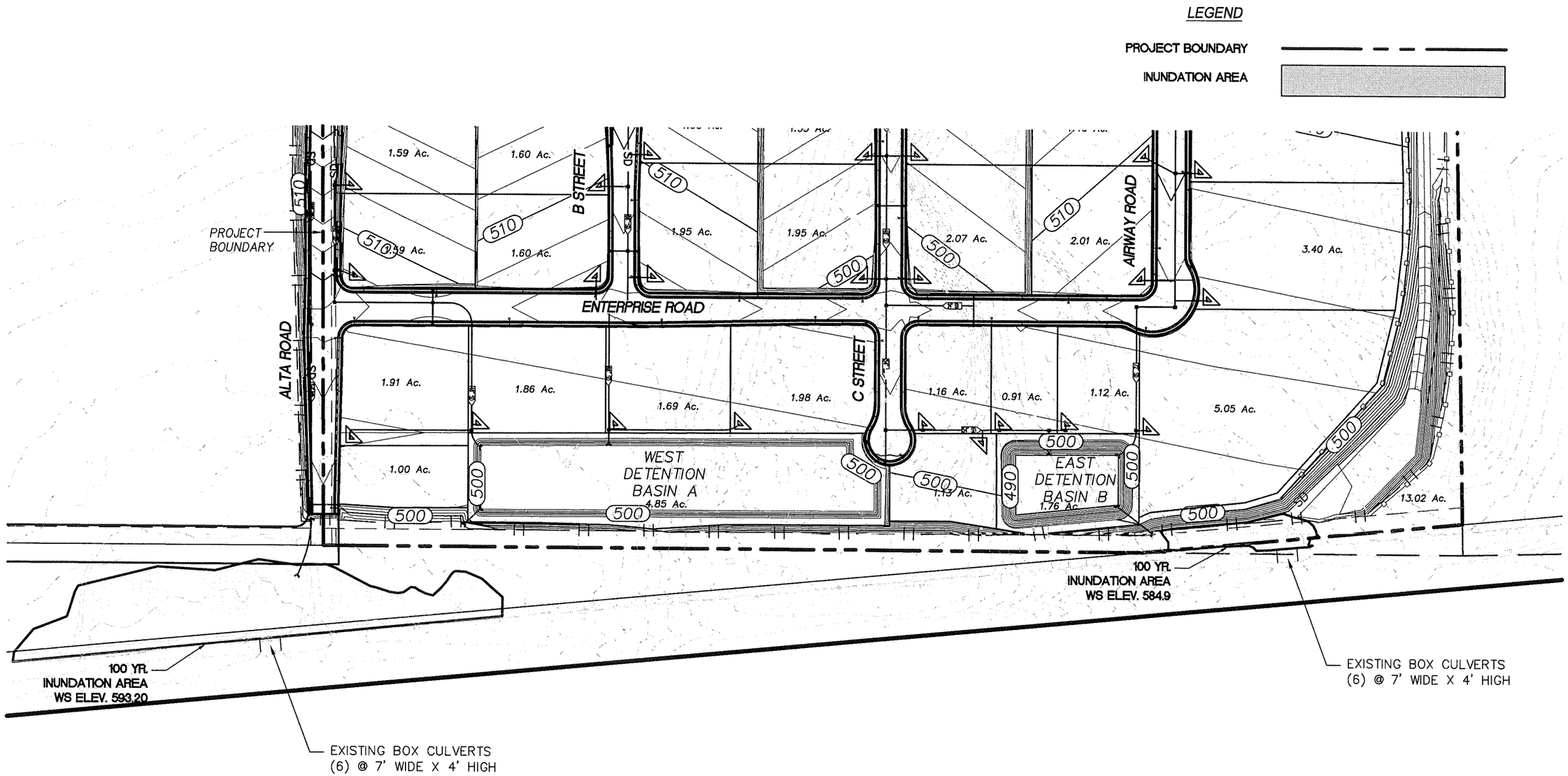

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EXHIBIT D - INUNDATION EXHIBIT (2 OF 2)

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APPENDICES

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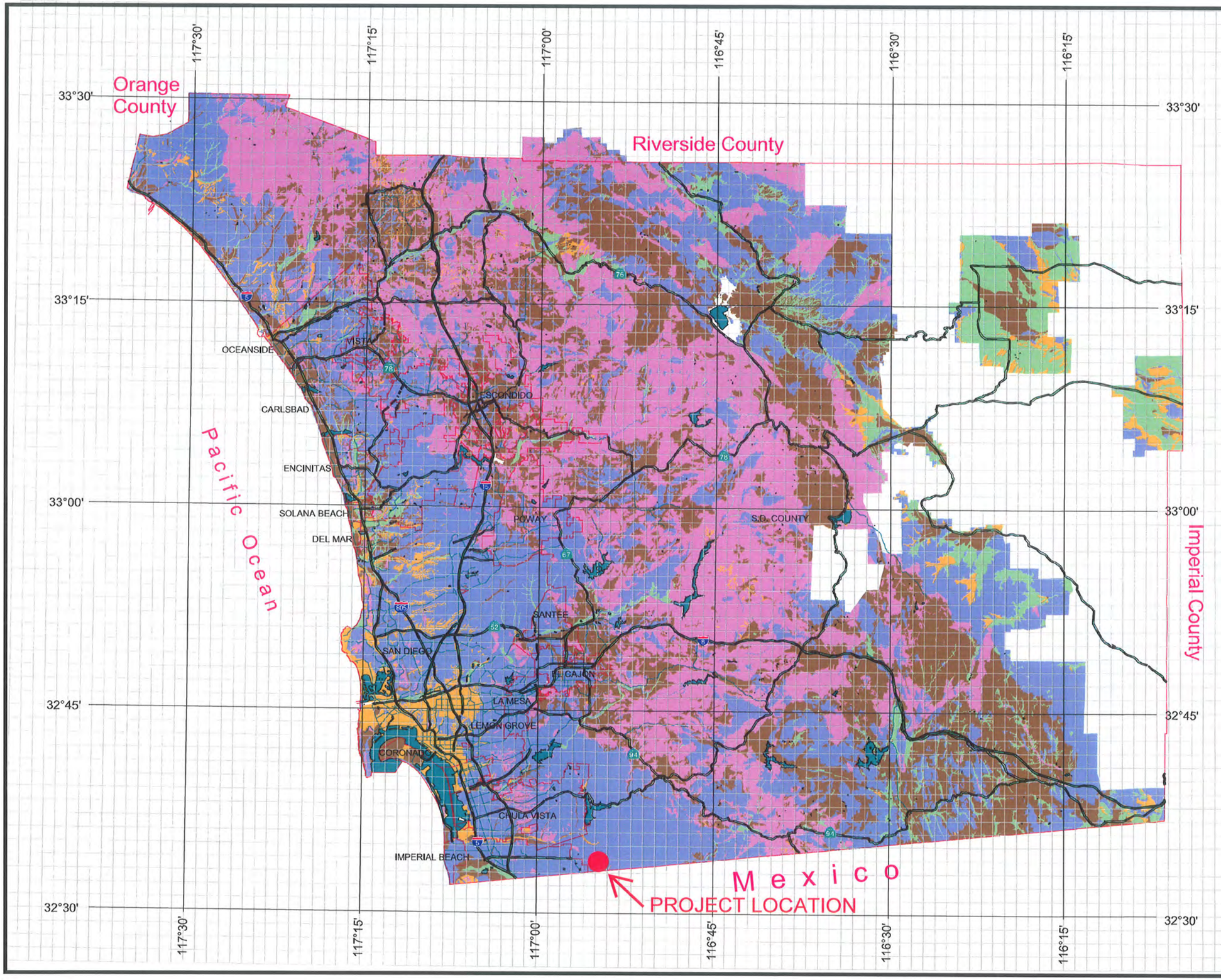
Appendix A ~ Hydrology Reference Material

County of San Diego Hydrology Manual

Soil Hydrologic Groups



Legend

Soil Groups

- Group A
- Group B
- Group C
- Group D
- Undetermined
- Data Unavailable

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3 0 3 Miles

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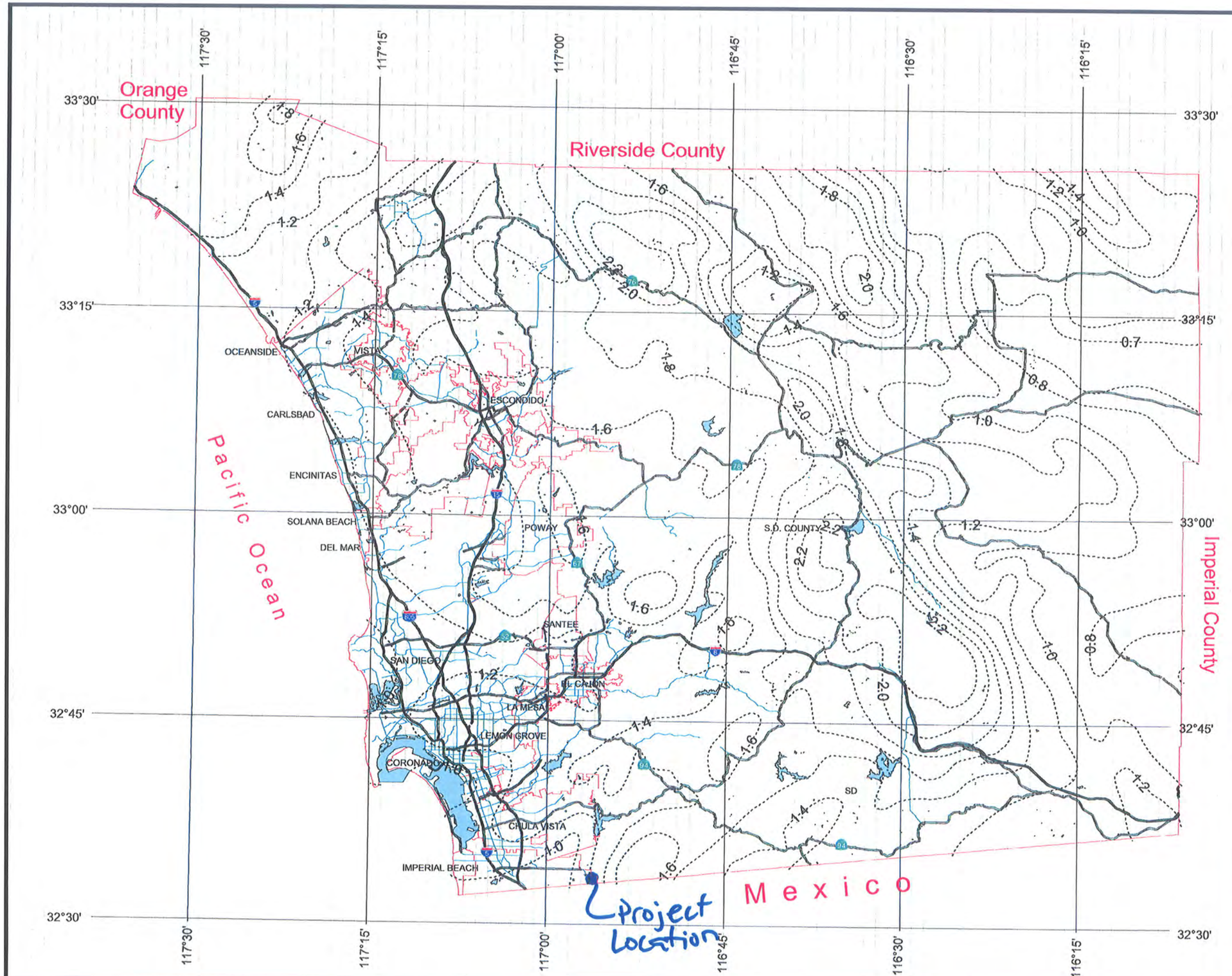
County of San Diego Hydrology Manual

Rainfall Isopluvials

2 Year Rainfall Event - 6 Hours

Isopluvial (inches)



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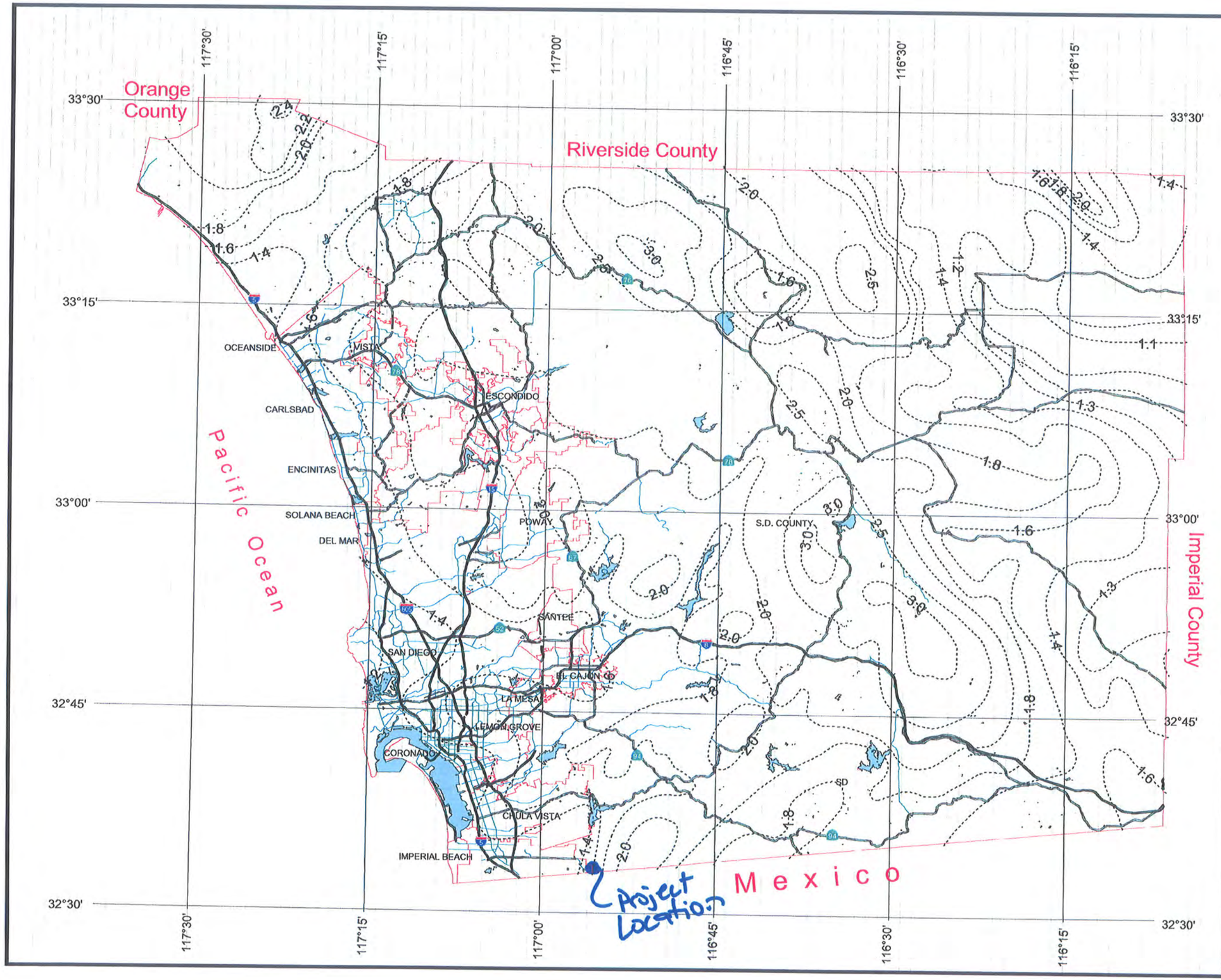
3 0 3 Miles

County of San Diego Hydrology Manual

Rainfall Isopluvials

5 Year Rainfall Event - 6 Hours

Isopluvial (inches)



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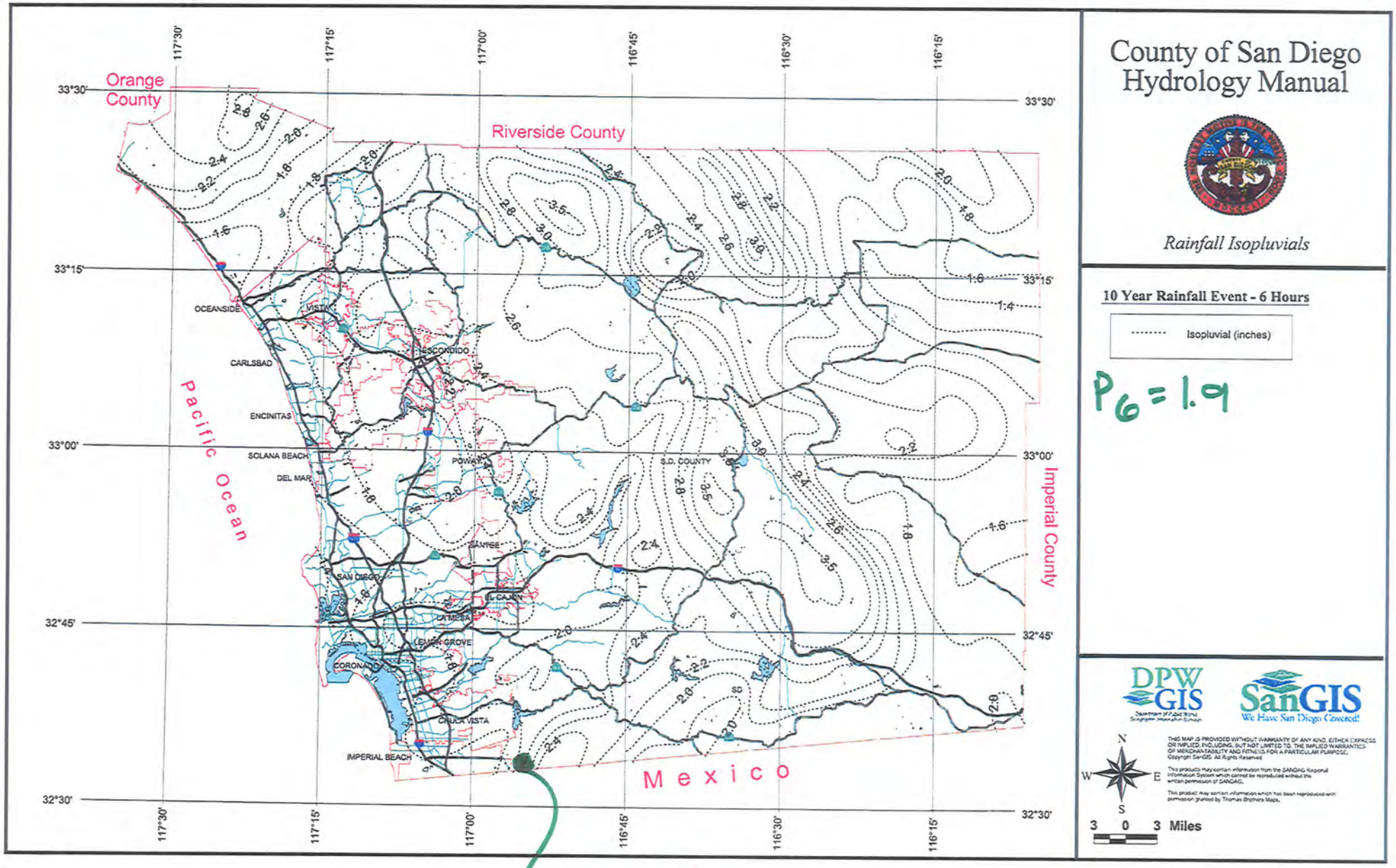
3 0 3 Miles

Table 3-1
RUNOFF COEFFICIENTS FOR URBAN AREAS

Land Use		Runoff Coefficient "C"				
			Soil Type			
NRCS Elements	County Elements	% IMPER.	A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.20	0.25	0.30	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.60
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.58	0.60	0.63
High Density Residential (HDR)	Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0.77	0.78	0.79
Commercial/Industrial (G. Com)	General Commercial	85	0.80	0.80	0.81	0.82
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (Limited I.)	Limited Industrial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

*The values associated with 0% impervious may be used for direct calculation of the runoff coefficient as described in Section 3.1.2 (representing the pervious runoff coefficient, Cp, for the soil type), or for areas that will remain undisturbed in perpetuity. Justification must be given that the area will remain natural forever (e.g., the area is located in Cleveland National Forest).
DU/A = dwelling units per acre
NRCS = National Resources Conservation Service


County of San Diego
Hydrology Manual
Rainfall Isopluvials
10 Year Rainfall Event - 6 Hours
Isopluvial (inches)
$P_6 = 1.9$
Orange County
Riverside County
Imperial County
Pacific Ocean
Mexico
OCEANSIDE
VISTA
CARLSBAD
ESCONDIDO
ENCINITAS
SOLANA BEACH
DEL MAR
POWAY
S.D. COUNTY
SANTEE
SAN DIEGO
EL CAJON
LA MESA
LEMON GROVE
CORONADO
CHULA VISTA
IMPERIAL BEACH
33°30'
33°15'
33°00'
32°45'
32°30'
117°30'
117°15'
117°00'
116°45'
116°30'
116°15'
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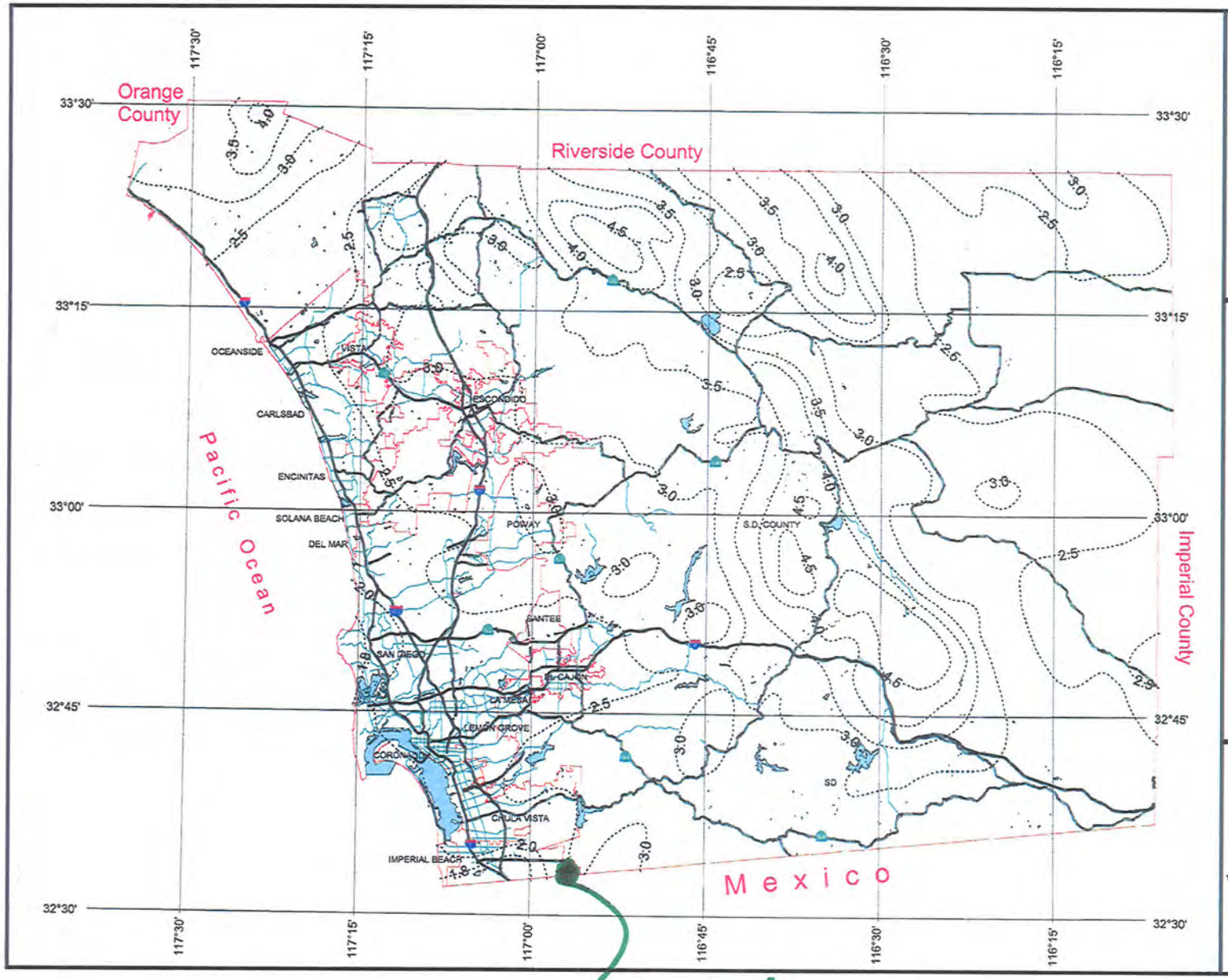

Project Location

County of San Diego Hydrology Manual

Rainfall Isopluvials

50 Year Rainfall Event - 6 Hours

Isopluvial (inches)

$P_6 = 2.8$

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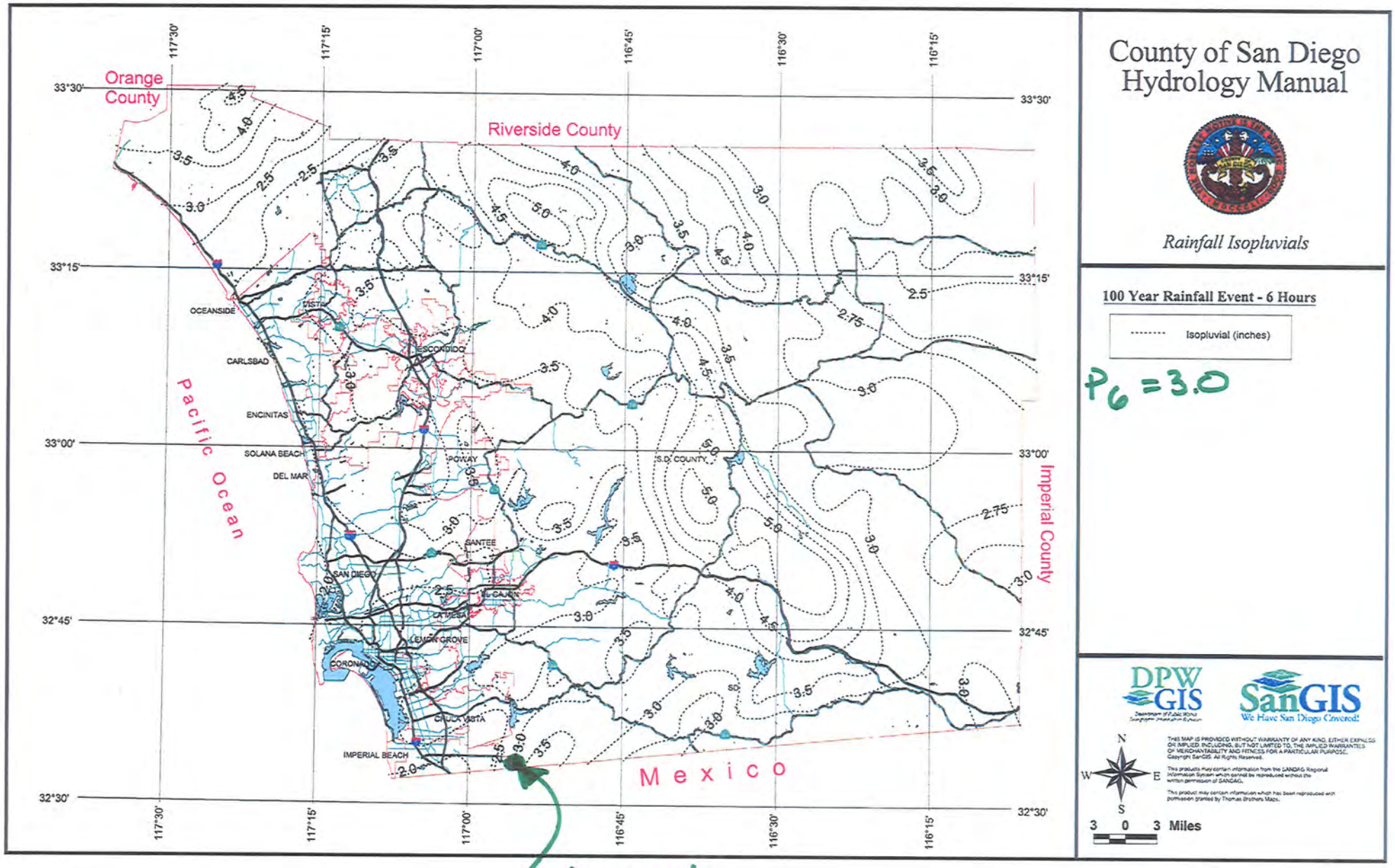
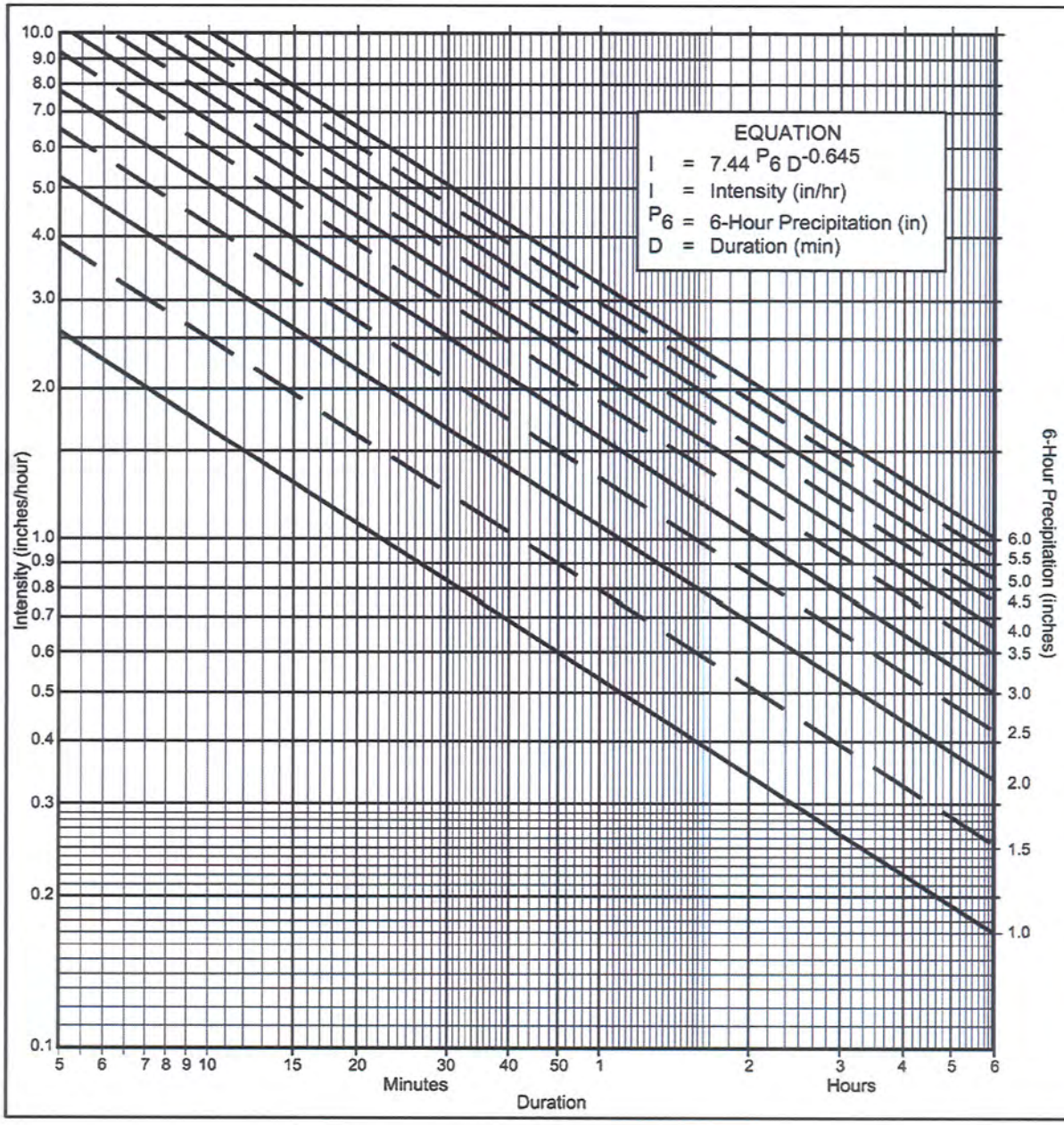
N W E S

3 0 3 Miles


County of San Diego
Hydrology Manual
Rainfall Isopluvials
100 Year Rainfall Event - 6 Hours
Isopluvial (inches)
Orange County
Riverside County
Imperial County
Pacific Ocean
Mexico
OCEANSIDE
CARLSBAD
ENCINITAS
SOLANA BEACH
DEL MAR
VISTA
ESCONDIDO
POWAY
SANTEE
SAN DIEGO
EL CAJON
LA MESA
LEMON GROVE
CORONADO
CHULA VISTA
IMPERIAL BEACH
S.D. COUNTY
33°30'
33°15'
33°00'
32°45'
32°30'
117°30'
117°15'
117°00'
116°45'
116°30'
116°15'
DPW GIS
SanGIS
We Have San Diego Covered!
N
W
E
S
3 0 3 Miles
Project Location

$P_6 = 3.0$



Directions for Application:

(1) From precipitation maps determine 6 hr and 24 hr amounts for the selected frequency. These maps are included in the County Hydrology Manual (10, 50, and 100 yr maps included in the Design and Procedure Manual).

(2) Adjust 6 hr precipitation (if necessary) so that it is within the range of 45% to 65% of the 24 hr precipitation (not applicaple to Desert).

(3) Plot 6 hr precipitation on the right side of the chart.

(4) Draw a line through the point parallel to the plotted lines.

(5) This line is the intensity-duration curve for the location being analyzed.

Application Form:

(a) Selected frequency 100 year

(b) P_6 = _____ in., P_{24} = _____, $\frac{P_6}{P_{24}}$ = _____ %(2)

(c) Adjusted P_6(2) = 3.0 in.

(d) t_x = -- min.

(e) I = -- in./hr.

Note: This chart replaces the Intensity-Duration-Frequency curves used since 1965.

P6	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
Duration	I	I	I	I	I	I	I	I	I	I	I
5	2.63	3.95	5.27	6.59	7.90	9.22	10.54	11.86	13.17	14.49	15.81
7	2.12	3.18	4.24	5.30	6.36	7.42	8.48	9.54	10.60	11.66	12.72
10	1.68	2.53	3.37	4.21	5.05	5.90	6.74	7.58	8.42	9.27	10.11
15	1.30	1.95	2.59	3.24	3.89	4.54	5.19	5.84	6.49	7.13	7.78
20	1.08	1.62	2.15	2.69	3.23	3.77	4.31	4.85	5.39	5.93	6.46
25	0.93	1.40	1.87	2.33	2.80	3.27	3.73	4.20	4.67	5.13	5.60
30	0.83	1.24	1.66	2.07	2.49	2.90	3.32	3.73	4.15	4.56	4.98
40	0.69	1.03	1.38	1.72	2.07	2.41	2.76	3.10	3.45	3.79	4.13
50	0.60	0.90	1.19	1.49	1.79	2.09	2.39	2.69	2.98	3.28	3.58
60	0.53	0.80	1.06	1.33	1.59	1.86	2.12	2.39	2.65	2.92	3.18
90	0.41	0.61	0.82	1.02	1.23	1.43	1.63	1.84	2.04	2.25	2.45
120	0.34	0.51	0.68	0.85	1.02	1.19	1.36	1.53	1.70	1.87	2.04
150	0.29	0.44	0.59	0.73	0.88	1.03	1.18	1.32	1.47	1.62	1.76
180	0.26	0.39	0.52	0.65	0.78	0.91	1.04	1.18	1.31	1.44	1.57
240	0.22	0.33	0.43	0.54	0.65	0.76	0.87	0.98	1.08	1.19	1.30
300	0.19	0.28	0.38	0.47	0.56	0.66	0.75	0.85	0.94	1.03	1.13
360	0.17	0.25	0.33	0.42	0.50	0.58	0.67	0.75	0.84	0.92	1.00

Intensity-Duration Design Chart - Template

FIGURE

3-1

Kimley-Horn
and Associates, Inc.

Appendix B ~ Rational Method Runoff Calculation Results

```
****************************************************************************

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2006 Advanced Engineering Software (aes)
             Ver. 2.0 Release Date: 06/01/2005  License ID 1499

                          Analysis prepared by:

                      Kimley-Horn & Associates, Inc
                          401 B Street Suite 600
                           San Diego, CA 92101
                               619-234-9411

 ************************** DESCRIPTION OF STUDY **************************
* Otay Business Park                                                       *
* existing 2-year storm                                                    *
* P = 1.2" 5/3/2010 AG                                                     *
 ***************************************************************************

  FILE NAME: 2EXOBP.DAT
  TIME/DATE OF STUDY: 14:03 05/03/2010
---------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
---------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) =   2.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   1.200
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SPECIFIED CONSTANT RUNOFF COEFFICIENT = 0.350
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    110.00 IS CODE =  21
---------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
===========================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    655.00
  DOWNSTREAM ELEVATION(FEET) =    650.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.490
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    90.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.436
  SUBAREA RUNOFF(CFS) =      0.13
  TOTAL AREA(ACRES) =      0.15   TOTAL RUNOFF(CFS) =      0.13

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    110.00 TO NODE    120.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    640.00  DOWNSTREAM(FEET) =    525.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3950.00   CHANNEL SLOPE =  0.0291
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.13
  FLOW VELOCITY(FEET/SEC) =   2.56 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.72   Tc(MIN.) =  33.21
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    120.00 =    4050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    120.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  0.932
  *USER SPECIFIED(GLOBAL):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   99.00   SUBAREA RUNOFF(CFS) =   32.30
  TOTAL AREA(ACRES) =       99.2   TOTAL RUNOFF(CFS) =      32.35
  TC(MIN.) =  33.21

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    130.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    525.00  DOWNSTREAM(FEET) =    516.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1000.00   CHANNEL SLOPE =  0.0090
  CHANNEL FLOW THRU SUBAREA(CFS) =      32.35
  FLOW VELOCITY(FEET/SEC) =   3.24 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   5.14   Tc(MIN.) =  38.35
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    130.00 =    5050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    130.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  38.35
  RAINFALL INTENSITY(INCH/HR) =   0.85
  TOTAL STREAM AREA(ACRES) =    99.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.35

****************************************************************************
  FLOW PROCESS FROM NODE    150.00 TO NODE    160.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    638.00
  DOWNSTREAM ELEVATION(FEET) =    632.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.126
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    92.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.516
  SUBAREA RUNOFF(CFS) =      0.18
```

```
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.18

****************************************************************************
  FLOW PROCESS FROM NODE    160.00 TO NODE    170.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3730.00   CHANNEL SLOPE =  0.0273
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.18
  FLOW VELOCITY(FEET/SEC) =   2.48 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.06   Tc(MIN.) =  32.19
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    170.00 =    3830.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    170.00 TO NODE    170.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  0.951
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  132.40   SUBAREA RUNOFF(CFS) =   44.08
  TOTAL AREA(ACRES) =      132.6   TOTAL RUNOFF(CFS) =      44.15
  TC(MIN.) =  32.19

****************************************************************************
  FLOW PROCESS FROM NODE    170.00 TO NODE    130.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    516.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1700.00   CHANNEL SLOPE =  0.0082
  CHANNEL FLOW THRU SUBAREA(CFS) =      44.15
  FLOW VELOCITY(FEET/SEC) =   3.39 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   8.36   Tc(MIN.) =  40.55
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    130.00 =    5530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    130.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  40.55
  RAINFALL INTENSITY(INCH/HR) =   0.82
  TOTAL STREAM AREA(ACRES) =   132.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     44.15

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       32.35    38.35       0.850         99.15
      2       44.15    40.55       0.820        132.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       74.10    38.35       0.850
      2       75.35    40.55       0.820
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      75.35   Tc(MIN.) =   40.55
  TOTAL AREA(ACRES) =      231.8
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    130.00 =    5530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    140.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    516.00  DOWNSTREAM(FEET) =    495.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   500.00   CHANNEL SLOPE =  0.0420
  CHANNEL FLOW THRU SUBAREA(CFS) =      75.35
  FLOW VELOCITY(FEET/SEC) =   8.94 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.93   Tc(MIN.) =  41.48
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    140.00 =    6030.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  0.808
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   77.60   SUBAREA RUNOFF(CFS) =   21.94
  TOTAL AREA(ACRES) =      309.4   TOTAL RUNOFF(CFS) =      87.45
  TC(MIN.) =  41.48

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    190.00 TO NODE    200.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1560.00
  DOWNSTREAM ELEVATION(FEET) =   1520.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.733
  SUBAREA RUNOFF(CFS) =      0.10
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.10

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  52
----------------------------------------------------------------------------
  ** WARNING: Computed Flowrate is less than 0.1 cfs,
               Routing Algorithm is UNAVAILABLE.

****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE     52.00 IS CODE = 800
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================


  ***TOTAL NUMBER OF CONFLUENCE STREAMS ARE GREATER THAN [50],
     SUGGEST REDEFINING MEMORY BANK WITH FEWER STREAM - PROCESS IGNORED.***
```

```
****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE = ***
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================


  ***TOTAL NUMBER OF CONFLUENCE STREAMS ARE GREATER THAN [50],
     SUGGEST REDEFINING MEMORY BANK WITH FEWER STREAM - PROCESS IGNORED.***

****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE     14.00 IS CODE =  51
----------------------------------------------------------------------------
  ** WARNING: Computed Flowrate is less than 0.1 cfs,
               Routing Algorithm is UNAVAILABLE.

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE     14.10 IS CODE =  51
----------------------------------------------------------------------------
  ** WARNING: Computed Flowrate is less than 0.1 cfs,
               Routing Algorithm is UNAVAILABLE.

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE = ***
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================


  ***TOTAL NUMBER OF CONFLUENCE STREAMS ARE GREATER THAN [50],
     SUGGEST REDEFINING MEMORY BANK WITH FEWER STREAM - PROCESS IGNORED.***

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    485.00 IS CODE = ***
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  0
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  0 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.27
  RAINFALL INTENSITY(INCH/HR) =   2.73
  TOTAL STREAM AREA(ACRES) =     0.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.10
```

```
****************************************************************************

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                          2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2006 Advanced Engineering Software (aes)
             Ver. 2.0 Release Date: 06/01/2005  License ID 1499

                          Analysis prepared by:

                      Kimley-Horn & Associates, Inc
                          401 B Street Suite 600
                           San Diego, CA 92101
                               619-234-9411

 ************************** DESCRIPTION OF STUDY **************************
* Otay Business Park                                                      *
* 5-year existing storm                                                   *
* P = 1.6" 5/3/2010 AG                                                    *
 **************************************************************************

  FILE NAME: 5.DAT
  TIME/DATE OF STUDY: 13:38 05/03/2010
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) =    5.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   1.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SPECIFIED CONSTANT RUNOFF COEFFICIENT = 0.350
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  =====  ======  =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    110.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    655.00
  DOWNSTREAM ELEVATION(FEET) =    650.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.490
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    90.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.248
  SUBAREA RUNOFF(CFS) =      0.17
  TOTAL AREA(ACRES) =      0.15   TOTAL RUNOFF(CFS) =      0.17

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    110.00 TO NODE    120.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    640.00  DOWNSTREAM(FEET) =    525.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3950.00   CHANNEL SLOPE =  0.0291
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.17
  FLOW VELOCITY(FEET/SEC) =   2.56 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.72   Tc(MIN.) =  33.21
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    120.00 =    4050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    120.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.243
  *USER SPECIFIED(GLOBAL):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   99.00   SUBAREA RUNOFF(CFS) =   43.07
  TOTAL AREA(ACRES) =       99.2   TOTAL RUNOFF(CFS) =      43.13
  TC(MIN.) =  33.21

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    130.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    525.00  DOWNSTREAM(FEET) =    516.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1000.00   CHANNEL SLOPE =  0.0090
  CHANNEL FLOW THRU SUBAREA(CFS) =      43.13
  FLOW VELOCITY(FEET/SEC) =   3.52 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   4.74   Tc(MIN.) =  37.95
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    130.00 =    5050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    130.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  37.95
  RAINFALL INTENSITY(INCH/HR) =   1.14
  TOTAL STREAM AREA(ACRES) =    99.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     43.13

****************************************************************************
  FLOW PROCESS FROM NODE    150.00 TO NODE    160.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    638.00
  DOWNSTREAM ELEVATION(FEET) =    632.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.126
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    92.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.354
  SUBAREA RUNOFF(CFS) =      0.12
```

```
  TOTAL AREA(ACRES) =       0.10   TOTAL RUNOFF(CFS) =       0.12

****************************************************************************
  FLOW PROCESS FROM NODE    160.00 TO NODE    170.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3730.00   CHANNEL SLOPE =  0.0273
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =        0.12
  FLOW VELOCITY(FEET/SEC) =   2.48 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.06   Tc(MIN.) =  32.19
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    170.00 =    3830.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    170.00 TO NODE    170.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.268
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  132.40   SUBAREA RUNOFF(CFS) =   58.77
  TOTAL AREA(ACRES) =      132.5   TOTAL RUNOFF(CFS) =      58.82
  TC(MIN.) =  32.19

****************************************************************************
  FLOW PROCESS FROM NODE    170.00 TO NODE    130.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    516.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1700.00   CHANNEL SLOPE =  0.0082
  CHANNEL FLOW THRU SUBAREA(CFS) =      58.82
  FLOW VELOCITY(FEET/SEC) =   3.68 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   7.70   Tc(MIN.) =  39.88
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    130.00 =    5530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    130.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  39.88
  RAINFALL INTENSITY(INCH/HR) =   1.10
  TOTAL STREAM AREA(ACRES) =   132.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     58.82

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        43.13    37.95       1.141         99.15
     2        58.82    39.88       1.105        132.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        99.10    37.95       1.141
     2       100.59    39.88       1.105
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     100.59   Tc(MIN.) =   39.88
  TOTAL AREA(ACRES) =      231.6
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    130.00 =    5530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    140.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    516.00  DOWNSTREAM(FEET) =    495.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   500.00   CHANNEL SLOPE =  0.0420
  CHANNEL FLOW THRU SUBAREA(CFS) =     100.59
  FLOW VELOCITY(FEET/SEC) =   9.74 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =  40.74
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    140.00 =    6030.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.090
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   77.60   SUBAREA RUNOFF(CFS) =   29.59
  TOTAL AREA(ACRES) =      309.2   TOTAL RUNOFF(CFS) =     117.93
  TC(MIN.) =  40.74

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    190.00 TO NODE    200.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1560.00
  DOWNSTREAM ELEVATION(FEET) =   1520.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.644
  SUBAREA RUNOFF(CFS) =      0.13
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.13

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1520.00  DOWNSTREAM(FEET) =    800.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4000.00   CHANNEL SLOPE =  0.1800
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.13
  FLOW VELOCITY(FEET/SEC) =   4.74 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  14.05   Tc(MIN.) =  20.32
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    201.00 =    4100.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    201.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.706
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  110.20   SUBAREA RUNOFF(CFS) =   65.81
  TOTAL AREA(ACRES) =      110.3   TOTAL RUNOFF(CFS) =      65.87
  TC(MIN.) =  20.32

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    210.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    800.00  DOWNSTREAM(FEET) =    620.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4000.00   CHANNEL SLOPE =  0.0450
  CHANNEL FLOW THRU SUBAREA(CFS) =      65.87
  FLOW VELOCITY(FEET/SEC) =   8.90 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   7.49   Tc(MIN.) =  27.82
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    210.00 =    8100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.394
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  386.70   SUBAREA RUNOFF(CFS) =  188.61
  TOTAL AREA(ACRES) =      497.0   TOTAL RUNOFF(CFS) =     242.41
  TC(MIN.) =  27.82

****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    220.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    620.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4900.00   CHANNEL SLOPE =  0.0184
  CHANNEL FLOW THRU SUBAREA(CFS) =     242.41
  FLOW VELOCITY(FEET/SEC) =   8.44 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   9.68   Tc(MIN.) =  37.49
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    220.00 =   13000.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    220.00 TO NODE    220.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.149
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  128.20   SUBAREA RUNOFF(CFS) =   51.58
  TOTAL AREA(ACRES) =      625.2   TOTAL RUNOFF(CFS) =     251.53
  TC(MIN.) =  37.49

****************************************************************************
  FLOW PROCESS FROM NODE    220.00 TO NODE    230.00 IS CODE =  52
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    485.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2890.00   CHANNEL SLOPE =  0.0156
  CHANNEL FLOW THRU SUBAREA(CFS) =     251.53
  FLOW VELOCITY(FEET/SEC) =   7.86 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   6.13   Tc(MIN.) =  43.62
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    230.00 =   15890.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    230.00 TO NODE    230.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.043
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   68.90   SUBAREA RUNOFF(CFS) =   25.14
  TOTAL AREA(ACRES) =      694.1   TOTAL RUNOFF(CFS) =     253.27
  TC(MIN.) =  43.62

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
================================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    315.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    572.00
  DOWNSTREAM ELEVATION(FEET) =    562.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.644
  SUBAREA RUNOFF(CFS) =      0.13
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.13

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    320.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    562.00  DOWNSTREAM(FEET) =    506.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2000.00   CHANNEL SLOPE =  0.0280
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.13
  FLOW VELOCITY(FEET/SEC) =   2.51 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  13.28   Tc(MIN.) =  19.55
  LONGEST FLOWPATH FROM NODE    310.00 TO NODE    320.00 =    2100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.750
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   15.60   SUBAREA RUNOFF(CFS) =    9.55
  TOTAL AREA(ACRES) =       15.7   TOTAL RUNOFF(CFS) =       9.61
  TC(MIN.) =  19.55
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =       15.7  TC(MIN.) =     19.55
  PEAK FLOW RATE(CFS)    =       9.61
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2006 Advanced Engineering Software (aes)
             Ver. 2.0 Release Date: 06/01/2005  License ID 1499

                          Analysis prepared by:

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 ************************** DESCRIPTION OF STUDY **************************
* Otay Business Park                                                      *
* 10-year storm                                                           *
* P = 1.9" 5/3/2010 AG                                                    *
 **************************************************************************

  FILE NAME: 10.DAT
  TIME/DATE OF STUDY: 13:36 05/03/2010
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) =  10.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   1.900
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SPECIFIED CONSTANT RUNOFF COEFFICIENT = 0.350
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    110.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    655.00
  DOWNSTREAM ELEVATION(FEET) =    650.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.490
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    90.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.857
  SUBAREA RUNOFF(CFS) =      0.20
  TOTAL AREA(ACRES) =      0.15   TOTAL RUNOFF(CFS) =      0.20

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    110.00 TO NODE    120.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    640.00  DOWNSTREAM(FEET) =    525.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3950.00   CHANNEL SLOPE =  0.0291
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =        0.20
  FLOW VELOCITY(FEET/SEC) =   2.56 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.72   Tc(MIN.) =  33.21
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    120.00 =    4050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    120.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.476
  *USER SPECIFIED(GLOBAL):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   99.00   SUBAREA RUNOFF(CFS) =   51.14
  TOTAL AREA(ACRES) =       99.2   TOTAL RUNOFF(CFS) =      51.22
  TC(MIN.) =  33.21

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    130.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    525.00  DOWNSTREAM(FEET) =    516.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1000.00   CHANNEL SLOPE =  0.0090
  CHANNEL FLOW THRU SUBAREA(CFS) =      51.22
  FLOW VELOCITY(FEET/SEC) =   3.70 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   4.51   Tc(MIN.) =  37.72
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    130.00 =    5050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    130.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  37.72
  RAINFALL INTENSITY(INCH/HR) =   1.36
  TOTAL STREAM AREA(ACRES) =    99.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     51.22

****************************************************************************
  FLOW PROCESS FROM NODE    150.00 TO NODE    160.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    638.00
  DOWNSTREAM ELEVATION(FEET) =    632.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.126
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    92.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.983
  SUBAREA RUNOFF(CFS) =      0.14
```

```
  TOTAL AREA(ACRES) =       0.10   TOTAL RUNOFF(CFS) =       0.14

****************************************************************************
  FLOW PROCESS FROM NODE    160.00 TO NODE    170.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3730.00   CHANNEL SLOPE =  0.0273
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.14
  FLOW VELOCITY(FEET/SEC) =   2.48 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.06   Tc(MIN.) =  32.19
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    170.00 =    3830.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    170.00 TO NODE    170.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.506
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  132.40   SUBAREA RUNOFF(CFS) =   69.79
  TOTAL AREA(ACRES) =      132.5   TOTAL RUNOFF(CFS) =      69.85
  TC(MIN.) =  32.19

****************************************************************************
  FLOW PROCESS FROM NODE    170.00 TO NODE    130.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    516.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1700.00   CHANNEL SLOPE =  0.0082
  CHANNEL FLOW THRU SUBAREA(CFS) =      69.85
  FLOW VELOCITY(FEET/SEC) =   3.87 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   7.32   Tc(MIN.) =  39.51
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    130.00 =    5530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    130.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  39.51
  RAINFALL INTENSITY(INCH/HR) =   1.32
  TOTAL STREAM AREA(ACRES) =   132.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     69.85

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        51.22    37.72       1.360         99.15
     2        69.85    39.51       1.320        132.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       117.91    37.72       1.360
     2       119.56    39.51       1.320
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     119.56   Tc(MIN.) =   39.51
  TOTAL AREA(ACRES) =      231.6
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    130.00 =    5530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    140.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    516.00  DOWNSTREAM(FEET) =    495.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   500.00   CHANNEL SLOPE =  0.0420
  CHANNEL FLOW THRU SUBAREA(CFS) =     119.56
  FLOW VELOCITY(FEET/SEC) =  10.27 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.81   Tc(MIN.) =  40.32
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    140.00 =    6030.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.302
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   77.60   SUBAREA RUNOFF(CFS) =   35.38
  TOTAL AREA(ACRES) =      309.2   TOTAL RUNOFF(CFS) =     140.98
  TC(MIN.) =  40.32

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    190.00 TO NODE    200.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1560.00
  DOWNSTREAM ELEVATION(FEET) =   1520.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.328
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1520.00  DOWNSTREAM(FEET) =    800.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4000.00   CHANNEL SLOPE =  0.1800
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.15
  FLOW VELOCITY(FEET/SEC) =   4.74 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  14.05   Tc(MIN.) =  20.32
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    201.00 =    4100.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    201.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.026
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  110.20   SUBAREA RUNOFF(CFS) =   78.15
  TOTAL AREA(ACRES) =      110.3   TOTAL RUNOFF(CFS) =      78.22
  TC(MIN.) =  20.32

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    210.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    800.00  DOWNSTREAM(FEET) =    620.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4000.00   CHANNEL SLOPE =  0.0450
  CHANNEL FLOW THRU SUBAREA(CFS) =      78.22
  FLOW VELOCITY(FEET/SEC) =   9.36 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   7.12   Tc(MIN.) =  27.45
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    210.00 =    8100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.669
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  386.70   SUBAREA RUNOFF(CFS) =  225.92
  TOTAL AREA(ACRES) =      497.0   TOTAL RUNOFF(CFS) =     290.36
  TC(MIN.) =  27.45

****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    220.00 IS CODE -  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    620.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4900.00   CHANNEL SLOPE =  0.0184
  CHANNEL FLOW THRU SUBAREA(CFS) =     290.36
  FLOW VELOCITY(FEET/SEC) =   8.93 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   9.15   Tc(MIN.) =  36.59
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    220.00 =   13000.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    220.00 TO NODE    220.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.387
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  128.20   SUBAREA RUNOFF(CFS) =   62.22
  TOTAL AREA(ACRES) =      625.2   TOTAL RUNOFF(CFS) =     303.42
  TC(MIN.) =  36.59

****************************************************************************
  FLOW PROCESS FROM NODE    220.00 TO NODE    230.00 IS CODE =  52
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    485.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2890.00   CHANNEL SLOPE =  0.0156
  CHANNEL FLOW THRU SUBAREA(CFS) =     303.42
  FLOW VELOCITY(FEET/SEC) =   8.34 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   5.78   Tc(MIN.) =  42.37
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    230.00 =   15890.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    230.00 TO NODE    230.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.261
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   68.90   SUBAREA RUNOFF(CFS) =   30.42
  TOTAL AREA(ACRES) =      694.1   TOTAL RUNOFF(CFS) =     306.46
  TC(MIN.) =  42.37

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    315.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    572.00
  DOWNSTREAM ELEVATION(FEET) =    562.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.328
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    320.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    562.00  DOWNSTREAM(FEET) =    506.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2000.00   CHANNEL SLOPE =  0.0280
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.15
  FLOW VELOCITY(FEET/SEC) =   2.51 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  13.28   Tc(MIN.) =  19.55
  LONGEST FLOWPATH FROM NODE    310.00 TO NODE    320.00 =    2100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.078
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   15.60   SUBAREA RUNOFF(CFS) =   11.34
  TOTAL AREA(ACRES) =       15.7   TOTAL RUNOFF(CFS) =      11.42
  TC(MIN.) =  19.55
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =       15.7  TC(MIN.) =     19.55
  PEAK FLOW RATE(CFS)    =      11.42
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2006 Advanced Engineering Software (aes)
             Ver. 2.0 Release Date: 06/01/2005  License ID 1499

                          Analysis prepared by:

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                               619-234-9411

 ************************** DESCRIPTION OF STUDY **************************
* Otay Business Park                                                       *
* Existing 50-year storm                                                   *
* P = 2.8" 5/3/2010 AG                                                     *
 ***************************************************************************

  FILE NAME: 50.DAT
  TIME/DATE OF STUDY: 13:34 05/03/2010
---------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
---------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) =  50.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   2.800
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SPECIFIED CONSTANT RUNOFF COEFFICIENT = 0.350
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    110.00 IS CODE =  21
---------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
===========================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    655.00
  DOWNSTREAM ELEVATION(FEET) =    650.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.490
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    90.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.684
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.15   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    110.00 TO NODE    120.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    640.00  DOWNSTREAM(FEET) =    525.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3950.00   CHANNEL SLOPE =  0.0291
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.30
  FLOW VELOCITY(FEET/SEC) =   2.56 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.72   Tc(MIN.) =  33.21
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    120.00 =    4050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    120.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.175
  *USER SPECIFIED(GLOBAL):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   99.00   SUBAREA RUNOFF(CFS) =   75.37
  TOTAL AREA(ACRES) =       99.2   TOTAL RUNOFF(CFS) =      75.48
  TC(MIN.) =  33.21

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    130.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    525.00  DOWNSTREAM(FEET) =    516.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1000.00   CHANNEL SLOPE =  0.0090
  CHANNEL FLOW THRU SUBAREA(CFS) =      75.48
  FLOW VELOCITY(FEET/SEC) =   4.14 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   4.02   Tc(MIN.) =  37.24
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    130.00 =    5050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    130.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  37.24
  RAINFALL INTENSITY(INCH/HR) =   2.02
  TOTAL STREAM AREA(ACRES) =    99.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     75.48

****************************************************************************
  FLOW PROCESS FROM NODE    150.00 TO NODE    160.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    638.00
  DOWNSTREAM ELEVATION(FEET) =    632.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.126
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    92.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.870
  SUBAREA RUNOFF(CFS) =      0.21
```

```
  TOTAL AREA(ACRES) =       0.10   TOTAL RUNOFF(CFS) =       0.21

****************************************************************************
  FLOW PROCESS FROM NODE    160.00 TO NODE    170.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3730.00   CHANNEL SLOPE =  0.0273
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.21
  FLOW VELOCITY(FEET/SEC) =   2.48 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.06   Tc(MIN.) =  32.19
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    170.00 =    3830.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    170.00 TO NODE    170.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.220
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  132.40   SUBAREA RUNOFF(CFS) =  102.85
  TOTAL AREA(ACRES) =      132.5   TOTAL RUNOFF(CFS) =     102.93
  TC(MIN.) =  32.19

****************************************************************************
  FLOW PROCESS FROM NODE    170.00 TO NODE    130.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    516.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1700.00   CHANNEL SLOPE =  0.0082
  CHANNEL FLOW THRU SUBAREA(CFS) =     102.93
  FLOW VELOCITY(FEET/SEC) =   4.35 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   6.52   Tc(MIN.) =  38.71
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    130.00 =    5530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    130.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  38.71
  RAINFALL INTENSITY(INCH/HR) =   1.97
  TOTAL STREAM AREA(ACRES) =   132.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    102.93

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       75.48    37.24        2.020        99.15
      2      102.93    38.71        1.971       132.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      174.50    37.24       2.020
      2      176.55    38.71       1.971
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     176.55   Tc(MIN.) =   38.71
  TOTAL AREA(ACRES) =      231.6
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    130.00 =    5530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    140.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    516.00  DOWNSTREAM(FEET) =    495.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   500.00   CHANNEL SLOPE =  0.0420
  CHANNEL FLOW THRU SUBAREA(CFS) =     176.55
  FLOW VELOCITY(FEET/SEC) =  11.56 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.72   Tc(MIN.) =  39.43
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    140.00 =    6030.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.947
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   77.60   SUBAREA RUNOFF(CFS) =   52.89
  TOTAL AREA(ACRES) =      309.2   TOTAL RUNOFF(CFS) =     210.77
  TC(MIN.) =  39.43

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    190.00 TO NODE    200.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1560.00
  DOWNSTREAM ELEVATION(FEET) =   1520.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.377
  SUBAREA RUNOFF(CFS) =      0.22
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.22

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1520.00  DOWNSTREAM(FEET) =    800.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4000.00   CHANNEL SLOPE =  0.1800
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.22
  FLOW VELOCITY(FEET/SEC) =   4.74 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  14.05   Tc(MIN.) =  20.32
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    201.00 =    4100.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     201.00 TO NODE     201.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.986
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  110.20   SUBAREA RUNOFF(CFS) =  115.17
  TOTAL AREA(ACRES) =      110.3   TOTAL RUNOFF(CFS) =     115.28
  TC(MIN.) =  20.32

****************************************************************************
  FLOW PROCESS FROM NODE     201.00 TO NODE     210.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    800.00  DOWNSTREAM(FEET) =    620.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4000.00   CHANNEL SLOPE =  0.0450
  CHANNEL FLOW THRU SUBAREA(CFS) =     115.28
  FLOW VELOCITY(FEET/SEC) =  10.51 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   6.34   Tc(MIN.) =  26.66
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    210.00 =    8100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     210.00 TO NODE     210.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.506
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  386.70   SUBAREA RUNOFF(CFS) =  339.19
  TOTAL AREA(ACRES) =      497.0   TOTAL RUNOFF(CFS) =     435.94
  TC(MIN.) =  26.66

****************************************************************************
  FLOW PROCESS FROM NODE     210.00 TO NODE     220.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    620.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4900.00   CHANNEL SLOPE =  0.0184
  CHANNEL FLOW THRU SUBAREA(CFS) =     435.94
  FLOW VELOCITY(FEET/SEC) =  10.16 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   8.04   Tc(MIN.) =  34.70
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    220.00 =   13000.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     220.00 TO NODE     220.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.114
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  128.20   SUBAREA RUNOFF(CFS) =   94.87
  TOTAL AREA(ACRES) =      625.2   TOTAL RUNOFF(CFS) =     462.66
  TC(MIN.) =  34.70

****************************************************************************
  FLOW PROCESS FROM NODE     220.00 TO NODE     230.00 IS CODE =  52
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    485.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2890.00   CHANNEL SLOPE =  0.0156
  CHANNEL FLOW THRU SUBAREA(CFS) =     462.66
  FLOW VELOCITY(FEET/SEC) =   9.53 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   5.05   Tc(MIN.) =  39.76
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    230.00 =   15890.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    230.00 TO NODE    230.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.937
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   68.90   SUBAREA RUNOFF(CFS) =   46.71
  TOTAL AREA(ACRES) =      694.1   TOTAL RUNOFF(CFS) =     470.53
  TC(MIN.) =  39.76

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
================================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    315.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    572.00
  DOWNSTREAM ELEVATION(FEET) =    562.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.377
  SUBAREA RUNOFF(CFS) =      0.22
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.22

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    320.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    562.00  DOWNSTREAM(FEET) =    506.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2000.00   CHANNEL SLOPE =  0.0280
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.22
  FLOW VELOCITY(FEET/SEC) =   2.51 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  13.28   Tc(MIN.) =  19.55
  LONGEST FLOWPATH FROM NODE    310.00 TO NODE    320.00 =    2100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.062
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   15.60   SUBAREA RUNOFF(CFS) =   16.72
  TOTAL AREA(ACRES) =       15.7   TOTAL RUNOFF(CFS) =      16.82
  TC(MIN.) =  19.55
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =       15.7  TC(MIN.) =     19.55
  PEAK FLOW RATE(CFS)    =      16.82
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2006 Advanced Engineering Software (aes)
             Ver. 2.0 Release Date: 06/01/2005  License ID 1499

                          Analysis prepared by:

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                               619-234-9411

 ************************** DESCRIPTION OF STUDY **************************
* Otay Business Park                                                       *
* Existing 50-year storm                                                   *
* P = 2.8" 5/3/2010 AG                                                     *
 ***************************************************************************

  FILE NAME: 50.DAT
  TIME/DATE OF STUDY: 13:34 05/03/2010
---------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
---------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) =  50.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   2.800
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SPECIFIED CONSTANT RUNOFF COEFFICIENT = 0.350
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ==========  ==================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    110.00 IS CODE =  21
---------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
===========================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    655.00
  DOWNSTREAM ELEVATION(FEET) =    650.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.490
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    90.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.684
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.15   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    110.00 TO NODE    120.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    640.00  DOWNSTREAM(FEET) =    525.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3950.00   CHANNEL SLOPE =  0.0291
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =        0.30
  FLOW VELOCITY(FEET/SEC) =   2.56 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.72   Tc(MIN.) =  33.21
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    120.00 =    4050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    120.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.175
  *USER SPECIFIED(GLOBAL):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   99.00   SUBAREA RUNOFF(CFS) =   75.37
  TOTAL AREA(ACRES) =       99.2   TOTAL RUNOFF(CFS) =      75.48
  TC(MIN.) =  33.21

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    130.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    525.00  DOWNSTREAM(FEET) =    516.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1000.00   CHANNEL SLOPE =  0.0090
  CHANNEL FLOW THRU SUBAREA(CFS) =      75.48
  FLOW VELOCITY(FEET/SEC) =   4.14 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   4.02   Tc(MIN.) =  37.24
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    130.00 =    5050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    130.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  37.24
  RAINFALL INTENSITY(INCH/HR) =   2.02
  TOTAL STREAM AREA(ACRES) =    99.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     75.48

****************************************************************************
  FLOW PROCESS FROM NODE    150.00 TO NODE    160.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    638.00
  DOWNSTREAM ELEVATION(FEET) =    632.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.126
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    92.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.870
  SUBAREA RUNOFF(CFS) =      0.21
```

```
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.21

****************************************************************************
  FLOW PROCESS FROM NODE    160.00 TO NODE    170.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3730.00   CHANNEL SLOPE =  0.0273
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.21
  FLOW VELOCITY(FEET/SEC) =   2.48 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.06   Tc(MIN.) =  32.19
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    170.00 =    3830.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    170.00 TO NODE    170.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.220
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  132.40   SUBAREA RUNOFF(CFS) =  102.85
  TOTAL AREA(ACRES) =      132.5   TOTAL RUNOFF(CFS) =     102.93
  TC(MIN.) =  32.19

****************************************************************************
  FLOW PROCESS FROM NODE    170.00 TO NODE    130.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    516.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1700.00   CHANNEL SLOPE =  0.0082
  CHANNEL FLOW THRU SUBAREA(CFS) =     102.93
  FLOW VELOCITY(FEET/SEC) =   4.35 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   6.52   Tc(MIN.) =  38.71
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    130.00 =    5530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    130.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  38.71
  RAINFALL INTENSITY(INCH/HR) =   1.97
  TOTAL STREAM AREA(ACRES) =   132.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    102.93

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       75.48    37.24        2.020        99.15
      2      102.93    38.71        1.971       132.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      174.50    37.24       2.020
      2      176.55    38.71       1.971
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     176.55   Tc(MIN.) =   38.71
  TOTAL AREA(ACRES) =      231.6
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    130.00 =    5530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    140.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    516.00  DOWNSTREAM(FEET) =    495.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   500.00   CHANNEL SLOPE =  0.0420
  CHANNEL FLOW THRU SUBAREA(CFS) =     176.55
  FLOW VELOCITY(FEET/SEC) =  11.56 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.72   Tc(MIN.) =  39.43
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    140.00 =    6030.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.947
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   77.60   SUBAREA RUNOFF(CFS) =   52.89
  TOTAL AREA(ACRES) =      309.2   TOTAL RUNOFF(CFS) =     210.77
  TC(MIN.) =  39.43

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    190.00 TO NODE    200.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1560.00
  DOWNSTREAM ELEVATION(FEET) =   1520.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.377
  SUBAREA RUNOFF(CFS) =      0.22
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.22

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1520.00  DOWNSTREAM(FEET) =    800.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4000.00   CHANNEL SLOPE =  0.1800
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.22
  FLOW VELOCITY(FEET/SEC) =   4.74 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  14.05   Tc(MIN.) =  20.32
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    201.00 =    4100.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    201.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.986
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  110.20   SUBAREA RUNOFF(CFS) =  115.17
  TOTAL AREA(ACRES) =      110.3   TOTAL RUNOFF(CFS) =     115.28
  TC(MIN.) =  20.32

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    210.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    800.00  DOWNSTREAM(FEET) =    620.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4000.00   CHANNEL SLOPE =  0.0450
  CHANNEL FLOW THRU SUBAREA(CFS) =     115.28
  FLOW VELOCITY(FEET/SEC) =  10.51 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   6.34   Tc(MIN.) =  26.66
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    210.00 =    8100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.506
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  386.70   SUBAREA RUNOFF(CFS) =  339.19
  TOTAL AREA(ACRES) =      497.0   TOTAL RUNOFF(CFS) =     435.94
  TC(MIN.) =  26.66

****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    220.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    620.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4900.00   CHANNEL SLOPE =  0.0184
  CHANNEL FLOW THRU SUBAREA(CFS) =     435.94
  FLOW VELOCITY(FEET/SEC) =  10.16 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   8.04   Tc(MIN.) =  34.70
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    220.00 =   13000.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    220.00 TO NODE    220.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.114
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  128.20   SUBAREA RUNOFF(CFS) =   94.87
  TOTAL AREA(ACRES) =      625.2   TOTAL RUNOFF(CFS) =     462.66
  TC(MIN.) =  34.70

****************************************************************************
  FLOW PROCESS FROM NODE    220.00 TO NODE    230.00 IS CODE =  52
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    485.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2890.00   CHANNEL SLOPE =  0.0156
  CHANNEL FLOW THRU SUBAREA(CFS) =     462.66
  FLOW VELOCITY(FEET/SEC) =   9.53 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   5.05   Tc(MIN.) =  39.76
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    230.00 =   15890.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    230.00 TO NODE    230.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.937
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   68.90   SUBAREA RUNOFF(CFS) =   46.71
  TOTAL AREA(ACRES) =      694.1   TOTAL RUNOFF(CFS) =     470.53
  TC(MIN.) =  39.76

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
================================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    315.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    572.00
  DOWNSTREAM ELEVATION(FEET) =    562.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.377
  SUBAREA RUNOFF(CFS) =      0.22
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.22

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    320.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    562.00  DOWNSTREAM(FEET) =    506.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2000.00   CHANNEL SLOPE =  0.0280
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.22
  FLOW VELOCITY(FEET/SEC) =   2.51 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  13.28   Tc(MIN.) =  19.55
  LONGEST FLOWPATH FROM NODE    310.00 TO NODE    320.00 =    2100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.062
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    15.60   SUBAREA RUNOFF(CFS) =    16.72
  TOTAL AREA(ACRES) =        15.7   TOTAL RUNOFF(CFS) =       16.82
  TC(MIN.) =  19.55
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =        15.7  TC(MIN.) =      19.55
  PEAK FLOW RATE(CFS)    =       16.82
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                          2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2006 Advanced Engineering Software (aes)
             Ver. 2.0 Release Date: 06/01/2005  License ID 1499

                              Analysis prepared by:

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                             San Diego, CA 92101
                                 619-234-9411

 ************************** DESCRIPTION OF STUDY **************************
* Otay Business Park                                                       *
* Existing 100 Year Storm                                                  *
* 6/23/2009 KDC                                                            *
 ***************************************************************************

  FILE NAME: 100.DAT
  TIME/DATE OF STUDY: 11:14 04/19/2010
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.000
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SPECIFIED CONSTANT RUNOFF COEFFICIENT = 0.350
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    110.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    655.00
  DOWNSTREAM ELEVATION(FEET) =    650.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.490
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    90.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.090
  SUBAREA RUNOFF(CFS) =      0.32
  TOTAL AREA(ACRES) =      0.15   TOTAL RUNOFF(CFS) =      0.32

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    110.00 TO NODE    120.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    640.00  DOWNSTREAM(FEET) =    525.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3950.00   CHANNEL SLOPE =  0.0291
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.32
  FLOW VELOCITY(FEET/SEC) =   2.56 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.72   Tc(MIN.) =  33.21
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    120.00 =    4050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    120.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.331
  *USER SPECIFIED(GLOBAL):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   99.00   SUBAREA RUNOFF(CFS) =   80.75
  TOTAL AREA(ACRES) =       99.2   TOTAL RUNOFF(CFS) =      80.88
  TC(MIN.) =  33.21

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    130.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    525.00  DOWNSTREAM(FEET) =    516.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1000.00   CHANNEL SLOPE =  0.0090
  CHANNEL FLOW THRU SUBAREA(CFS) =      80.88
  FLOW VELOCITY(FEET/SEC) =   4.23 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.94   Tc(MIN.) =  37.16
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    130.00 =    5050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    130.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  37.16
  RAINFALL INTENSITY(INCH/HR) =   2.17
  TOTAL STREAM AREA(ACRES) =    99.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     80.88

****************************************************************************
  FLOW PROCESS FROM NODE    150.00 TO NODE    160.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    638.00
  DOWNSTREAM ELEVATION(FEET) =    632.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.126
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    92.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.289
  SUBAREA RUNOFF(CFS) =      0.22
```

```
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.22

****************************************************************************
  FLOW PROCESS FROM NODE    160.00 TO NODE    170.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3730.00   CHANNEL SLOPE =  0.0273
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.22
  FLOW VELOCITY(FEET/SEC) =   2.48 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.06   Tc(MIN.) =  32.19
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    170.00 =    3830.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    170.00 TO NODE    170.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.378
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  132.40   SUBAREA RUNOFF(CFS) =  110.20
  TOTAL AREA(ACRES) =      132.5   TOTAL RUNOFF(CFS) =     110.28
  TC(MIN.) =  32.19

****************************************************************************
  FLOW PROCESS FROM NODE    170.00 TO NODE    130.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    516.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1700.00   CHANNEL SLOPE =  0.0082
  CHANNEL FLOW THRU SUBAREA(CFS) =     110.28
  FLOW VELOCITY(FEET/SEC) =   4.44 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   6.39   Tc(MIN.) =  38.58
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    130.00 =    5530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    130.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  38.58
  RAINFALL INTENSITY(INCH/HR) =   2.12
  TOTAL STREAM AREA(ACRES) =   132.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    110.28

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       80.88    37.16        2.168         99.15
      2      110.28    38.58        2.116        132.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      187.10    37.16       2.168
      2      189.23    38.58       2.116
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      189.23   Tc(MIN.) =   38.58
  TOTAL AREA(ACRES) =      231.6
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    130.00 =    5530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    140.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    516.00  DOWNSTREAM(FEET) =    495.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   500.00   CHANNEL SLOPE =  0.0420
  CHANNEL FLOW THRU SUBAREA(CFS) =     189.23
  FLOW VELOCITY(FEET/SEC) =  11.81 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.71   Tc(MIN.) =  39.28
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    140.00 =    6030.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.091
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   77.60   SUBAREA RUNOFF(CFS) =   56.80
  TOTAL AREA(ACRES) =      309.2   TOTAL RUNOFF(CFS) =     226.37
  TC(MIN.) =  39.28

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    190.00 TO NODE    200.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1560.00
  DOWNSTREAM ELEVATION(FEET) =   1520.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.833
  SUBAREA RUNOFF(CFS) =      0.24
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.24

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1520.00  DOWNSTREAM(FEET) =    800.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4000.00   CHANNEL SLOPE =  0.1800
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.24
  FLOW VELOCITY(FEET/SEC) =   4.74 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  14.05   Tc(MIN.) =  20.32
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    201.00 =    4100.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    201.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.199
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  110.20   SUBAREA RUNOFF(CFS) =  123.40
  TOTAL AREA(ACRES) =      110.3   TOTAL RUNOFF(CFS) =     123.51
  TC(MIN.) =  20.32

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    210.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    800.00  DOWNSTREAM(FEET) =    620.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4000.00   CHANNEL SLOPE =  0.0450
  CHANNEL FLOW THRU SUBAREA(CFS) =     123.51
  FLOW VELOCITY(FEET/SEC) =  10.73 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   6.21   Tc(MIN.) =  26.53
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    210.00 =    8100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.694
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  386.70   SUBAREA RUNOFF(CFS) =  364.58
  TOTAL AREA(ACRES) =      497.0   TOTAL RUNOFF(CFS) =     468.57
  TC(MIN.) =  26.53

****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    220.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    620.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4900.00   CHANNEL SLOPE =  0.0184
  CHANNEL FLOW THRU SUBAREA(CFS) =     468.57
  FLOW VELOCITY(FEET/SEC) =  10.39 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   7.86   Tc(MIN.) =  34.39
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    220.00 =   13000.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    220.00 TO NODE    220.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.279
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  128.20   SUBAREA RUNOFF(CFS) =  102.25
  TOTAL AREA(ACRES) =      625.2   TOTAL RUNOFF(CFS) =     498.63
  TC(MIN.) =  34.39

****************************************************************************
  FLOW PROCESS FROM NODE    220.00 TO NODE    230.00 IS CODE =  52
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    485.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2890.00   CHANNEL SLOPE =  0.0156
  CHANNEL FLOW THRU SUBAREA(CFS) =     498.63
  FLOW VELOCITY(FEET/SEC) =   9.76 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   4.93   Tc(MIN.) =  39.32
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    230.00 =   15890.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    230.00 TO NODE    230.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.090
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   68.90   SUBAREA RUNOFF(CFS) =   50.40
  TOTAL AREA(ACRES) =      694.1   TOTAL RUNOFF(CFS) =     507.73
  TC(MIN.) =  39.32

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
================================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    315.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    572.00
  DOWNSTREAM ELEVATION(FEET) =    562.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.833
  SUBAREA RUNOFF(CFS) =      0.24
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.24

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    320.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    562.00  DOWNSTREAM(FEET) =    506.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2000.00   CHANNEL SLOPE =  0.0280
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.24
  FLOW VELOCITY(FEET/SEC) =   2.51 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  13.28   Tc(MIN.) =  19.55
  LONGEST FLOWPATH FROM NODE    310.00 TO NODE    320.00 =    2100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.281
  *USER SPECIFIED(GLOBAL):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) =    15.60   SUBAREA RUNOFF(CFS) =    17.91
TOTAL AREA(ACRES) =        15.7   TOTAL RUNOFF(CFS) =       18.03
TC(MIN.) =  19.55
================================================================================
END OF STUDY SUMMARY:
TOTAL AREA(ACRES)      =        15.7  TC(MIN.) =      19.55
PEAK FLOW RATE(CFS)    =       18.03
================================================================================
================================================================================
END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2006 Advanced Engineering Software (aes)
            Ver. 2.0 Release Date: 06/01/2005  License ID 1499

                          Analysis prepared by:

                     Kimley-Horn & Associates, Inc
                         401 B Street Suite 600
                          San Diego, CA 92101
                              619-234-9411

 ************************* DESCRIPTION OF STUDY *************************
* otay business park proposed condition                                 *
* 2-year storm; P = 1.2"                                                *
* 2010-04-12 AG                                                         *
 ************************************************************************

  FILE NAME: 2.DAT
  TIME/DATE OF STUDY: 17:09 04/12/2010
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) =   2.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   1.200
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ======  =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150
  2   39.0     34.0    0.020/0.020/ ---    0.50    1.50 0.0313 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    657.00
  DOWNSTREAM ELEVATION(FEET) =    640.00
  ELEVATION DIFFERENCE(FEET) =     17.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.431
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.12
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.12

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    640.00  DOWNSTREAM(FEET) =    540.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3300.00   CHANNEL SLOPE =  0.0303
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.12
  FLOW VELOCITY(FEET/SEC) =   2.61 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  21.06   Tc(MIN.) =  25.49
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    3350.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.106
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  101.30   SUBAREA RUNOFF(CFS) =   39.20
  TOTAL AREA(ACRES) =      101.4   TOTAL RUNOFF(CFS) =      39.24
  TC(MIN.) =  25.49

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.30
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      39.24
  PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =  26.07
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    203.00 =    3600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  26.07
  RAINFALL INTENSITY(INCH/HR) =   1.09
  TOTAL STREAM AREA(ACRES) =   101.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     39.24

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    601.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    638.00
  DOWNSTREAM ELEVATION(FEET) =    632.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.431
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.12
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.12
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     601.00 TO NODE     602.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.00  DOWNSTREAM(FEET) =    531.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3766.00   CHANNEL SLOPE =  0.0268
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =        0.12
  FLOW VELOCITY(FEET/SEC) =   2.46 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.55   Tc(MIN.) =  29.98
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    602.00 =    3816.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     602.00 TO NODE     602.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  0.996
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  102.19   SUBAREA RUNOFF(CFS) =   35.62
  TOTAL AREA(ACRES) =      102.3   TOTAL RUNOFF(CFS) =      35.65
  TC(MIN.) =  29.98

****************************************************************************
  FLOW PROCESS FROM NODE     602.00 TO NODE     203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   440.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  26.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.99
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      35.65
  PIPE TRAVEL TIME(MIN.) =   1.05    Tc(MIN.) =  31.03
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    203.00 =    4256.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     203.00 TO NODE     203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  31.03
  RAINFALL INTENSITY(INCH/HR) =   0.97
  TOTAL STREAM AREA(ACRES) =   102.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     35.65

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        39.24    26.07       1.090        101.41
     2        35.65    31.03       0.974        102.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        69.19    26.07       1.090
     2        70.72    31.03       0.974

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      70.72   Tc(MIN.) =   31.03
  TOTAL AREA(ACRES) =      203.7
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    203.00 =    4256.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     203.00 TO NODE     204.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =  1200.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  31.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.47
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      70.72
  PIPE TRAVEL TIME(MIN.) =   2.36    Tc(MIN.) =  33.39
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    204.00 =    5456.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     204.00 TO NODE     204.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  33.39
  RAINFALL INTENSITY(INCH/HR) =   0.93
  TOTAL STREAM AREA(ACRES) =   203.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     70.72

****************************************************************************
  FLOW PROCESS FROM NODE     400.00 TO NODE     401.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     3.00
  UPSTREAM ELEVATION(FEET) =    555.00
  DOWNSTREAM ELEVATION(FEET) =    552.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.085
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.12
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.12

****************************************************************************
  FLOW PROCESS FROM NODE     401.00 TO NODE     402.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    552.00  DOWNSTREAM(FEET) =    519.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1517.00   CHANNEL SLOPE =  0.0218
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =        0.12
  FLOW VELOCITY(FEET/SEC) =   2.21 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  11.43   Tc(MIN.) =  12.51
  LONGEST FLOWPATH FROM NODE    400.00 TO NODE    402.00 =    1520.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     402.00 TO NODE     402.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.750
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =   21.69   SUBAREA RUNOFF(CFS) =   13.28
  TOTAL AREA(ACRES) =       21.8   TOTAL RUNOFF(CFS) =      13.35
  TC(MIN.) =  12.51

****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    204.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.58
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.35
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =  12.66
  LONGEST FLOWPATH FROM NODE    400.00 TO NODE    204.00 =    1570.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    204.00 TO NODE    204.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.66
  RAINFALL INTENSITY(INCH/HR) =   1.74
  TOTAL STREAM AREA(ACRES) =    21.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.35

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       70.72    33.39        0.929       203.71
      2       13.35    12.66        1.736        21.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       51.19    12.66       1.736
      2       77.86    33.39       0.929

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      77.86   Tc(MIN.) =   33.39
  TOTAL AREA(ACRES) =      225.5
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    204.00 =    5456.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    204.00 TO NODE    204.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =  1370.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  34.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.57
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      77.86
  PIPE TRAVEL TIME(MIN.) =   2.66    Tc(MIN.) =  36.06
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    204.50 =    6826.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    204.50 TO NODE    204.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  36.06
  RAINFALL INTENSITY(INCH/HR) =   0.88
  TOTAL STREAM AREA(ACRES) =   225.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     77.86

****************************************************************************
  FLOW PROCESS FROM NODE   1030.00 TO NODE   1031.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    20.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.60
  ELEVATION DIFFERENCE(FEET) =      0.40
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.470
    2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.28
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.28

****************************************************************************
  FLOW PROCESS FROM NODE   1031.00 TO NODE   1032.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1300.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.09
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.41
  STREET FLOW TRAVEL TIME(MIN.) =  15.18   Tc(MIN.) =  16.65
    2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.455
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.20      SUBAREA RUNOFF(CFS) =    1.52
  TOTAL AREA(ACRES) =        1.3        PEAK FLOW RATE(CFS) =       1.65

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.67
  FLOW VELOCITY(FEET/SEC.) =  1.56   DEPTH*VELOCITY(FT*FT/SEC.) =   0.50
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE   1032.00 =    1320.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1032.00 TO NODE    204.50 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.31
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        1.65
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =  16.90
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    204.50 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    204.50 TO NODE    204.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.90
  RAINFALL INTENSITY(INCH/HR) =   1.44
  TOTAL STREAM AREA(ACRES) =      1.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.65

****************************************************************************
  FLOW PROCESS FROM NODE    280.00 TO NODE    281.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    20.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.60
  ELEVATION DIFFERENCE(FEET) =      0.40
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.470
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.28
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.28

****************************************************************************
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1300.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.66
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =    6.30
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.32
  STREET FLOW TRAVEL TIME(MIN.) =  17.00   Tc(MIN.) =  18.47
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.361
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.60      SUBAREA RUNOFF(CFS) =    0.71
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       0.83

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =   7.10
  FLOW VELOCITY(FEET/SEC.) =  1.33   DEPTH*VELOCITY(FT*FT/SEC.) =   0.36
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =    1320.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    204.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.72
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        0.83
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =  18.77
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    204.50 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    204.50 TO NODE    204.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.77
  RAINFALL INTENSITY(INCH/HR) =   1.35
  TOTAL STREAM AREA(ACRES) =      0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.83

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        77.86    36.06       0.884        225.51
     2         1.65    16.90       1.441          1.30
     3         0.83    18.77       1.347          0.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        50.15    16.90       1.441
     2        53.48    18.77       1.347
     3        79.42    36.06       0.884

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      79.42   Tc(MIN.) =   36.06
  TOTAL AREA(ACRES) =      227.5
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    204.50 =    6826.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    204.50 TO NODE    205.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    22.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  35.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.59
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =       79.42
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =  36.10
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    205.00 =    6848.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    121.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    586.00
  DOWNSTREAM ELEVATION(FEET) =    583.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.254
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.062
  SUBAREA RUNOFF(CFS) =       0.12
  TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.12

****************************************************************************
  FLOW PROCESS FROM NODE    121.00 TO NODE    122.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    583.00  DOWNSTREAM(FEET) =    551.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   600.00   CHANNEL SLOPE =  0.0533
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =        0.12
  FLOW VELOCITY(FEET/SEC) =   3.46 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.89   Tc(MIN.) =   8.14
  LONGEST FLOWPATH FROM NODE    120.00 TO NODE    122.00 =     650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.309
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =     5.80   SUBAREA RUNOFF(CFS) =     4.69
  TOTAL AREA(ACRES) =        5.9   TOTAL RUNOFF(CFS) =       4.78
  TC(MIN.) =   8.14

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.14
  RAINFALL INTENSITY(INCH/HR) =   2.31
  TOTAL STREAM AREA(ACRES) =      5.91
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.78

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   5.00   RAIN INTENSITY(INCH/HOUR) =  3.16
  TOTAL AREA(ACRES) =    59.90   TOTAL RUNOFF(CFS) =     52.30

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.00
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =    59.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     52.30

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        4.78     8.14        2.309         5.91
     2       52.30     5.00        3.162        59.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       55.23     5.00       3.162
     2       42.97     8.14       2.309

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      55.23   Tc(MIN.) =    5.00
  TOTAL AREA(ACRES) =       65.8
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    122.00 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    123.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  31.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.82
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      55.23
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =   5.35
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    123.00 =    1535.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    123.00 TO NODE    117.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    550.00  DOWNSTREAM(FEET) =    520.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1210.00   CHANNEL SLOPE =  0.0248
  CHANNEL FLOW THRU SUBAREA(CFS) =      55.23
  FLOW VELOCITY(FEET/SEC) =   6.27 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.22   Tc(MIN.) =   8.57
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    117.00 =    2745.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.234
 *USER SPECIFIED(SUBAREA):
 DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =  97
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.2949
 SUBAREA AREA(ACRES) =   14.40   SUBAREA RUNOFF(CFS) =   11.26
 TOTAL AREA(ACRES) =       80.2   TOTAL RUNOFF(CFS) =      55.23
 TC(MIN.) =   8.57
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.57
 RAINFALL INTENSITY(INCH/HR) =   2.23
 TOTAL STREAM AREA(ACRES) =    80.21
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     55.23

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   7
----------------------------------------------------------------------------
 >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN) =   5.00   RAIN INTENSITY(INCH/HOUR) =  3.16
 TOTAL AREA(ACRES) =   206.40   TOTAL RUNOFF(CFS) =    180.40

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.00
 RAINFALL INTENSITY(INCH/HR) =   3.16
 TOTAL STREAM AREA(ACRES) =   206.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    180.40

 ** CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       55.23     8.57        2.234        80.21
    2      180.40     5.00        3.162       206.40

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1      219.43     5.00       3.162
    2      182.70     8.57       2.234

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     219.43   Tc(MIN.) =    5.00
 TOTAL AREA(ACRES) =      286.6
 LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    117.00 =    2745.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    118.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  66.0 INCH PIPE IS  51.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  11.08
 ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     219.43
 PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   5.26
 LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    118.00 =    2915.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
 >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    325.00 TO NODE    326.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
 UPSTREAM ELEVATION(FEET) =    618.00
 DOWNSTREAM ELEVATION(FEET) =    617.22
 ELEVATION DIFFERENCE(FEET) =      0.78
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.30
 TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
 FLOW PROCESS FROM NODE    326.00 TO NODE    327.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 STREET LENGTH(FEET) =  1580.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 39.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.35
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.30
   HALFSTREET FLOOD WIDTH(FEET) =    8.86
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.50
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.45
 STREET FLOW TRAVEL TIME(MIN.) =  17.60   Tc(MIN.) =  19.65
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.308
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
 SUBAREA AREA(ACRES) =    1.69      SUBAREA RUNOFF(CFS) =    1.92
 TOTAL AREA(ACRES) =        1.8        PEAK FLOW RATE(CFS) =       2.05

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.62
 FLOW VELOCITY(FEET/SEC.) =  1.64   DEPTH*VELOCITY(FT*FT/SEC.) =   0.56
 LONGEST FLOWPATH FROM NODE    325.00 TO NODE    327.00 =    1619.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    327.00 TO NODE    310.00 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.52
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =          2.05
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =  19.96
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    310.00 =    1684.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.96
  RAINFALL INTENSITY(INCH/HR) =   1.29
  TOTAL STREAM AREA(ACRES) =      1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       2.05

****************************************************************************
  FLOW PROCESS FROM NODE    330.00 TO NODE    331.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =     618.00
  DOWNSTREAM ELEVATION(FEET) =    617.22
  ELEVATION DIFFERENCE(FEET) =       0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.30
  TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.30

****************************************************************************
  FLOW PROCESS FROM NODE    331.00 TO NODE    332.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1580.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.35
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.50
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.45
  STREET FLOW TRAVEL TIME(MIN.) =  17.60   Tc(MIN.) =  19.65
    2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.308
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.69      SUBAREA RUNOFF(CFS) =    1.92
  TOTAL AREA(ACRES) =        1.8        PEAK FLOW RATE(CFS) =       2.05

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.62
  FLOW VELOCITY(FEET/SEC.) =  1.64   DEPTH*VELOCITY(FT*FT/SEC.) =   0.56
  LONGEST FLOWPATH FROM NODE    330.00 TO NODE    332.00 =    1619.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    332.00 TO NODE    310.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.52
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =          2.05
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =  19.75
  LONGEST FLOWPATH FROM NODE    330.00 TO NODE    310.00 =    1639.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.75
  RAINFALL INTENSITY(INCH/HR) =   1.30
  TOTAL STREAM AREA(ACRES) =      1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       2.05

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        2.05     19.96       1.295         1.80
     2        2.05     19.75       1.304         1.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        4.07     19.75       1.304
     2        4.08     19.96       1.295

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.08   Tc(MIN.) =   19.96
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    310.00 =    1684.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    311.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   920.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.22
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =        4.08
  PIPE TRAVEL TIME(MIN.) =   3.63    Tc(MIN.) =  23.60
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    311.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.60
  RAINFALL INTENSITY(INCH/HR) =   1.16
  TOTAL STREAM AREA(ACRES) =     3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.08

****************************************************************************
  FLOW PROCESS FROM NODE    340.00 TO NODE    341.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    554.00
  DOWNSTREAM ELEVATION(FEET) =    553.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    341.00 TO NODE    342.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   900.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.00
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.76
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.39
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.39
  STREET FLOW TRAVEL TIME(MIN.) =  10.76   Tc(MIN.) =  12.82
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.723
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.89      SUBAREA RUNOFF(CFS) =    1.33
  TOTAL AREA(ACRES) =        1.0        PEAK FLOW RATE(CFS) =       1.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.30
  FLOW VELOCITY(FEET/SEC.) =  1.52   DEPTH*VELOCITY(FT*FT/SEC.) =   0.48
  LONGEST FLOWPATH FROM NODE    340.00 TO NODE    342.00 =     939.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    342.00 TO NODE    311.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.23
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        1.50
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =  13.12
  LONGEST FLOWPATH FROM NODE    340.00 TO NODE    311.00 =     999.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.12
  RAINFALL INTENSITY(INCH/HR) =   1.70
  TOTAL STREAM AREA(ACRES) =     1.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.50

****************************************************************************
  FLOW PROCESS FROM NODE    350.00 TO NODE    351.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    554.00
  DOWNSTREAM ELEVATION(FEET) =    553.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    351.00 TO NODE    352.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   900.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.09
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.42
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.41
  STREET FLOW TRAVEL TIME(MIN.) =  10.55   Tc(MIN.) =  12.60
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.742
```

```
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     0.99      SUBAREA RUNOFF(CFS) =     1.50
  TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       1.67

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.74
  FLOW VELOCITY(FEET/SEC.) =  1.56   DEPTH*VELOCITY(FT*FT/SEC.) =   0.50
  LONGEST FLOWPATH FROM NODE    350.00 TO NODE    352.00 =     939.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    311.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.33
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.67
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  12.70
  LONGEST FLOWPATH FROM NODE    350.00 TO NODE    311.00 =     959.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.70
  RAINFALL INTENSITY(INCH/HR) =   1.73
  TOTAL STREAM AREA(ACRES) =     1.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.67

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.08    23.60        1.162         3.60
      2        1.50    13.12        1.697         1.00
      3        1.67    12.70        1.733         1.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        5.85    12.70       1.733
      2        5.93    13.12       1.697
      3        6.23    23.60       1.162

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.23   Tc(MIN.) =   23.60
  TOTAL AREA(ACRES) =        5.7
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    311.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.61
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.23
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =  23.88
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    312.00 =    2684.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    312.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    360.00 TO NODE    361.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    560.00
  DOWNSTREAM ELEVATION(FEET) =    559.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    361.00 TO NODE    362.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1130.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.24
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.57
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.45
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.43
  STREET FLOW TRAVEL TIME(MIN.) =  12.96   Tc(MIN.) =  14.99
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.557
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     1.29      SUBAREA RUNOFF(CFS) =     1.75
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       1.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.25
  FLOW VELOCITY(FEET/SEC.) =  1.62   DEPTH*VELOCITY(FT*FT/SEC.) =   0.54
  LONGEST FLOWPATH FROM NODE    360.00 TO NODE    362.00 =    1169.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    362.00 TO NODE    363.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.45
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =          1.90
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =  15.35
  LONGEST FLOWPATH FROM NODE    360.00 TO NODE    363.00 =    1244.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    363.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.35
  RAINFALL INTENSITY(INCH/HR) =   1.53
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.90

****************************************************************************
  FLOW PROCESS FROM NODE    370.00 TO NODE    371.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    34.00
  UPSTREAM ELEVATION(FEET) =    560.00
  DOWNSTREAM ELEVATION(FEET) =    559.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.815
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    371.00 TO NODE    372.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1220.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.21
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.46
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.43
  STREET FLOW TRAVEL TIME(MIN.) =  13.91   Tc(MIN.) =  15.73
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.510
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    1.69
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       1.84

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.18
  FLOW VELOCITY(FEET/SEC.) =  1.59   DEPTH*VELOCITY(FT*FT/SEC.) =   0.53
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    372.00 =    1254.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    372.00 TO NODE    363.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.42
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =          1.84
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =  15.85
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    363.00 =    1279.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    363.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.85
  RAINFALL INTENSITY(INCH/HR) =   1.50
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.84

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        1.90    15.35        1.533         1.40
     2        1.84    15.85        1.502         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        3.68    15.35        1.533
     2        3.70    15.85        1.502

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.70   Tc(MIN.) =   15.85
  TOTAL AREA(ACRES) =        2.8
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    363.00 =    1279.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    312.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.12
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.70
```

```
  PIPE TRAVEL TIME(MIN.) =   0.49    Tc(MIN.) =  16.34
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    312.00 =    1399.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    312.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1         3.70    16.34       1.473       2.80
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    312.00 =    1399.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1         6.23    23.88       1.153       5.70
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    312.00 =    2684.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1       7.96      16.34       1.473
     2       9.12      23.88       1.153

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.12   Tc(MIN.) =   23.88
  TOTAL AREA(ACRES) =        8.5

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    313.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   354.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.08
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.12
  PIPE TRAVEL TIME(MIN.) =   1.16    Tc(MIN.) =  25.05
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    313.00 =    3038.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.05
  RAINFALL INTENSITY(INCH/HR) =   1.12
  TOTAL STREAM AREA(ACRES) =     8.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.12

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    501.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
  UPSTREAM ELEVATION(FEET) =    546.00
  DOWNSTREAM ELEVATION(FEET) =    540.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.818
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.65
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.23
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      5.23

****************************************************************************
  FLOW PROCESS FROM NODE    501.00 TO NODE    313.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.23
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   2.97
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    313.00 =     380.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.97
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.23

  ** CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1         9.12    25.05       1.118       8.50
     2         5.23     2.97       3.162       1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF     Tc      INTENSITY
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)
     1         6.31     2.97       3.162
     2        10.97    25.05       1.118

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.97   Tc(MIN.) =   25.05
  TOTAL AREA(ACRES) =       10.4
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    313.00 =    3038.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    313.00 TO NODE    314.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.38
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.97
  PIPE TRAVEL TIME(MIN.) =   0.93    Tc(MIN.) =  25.98
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    314.00 =    3338.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    314.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.98
  RAINFALL INTENSITY(INCH/HR) =   1.09
  TOTAL STREAM AREA(ACRES) =    10.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.97

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    511.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   370.00
  UPSTREAM ELEVATION(FEET) =    540.00
  DOWNSTREAM ELEVATION(FEET) =    534.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.868
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.22
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.23
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      5.23

****************************************************************************
  FLOW PROCESS FROM NODE    511.00 TO NODE    314.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.23
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   3.02
  LONGEST FLOWPATH FROM NODE    510.00 TO NODE    314.00 =     410.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    314.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.02
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.23

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        10.97    25.98       1.092        10.40
     2         5.23     3.02       3.162         1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1         9.02     3.02       3.162
     2        12.77    25.98       1.092

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      12.77   Tc(MIN.) =   25.98
  TOTAL AREA(ACRES) =      12.3
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    314.00 =    3338.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    315.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.54
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.77
  PIPE TRAVEL TIME(MIN.) =   0.90    Tc(MIN.) =  26.88
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    315.00 =    3638.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    315.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  26.88
  RAINFALL INTENSITY(INCH/HR) =   1.07
  TOTAL STREAM AREA(ACRES) =    12.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.77

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    521.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   365.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.859
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.44
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.23
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      5.23

****************************************************************************
  FLOW PROCESS FROM NODE    521.00 TO NODE    315.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.23
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   3.01
  LONGEST FLOWPATH FROM NODE    520.00 TO NODE    315.00 =     405.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    315.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.01
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.23

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        12.77    26.88        1.069        12.30
     2         5.23     3.01        3.162         1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1         9.54     3.01       3.162
     2        14.54    26.88       1.069

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      14.54   Tc(MIN.) =   26.88
  TOTAL AREA(ACRES) =       14.2
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    315.00 =    3638.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    316.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.64
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.54
  PIPE TRAVEL TIME(MIN.) =   0.71    Tc(MIN.) =  27.59
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    316.00 =    3878.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    316.00 TO NODE    316.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  27.59
  RAINFALL INTENSITY(INCH/HR) =   1.05
  TOTAL STREAM AREA(ACRES) =    14.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.54
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    390.00 TO NODE    391.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    544.00
  DOWNSTREAM ELEVATION(FEET) =    543.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    391.00 TO NODE    392.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1200.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.21
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.46
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.43
  STREET FLOW TRAVEL TIME(MIN.) =  13.69   Tc(MIN.) =  15.73
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.510
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    1.69
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       1.84

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.18
  FLOW VELOCITY(FEET/SEC.) =  1.59   DEPTH*VELOCITY(FT*FT/SEC.) =   0.53
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    392.00 =    1239.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    316.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.42
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.84
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =  16.05
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    316.00 =    1304.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    316.00 TO NODE    316.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.05
  RAINFALL INTENSITY(INCH/HR) =   1.49
  TOTAL STREAM AREA(ACRES) =      1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.84

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       14.54    27.59        1.051        14.20
     2        1.84    16.05        1.490         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       12.09    16.05        1.490
     2       15.84    27.59        1.051

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      15.84   Tc(MIN.) =   27.59
  TOTAL AREA(ACRES) =       15.6
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    316.00 =    3878.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    316.00 TO NODE    317.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.88
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.84
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  27.72
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    317.00 =    3923.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    317.00 TO NODE    317.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    531.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   350.00
  UPSTREAM ELEVATION(FEET) =    528.00
  DOWNSTREAM ELEVATION(FEET) =    522.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.835
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.14
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       4.95
  TOTAL AREA(ACRES) =       1.80   TOTAL RUNOFF(CFS) =       4.95

****************************************************************************
  FLOW PROCESS FROM NODE    531.00 TO NODE    532.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.41
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.95
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   2.91
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    532.00 =     370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    532.00 TO NODE    532.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.91
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =      1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.95

****************************************************************************
  FLOW PROCESS FROM NODE    380.00 TO NODE    381.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    34.00
  UPSTREAM ELEVATION(FEET) =    542.00
  DOWNSTREAM ELEVATION(FEET) =    541.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.815
    2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.30
  TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.30

****************************************************************************
  FLOW PROCESS FROM NODE    381.00 TO NODE    532.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1200.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.22
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.49
```

```
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.45
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.43
STREET FLOW TRAVEL TIME(MIN.) =  13.80   Tc(MIN.) =  15.61
  2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.517
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    1.70
TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       1.85

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.18
FLOW VELOCITY(FEET/SEC.) =  1.60   DEPTH*VELOCITY(FT*FT/SEC.) =   0.53
LONGEST FLOWPATH FROM NODE    380.00 TO NODE    532.00 =    1234.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    532.00 TO NODE    532.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  15.61
RAINFALL INTENSITY(INCH/HR) =   1.52
TOTAL STREAM AREA(ACRES) =     1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.85

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1        4.95     2.91        3.162         1.80
    2        1.85    15.61        1.517         1.40

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1        5.30     2.91       3.162
    2        4.22    15.61       1.517

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =       5.30   Tc(MIN.) =    2.91
TOTAL AREA(ACRES) =        3.2
LONGEST FLOWPATH FROM NODE    380.00 TO NODE    532.00 =    1234.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    532.00 TO NODE    517.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.47
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       5.30
PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   2.95
LONGEST FLOWPATH FROM NODE    380.00 TO NODE    517.00 =    1246.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    317.00 TO NODE    317.00 IS CODE =  11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1        5.30     2.95       3.162         3.20
LONGEST FLOWPATH FROM NODE    380.00 TO NODE    317.00 =    1246.00 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       15.84    27.72       1.048        15.60
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    317.00 =    3923.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1        6.98     2.95       3.162
    2       17.59    27.72       1.048

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      17.59   Tc(MIN.) =   27.72
TOTAL AREA(ACRES) =       18.8

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
>>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    317.00 TO NODE    318.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.00
ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      17.59
PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =  27.94
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    318.00 =    4003.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    318.00 TO NODE    318.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    240.00 TO NODE    241.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    540.00
DOWNSTREAM ELEVATION(FEET) =    539.20
ELEVATION DIFFERENCE(FEET) =      0.80
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
  2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.30
TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
FLOW PROCESS FROM NODE    241.00 TO NODE    242.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
```

```
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1200.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.21
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.46
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.43
  STREET FLOW TRAVEL TIME(MIN.) =  13.69   Tc(MIN.) =  15.73
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.510
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    1.69
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       1.84

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.18
  FLOW VELOCITY(FEET/SEC.) =  1.59   DEPTH*VELOCITY(FT*FT/SEC.) =   0.53
  LONGEST FLOWPATH FROM NODE    240.00 TO NODE    242.00 =    1239.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    242.00 TO NODE    243.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.42
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        1.84
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =  15.97
  LONGEST FLOWPATH FROM NODE    240.00 TO NODE    243.00 =    1289.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    243.00 TO NODE    243.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.97
  RAINFALL INTENSITY(INCH/HR) =   1.49
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       1.84

****************************************************************************
  FLOW PROCESS FROM NODE    250.00 TO NODE    251.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    547.50
  DOWNSTREAM ELEVATION(FEET) =    547.20
  ELEVATION DIFFERENCE(FEET) =      0.30
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.822
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  2039.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.62
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.49
  STREET FLOW TRAVEL TIME(MIN.) =  21.84   Tc(MIN.) =  24.66
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.129
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.40      SUBAREA RUNOFF(CFS) =    2.36
  TOTAL AREA(ACRES) =        2.5        PEAK FLOW RATE(CFS) =       2.47

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.50
  FLOW VELOCITY(FEET/SEC.) =  1.71   DEPTH*VELOCITY(FT*FT/SEC.) =   0.61
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    252.00 =    2078.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    252.00 TO NODE    243.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    54.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.71
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        2.47
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =  24.91
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    243.00 =    2132.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    243.00 TO NODE    243.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  24.91
  RAINFALL INTENSITY(INCH/HR) =   1.12
  TOTAL STREAM AREA(ACRES) =     2.51
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.47

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1         1.84    15.97        1.495         1.40
     2         2.47    24.91        1.122         2.51

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1         3.42    15.97        1.495
     2         3.85    24.91        1.122

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.85   Tc(MIN.) =   24.91
  TOTAL AREA(ACRES) =        3.9
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    243.00 =    2132.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    243.00 TO NODE    318.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   112.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.16
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.85
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =  25.36
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    318.00 =    2244.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    318.00 TO NODE    318.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1         3.85    25.36        1.110         3.91
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    318.00 =    2244.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        17.59    27.94        1.042        18.80
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    318.00 =    4003.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        19.81    25.36        1.110
     2        21.20    27.94        1.042

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      21.20   Tc(MIN.) =   27.94
  TOTAL AREA(ACRES) =       22.7

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    318.00 TO NODE    319.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  22.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.12
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      21.20
  PIPE TRAVEL TIME(MIN.) =   0.74    Tc(MIN.) =  28.67
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.00 =    4273.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.00 TO NODE    319.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  28.67
  RAINFALL INTENSITY(INCH/HR) =   1.02
  TOTAL STREAM AREA(ACRES) =    22.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.20

****************************************************************************
  FLOW PROCESS FROM NODE    540.00 TO NODE    541.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   345.00
  UPSTREAM ELEVATION(FEET) =     524.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.826
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.39
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       4.68
  TOTAL AREA(ACRES) =       1.70   TOTAL RUNOFF(CFS) =       4.68

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    319.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.36
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.68
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   2.98
  LONGEST FLOWPATH FROM NODE    540.00 TO NODE    319.00 =     385.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.00 TO NODE    319.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
```

```
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   2.98
RAINFALL INTENSITY(INCH/HR) =   3.16
TOTAL STREAM AREA(ACRES) =      1.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.68

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       21.20    28.67        1.025        22.71
    2        4.68     2.98        3.162         1.70

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1        6.88     2.98       3.162
    2       22.72    28.67       1.025

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      22.72   Tc(MIN.) =   28.67
TOTAL AREA(ACRES) =       24.4
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.00 =    4273.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    319.00 TO NODE    319.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   220.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.40
ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      22.72
PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =  29.25
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.50 =    4493.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    319.50 TO NODE    319.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  29.25
RAINFALL INTENSITY(INCH/HR) =   1.01
TOTAL STREAM AREA(ACRES) =    24.41
PEAK FLOW RATE(CFS) AT CONFLUENCE =     22.72

****************************************************************************
FLOW PROCESS FROM NODE    550.00 TO NODE    551.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
UPSTREAM ELEVATION(FEET) =    518.00
DOWNSTREAM ELEVATION(FEET) =    512.00
ELEVATION DIFFERENCE(FEET) =      6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.818
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    67.65
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
```

```
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      4.40
TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =      4.40

****************************************************************************
FLOW PROCESS FROM NODE    551.00 TO NODE    319.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.29
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       4.40
PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =   2.97
LONGEST FLOWPATH FROM NODE    550.00 TO NODE    319.50 =     380.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    319.50 TO NODE    319.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   2.97
RAINFALL INTENSITY(INCH/HR) =   3.16
TOTAL STREAM AREA(ACRES) =      1.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.40

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       22.72    29.25        1.012        24.41
    2        4.40     2.97        3.162         1.60

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       11.67     2.97       3.162
    2       24.13    29.25       1.012

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      24.13   Tc(MIN.) =   29.25
TOTAL AREA(ACRES) =       26.0
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.50 =    4493.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    319.50 TO NODE    320.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   280.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.47
ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      24.13
PIPE TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =  29.97
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    320.00 =    4773.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =  10
```

```
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    280.00 TO NODE    281.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   700.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.81
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.33
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.36
  STREET FLOW TRAVEL TIME(MIN.) =   8.77   Tc(MIN.) =  10.82
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.922
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.59      SUBAREA RUNOFF(CFS) =    0.99
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       1.17

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   8.35
  FLOW VELOCITY(FEET/SEC.) =  1.44   DEPTH*VELOCITY(FT*FT/SEC.) =   0.42
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =     739.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    282.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.82
  RAINFALL INTENSITY(INCH/HR) =   1.92
  TOTAL STREAM AREA(ACRES) =     0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.17

****************************************************************************
  FLOW PROCESS FROM NODE    560.00 TO NODE    561.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   330.00
  UPSTREAM ELEVATION(FEET) =    514.00
  DOWNSTREAM ELEVATION(FEET) =    508.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.801
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    68.18
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      4.40
  TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =      4.40

****************************************************************************
  FLOW PROCESS FROM NODE    561.00 TO NODE    282.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.29
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.40
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   2.90
  LONGEST FLOWPATH FROM NODE    560.00 TO NODE    282.00 =     355.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    282.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.90
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.40

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        1.17    10.82        1.922         0.70
     2        4.40     2.90        3.162         1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        4.71     2.90       3.162
     2        3.84    10.82       1.922
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.71   Tc(MIN.) =    2.90
  TOTAL AREA(ACRES) =        2.3
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =     739.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    320.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.37
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.71
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   2.96
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    320.00 =     754.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        4.71     2.96       3.162        2.30
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    320.00 =     754.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       24.13    29.97       0.996       26.01
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    320.00 =    4773.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1       7.09       2.96       3.162
     2      25.61      29.97       0.996

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      25.61   Tc(MIN.) =   29.97
  TOTAL AREA(ACRES) =       28.3

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    321.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.52
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      25.61
  PIPE TRAVEL TIME(MIN.) =   0.77    Tc(MIN.) =  30.73
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    321.00 =    5073.00 FEET.

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  30.73
  RAINFALL INTENSITY(INCH/HR) =   0.98
  TOTAL STREAM AREA(ACRES) =    28.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     25.61

****************************************************************************
  FLOW PROCESS FROM NODE    290.00 TO NODE    291.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    507.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    291.00 TO NODE    292.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   420.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.08
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.41
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.40
  STREET FLOW TRAVEL TIME(MIN.) =   4.97   Tc(MIN.) =   7.00
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.544
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.69      SUBAREA RUNOFF(CFS) =    1.53
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       1.77

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =   9.96
  FLOW VELOCITY(FEET/SEC.) =  1.60   DEPTH*VELOCITY(FT*FT/SEC.) =   0.52
  LONGEST FLOWPATH FROM NODE    290.00 TO NODE    292.00 =     459.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    292.00 TO NODE    321.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.39
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =          1.77
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   7.13
  LONGEST FLOWPATH FROM NODE    290.00 TO NODE    321.00 =     484.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.13
  RAINFALL INTENSITY(INCH/HR) =   2.52
  TOTAL STREAM AREA(ACRES) =     0.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.77

****************************************************************************
  FLOW PROCESS FROM NODE    410.00 TO NODE    411.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    507.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    411.00 TO NODE    412.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   400.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.97
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.40
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.39
  STREET FLOW TRAVEL TIME(MIN.) =   4.77   Tc(MIN.) =   6.81
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.591
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.59      SUBAREA RUNOFF(CFS) =    1.33
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       1.58

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.52
  FLOW VELOCITY(FEET/SEC.) =  1.54   DEPTH*VELOCITY(FT*FT/SEC.) =   0.49
  LONGEST FLOWPATH FROM NODE    410.00 TO NODE    412.00 =     439.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    412.00 TO NODE    321.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.28
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =          1.58
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   7.03
  LONGEST FLOWPATH FROM NODE    410.00 TO NODE    321.00 =     483.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.03
  RAINFALL INTENSITY(INCH/HR) =   2.54
  TOTAL STREAM AREA(ACRES) =     0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.58

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       25.61    30.73        0.980        28.31
     2        1.77     7.13        2.516         0.80
     3        1.58     7.03        2.537         0.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        9.19     7.03        2.537
     2        9.27     7.13        2.516
     3       26.91    30.73        0.980

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      26.91   Tc(MIN.) =   30.73
  TOTAL AREA(ACRES) =       29.8
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    321.00 =    5073.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    322.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   350.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  23.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.55
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =         26.91
  PIPE TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =  31.62
```

```
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    322.00 =    5423.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  31.62
  RAINFALL INTENSITY(INCH/HR) =   0.96
  TOTAL STREAM AREA(ACRES) =    29.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     26.91

****************************************************************************
  FLOW PROCESS FROM NODE   1002.00 TO NODE   1003.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   360.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    499.00
  ELEVATION DIFFERENCE(FEET) =      7.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.764
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    69.44
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.23
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      5.23

****************************************************************************
  FLOW PROCESS FROM NODE   1003.00 TO NODE    322.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =          5.23
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   2.82
  LONGEST FLOWPATH FROM NODE   1002.00 TO NODE    322.00 =     375.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    322.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.82
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =      1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.23

****************************************************************************
  FLOW PROCESS FROM NODE   1000.00 TO NODE   1001.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   360.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    504.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.600
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.11
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.70
  TOTAL AREA(ACRES) =      2.80   TOTAL RUNOFF(CFS) =      7.70

****************************************************************************
  FLOW PROCESS FROM NODE   1001.00 TO NODE    322.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.92
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =          7.70
  PIPE TRAVEL TIME(MIN.) =   0.98    Tc(MIN.) =   4.58
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE    322.00 =     650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    322.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.58
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =      2.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.70

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       26.91    31.62       0.962         29.81
     2        5.23     2.82       3.162          1.90
     3        7.70     4.58       3.162          2.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       18.16     2.82       3.162
     2       21.12     4.58       3.162
     3       30.85    31.62       0.962

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      30.85   Tc(MIN.) =   31.62
  TOTAL AREA(ACRES) =       34.5
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    322.00 =    5423.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    323.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
```

```
  FLOW LENGTH(FEET) =    58.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.88
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        30.85
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =  31.76
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    323.00 =    5481.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    323.00 TO NODE    323.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    641.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   350.00
  UPSTREAM ELEVATION(FEET) =    540.00
  DOWNSTREAM ELEVATION(FEET) =    534.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.835
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.14
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      4.68
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =      4.68

****************************************************************************
  FLOW PROCESS FROM NODE    641.00 TO NODE    514.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.36
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        4.68
  PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =   3.24
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    514.00 =     455.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    514.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.24
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.68

****************************************************************************
  FLOW PROCESS FROM NODE    650.00 TO NODE    651.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   195.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    530.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.736
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.51
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      3.58
  TOTAL AREA(ACRES) =      1.30   TOTAL RUNOFF(CFS) =      3.58

****************************************************************************
  FLOW PROCESS FROM NODE    651.00 TO NODE    514.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.09
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        3.58
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =   3.14
  LONGEST FLOWPATH FROM NODE    650.00 TO NODE    514.00 =     295.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    514.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.14
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.58

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1         4.68     3.24       3.162         1.70
     2         3.58     3.14       3.162         1.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1         8.12     3.14       3.162
     2         8.25     3.24       3.162

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       8.25   Tc(MIN.) =    3.24
  TOTAL AREA(ACRES) =        3.0
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    514.00 =     455.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    515.00 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   202.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.99
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        8.25
  PIPE TRAVEL TIME(MIN.) =   0.67    Tc(MIN.) =   3.91
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.00 =     657.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.91
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     3.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.25

****************************************************************************
  FLOW PROCESS FROM NODE    660.00 TO NODE    661.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   297.00
  UPSTREAM ELEVATION(FEET) =    532.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.987
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.47
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      4.13
  TOTAL AREA(ACRES) =      1.50   TOTAL RUNOFF(CFS) =      4.13

****************************************************************************
  FLOW PROCESS FROM NODE    661.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.23
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        4.13
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   3.32
  LONGEST FLOWPATH FROM NODE    660.00 TO NODE    515.00 =     382.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.32
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.13

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1         8.25     3.91       3.162         3.00
     2         4.13     3.32       3.162         1.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        12.38     3.32       3.162
     2        12.38     3.91       3.162

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      12.38   Tc(MIN.) =    3.91
  TOTAL AREA(ACRES) =         4.5
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.00 =     657.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    90.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.51
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       12.38
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   4.18
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.50 =     747.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.50 TO NODE    515.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.18
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     4.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.38

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    631.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   364.00
  UPSTREAM ELEVATION(FEET) =    536.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.702
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    71.98
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
```

```
  SUBAREA RUNOFF(CFS) =       5.23
  TOTAL AREA(ACRES) =       1.90   TOTAL RUNOFF(CFS) =       5.23

****************************************************************************
  FLOW PROCESS FROM NODE    631.00 TO NODE    515.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.23
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   2.98
  LONGEST FLOWPATH FROM NODE    630.00 TO NODE    515.50 =     439.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.50 TO NODE    515.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.98
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.23

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       12.38     4.18        3.162          4.50
     2        5.23     2.98        3.162          1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       17.60     2.98       3.162
     2       17.60     4.18       3.162

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      17.60   Tc(MIN.) =    4.18
  TOTAL AREA(ACRES) =        6.4
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.50 =     747.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.50 TO NODE    516.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.00
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.60
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   4.52
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    516.00 =     867.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    516.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.52
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     6.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.60

****************************************************************************
  FLOW PROCESS FROM NODE    670.00 TO NODE    671.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   298.00
  UPSTREAM ELEVATION(FEET) =    528.00
  DOWNSTREAM ELEVATION(FEET) =    524.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.989
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.42
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      4.13
  TOTAL AREA(ACRES) =      1.50   TOTAL RUNOFF(CFS) =      4.13

****************************************************************************
  FLOW PROCESS FROM NODE    671.00 TO NODE    516.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.23
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.13
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   3.30
  LONGEST FLOWPATH FROM NODE    670.00 TO NODE    516.00 =     378.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    516.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.30
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.13

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       17.60     4.52        3.162          6.40
     2        4.13     3.30        3.162          1.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       21.73     3.30       3.162
```

```
     2       21.73     4.52       3.162

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       21.73   Tc(MIN.) =    4.52
  TOTAL AREA(ACRES) =         7.9
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    516.00 =     867.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    517.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   190.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  19.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.35
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        21.73
  PIPE TRAVEL TIME(MIN.) =   0.50    Tc(MIN.) =   5.02
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    517.00 =    1057.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    517.00 TO NODE    517.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.02
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     7.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.73

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    621.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   363.00
  UPSTREAM ELEVATION(FEET) =    530.00
  DOWNSTREAM ELEVATION(FEET) =    522.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.700
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    72.04
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.23
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      5.23

****************************************************************************
  FLOW PROCESS FROM NODE    621.00 TO NODE    517.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    77.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.23
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   2.99
  LONGEST FLOWPATH FROM NODE    620.00 TO NODE    517.00 =     440.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    517.00 TO NODE    517.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.99
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.23

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       21.73     5.02        3.155         7.90
     2        5.23     2.99        3.162         1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       26.91     2.99       3.162
     2       26.95     5.02       3.155

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       26.95   Tc(MIN.) =    5.02
  TOTAL AREA(ACRES) =         9.8
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    517.00 =    1057.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    517.00 TO NODE    518.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   145.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  23.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.55
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       26.95
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =   5.38
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    518.00 =    1202.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.38
  RAINFALL INTENSITY(INCH/HR) =   3.01
  TOTAL STREAM AREA(ACRES) =     9.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      26.95

****************************************************************************
  FLOW PROCESS FROM NODE    413.00 TO NODE    414.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    542.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
```

```
  ELEVATION DIFFERENCE(FEET) =      24.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.200
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.0%, IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.30
  TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.30

****************************************************************************
  FLOW PROCESS FROM NODE    414.00 TO NODE    415.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1600.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.82
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   10.11
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.60
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.52
  STREET FLOW TRAVEL TIME(MIN.) =  16.71   Tc(MIN.) =  17.91
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.388
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.29      SUBAREA RUNOFF(CFS) =    2.77
  TOTAL AREA(ACRES) =        2.4        PEAK FLOW RATE(CFS) =       2.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.30
  FLOW VELOCITY(FEET/SEC.) =  1.78   DEPTH*VELOCITY(FT*FT/SEC.) =   0.66
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    415.00 =    1639.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    415.00 TO NODE    518.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.87
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.90
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =  18.06
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    518.00 =    1675.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.06
  RAINFALL INTENSITY(INCH/HR) =   1.38
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.90

****************************************************************************
  FLOW PROCESS FROM NODE    416.00 TO NODE    417.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    533.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.30
  TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.30

****************************************************************************
  FLOW PROCESS FROM NODE    417.00 TO NODE    418.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   975.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.81
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.33
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.35
  STREET FLOW TRAVEL TIME(MIN.) =  12.25   Tc(MIN.) =  14.31
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.605
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.69      SUBAREA RUNOFF(CFS) =    0.96
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       1.12

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   8.13
  FLOW VELOCITY(FEET/SEC.) =  1.43   DEPTH*VELOCITY(FT*FT/SEC.) =   0.41
  LONGEST FLOWPATH FROM NODE    416.00 TO NODE    418.00 =    1014.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    418.00 TO NODE    518.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    17.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.96
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.12
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  14.40
```

```
  LONGEST FLOWPATH FROM NODE    416.00 TO NODE    518.00 =    1031.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.40
  RAINFALL INTENSITY(INCH/HR) =   1.60
  TOTAL STREAM AREA(ACRES) =     0.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.12

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        26.95     5.38       3.014         9.80
     2         2.90    18.06       1.381         2.40
     3         1.12    14.40       1.598         0.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        28.23     5.38       3.014
     2        17.71    14.40       1.598
     3        16.21    18.06       1.381

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      28.23   Tc(MIN.) =    5.38
  TOTAL AREA(ACRES) =        13.0
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    518.00 =    1675.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    519.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  24.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.56
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      28.23
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   5.49
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    519.00 =    1715.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    519.00 TO NODE    519.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.49
  RAINFALL INTENSITY(INCH/HR) =   2.98
  TOTAL STREAM AREA(ACRES) =    13.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.23

****************************************************************************
  FLOW PROCESS FROM NODE    680.00 TO NODE    681.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   390.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.900
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    65.38
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.50
  TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =      5.50

****************************************************************************
  FLOW PROCESS FROM NODE    681.00 TO NODE    519.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.51
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.50
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   3.13
  LONGEST FLOWPATH FROM NODE    680.00 TO NODE    519.00 =     452.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    519.00 TO NODE    519.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.13
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.50

****************************************************************************
  FLOW PROCESS FROM NODE    610.00 TO NODE    611.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   316.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.777
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    68.99
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      4.40
  TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =      4.40

****************************************************************************
  FLOW PROCESS FROM NODE    611.00 TO NODE    519.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
```

```
FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.29
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =        4.40
PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   3.07
LONGEST FLOWPATH FROM NODE    610.00 TO NODE    519.00 =     391.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    519.00 TO NODE    519.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =   3.07
RAINFALL INTENSITY(INCH/HR) =   3.16
TOTAL STREAM AREA(ACRES) =     1.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.40

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       28.23     5.49        2.978        13.00
    2        5.50     3.13        3.162         2.00
    3        4.40     3.07        3.162         1.60

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       36.38     3.07       3.162
    2       36.49     3.13       3.162
    3       37.56     5.49       2.978

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      37.56   Tc(MIN.) =    5.49
TOTAL AREA(ACRES) =       16.6
LONGEST FLOWPATH FROM NODE    413.00 TO NODE    519.00 =    1715.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    519.00 TO NODE    525.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  36.0 INCH PIPE IS  24.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.25
ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      37.56
PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   5.62
LONGEST FLOWPATH FROM NODE    413.00 TO NODE    525.00 =    1775.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    525.00 TO NODE    525.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
>>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================
```

```
****************************************************************************
FLOW PROCESS FROM NODE    900.00 TO NODE    900.50 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
UPSTREAM ELEVATION(FEET) =    531.00
DOWNSTREAM ELEVATION(FEET) =    528.00
ELEVATION DIFFERENCE(FEET) =      3.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.611
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.28
TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.28

****************************************************************************
FLOW PROCESS FROM NODE    900.50 TO NODE    901.00 IS CODE =  61
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =   270.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 15.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.010
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.010

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.85
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.30
  HALFSTREET FLOOD WIDTH(FEET) =   15.00
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.40
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.42
STREET FLOW TRAVEL TIME(MIN.) =   3.21   Tc(MIN.) =   4.82
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =     2.60      SUBAREA RUNOFF(CFS) =     7.15
TOTAL AREA(ACRES) =        2.7        PEAK FLOW RATE(CFS) =       7.43

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  15.00
FLOW VELOCITY(FEET/SEC.) =  1.83   DEPTH*VELOCITY(FT*FT/SEC.) =   0.63
LONGEST FLOWPATH FROM NODE    900.00 TO NODE    901.00 =     320.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    901.00 TO NODE    936.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   293.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.88
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       7.43
PIPE TRAVEL TIME(MIN.) =   1.00    Tc(MIN.) =   5.82
LONGEST FLOWPATH FROM NODE    900.00 TO NODE    936.00 =     613.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     936.00 TO NODE     936.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.82
  RAINFALL INTENSITY(INCH/HR) =   2.87
  TOTAL STREAM AREA(ACRES) =      2.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.43

****************************************************************************
  FLOW PROCESS FROM NODE     451.00 TO NODE     452.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    544.00
  DOWNSTREAM ELEVATION(FEET) =    543.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.28
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.28

****************************************************************************
  FLOW PROCESS FROM NODE     452.00 TO NODE     453.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1410.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.77
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   10.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.52
  STREET FLOW TRAVEL TIME(MIN.) =  14.90   Tc(MIN.) =  16.95
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.439
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     2.20      SUBAREA RUNOFF(CFS) =     2.75
  TOTAL AREA(ACRES) =        2.3        PEAK FLOW RATE(CFS) =       2.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.23
  FLOW VELOCITY(FEET/SEC.) =  1.78   DEPTH*VELOCITY(FT*FT/SEC.) =   0.66
  LONGEST FLOWPATH FROM NODE     451.00 TO NODE     453.00 =    1449.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     453.00 TO NODE     936.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.86
  ESTIMATED PIPE DIAMETER(INCH) =  18.00     NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.88
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =  17.03
  LONGEST FLOWPATH FROM NODE     451.00 TO NODE     936.00 =    1468.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     936.00 TO NODE     936.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.03
  RAINFALL INTENSITY(INCH/HR) =   1.43
  TOTAL STREAM AREA(ACRES) =      2.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.88

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        7.43     5.82        2.866         2.70
     2        2.88    17.03        1.434         2.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        8.41     5.82        2.866
     2        6.59    17.03        1.434

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       8.41   Tc(MIN.) =    5.82
  TOTAL AREA(ACRES) =        5.0
  LONGEST FLOWPATH FROM NODE     451.00 TO NODE     936.00 =    1468.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     936.00 TO NODE     936.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     454.00 TO NODE     455.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    533.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    455.00 TO NODE    456.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   705.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.00
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.76
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.39
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.39
  STREET FLOW TRAVEL TIME(MIN.) =   8.46   Tc(MIN.) =  10.51
    2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.958
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     0.79      SUBAREA RUNOFF(CFS) =    1.35
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       1.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.37
  FLOW VELOCITY(FEET/SEC.) =  1.54   DEPTH*VELOCITY(FT*FT/SEC.) =   0.48
  LONGEST FLOWPATH FROM NODE    454.00 TO NODE    456.00 =     744.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    456.00 TO NODE    456.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.51
  RAINFALL INTENSITY(INCH/HR) =   1.96
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.53

****************************************************************************
  FLOW PROCESS FROM NODE    902.00 TO NODE    902.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    532.00
  DOWNSTREAM ELEVATION(FEET) =    530.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.844
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.28
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.28

****************************************************************************
  FLOW PROCESS FROM NODE    902.50 TO NODE    903.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   400.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 15.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.010
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.010

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.28
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) =    0.29   FLOOD WIDTH(FEET) =   15.00
    FULL HALF-STREET VELOCITY(FEET/SEC.) =    1.32
    SPLIT DEPTH(FEET) =    0.24   SPLIT FLOOD WIDTH(FEET) =    9.46
    SPLIT FLOW(CFS) =    0.62   SPLIT VELOCITY(FEET/SEC.) =    1.07
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =   15.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.38
  STREET FLOW TRAVEL TIME(MIN.) =   5.05   Tc(MIN.) =   6.89
    2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.570
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.79      SUBAREA RUNOFF(CFS) =    4.00
  TOTAL AREA(ACRES) =        1.9        PEAK FLOW RATE(CFS) =       4.23

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =  15.00
  FLOW VELOCITY(FEET/SEC.) =  1.46   DEPTH*VELOCITY(FT*FT/SEC.) =   0.44
  LONGEST FLOWPATH FROM NODE    902.00 TO NODE    903.00 =     450.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    903.00 TO NODE    456.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.26
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        4.23
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   6.97
  LONGEST FLOWPATH FROM NODE    902.00 TO NODE    456.00 =     469.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    456.00 TO NODE    456.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.97
  RAINFALL INTENSITY(INCH/HR) =   2.55
  TOTAL STREAM AREA(ACRES) =     1.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.23

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1         1.53    10.51       1.958         0.90
     2         4.23     6.97       2.552         1.89
```

```
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
      1        5.24      6.97        2.552
      2        4.78     10.51        1.958

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.24   Tc(MIN.) =    6.97
  TOTAL AREA(ACRES) =        2.8
  LONGEST FLOWPATH FROM NODE    454.00 TO NODE    456.00 =     744.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    456.00 TO NODE    936.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.24
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   7.19
  LONGEST FLOWPATH FROM NODE    454.00 TO NODE    936.00 =     804.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    936.00 TO NODE    936.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
      1        5.24      7.19        2.501       2.79
  LONGEST FLOWPATH FROM NODE    454.00 TO NODE    936.00 =     804.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
      1        8.41      5.82        2.866       5.00
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    936.00 =    1468.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
      1       12.65      5.82        2.866
      2       12.58      7.19        2.501

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      12.65   Tc(MIN.) =    5.82
  TOTAL AREA(ACRES) =        7.8

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    936.00 TO NODE    937.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    51.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.53
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       12.65
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   5.98
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    937.00 =    1519.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    937.00 TO NODE    937.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.98
  RAINFALL INTENSITY(INCH/HR) =   2.82
  TOTAL STREAM AREA(ACRES) =     7.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.65

****************************************************************************
  FLOW PROCESS FROM NODE    904.00 TO NODE    905.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   420.00
  UPSTREAM ELEVATION(FEET) =    532.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.233
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    59.05
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.05
  TOTAL AREA(ACRES) =      2.20   TOTAL RUNOFF(CFS) =      6.05

****************************************************************************
  FLOW PROCESS FROM NODE    905.00 TO NODE    937.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.58
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.05
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   3.42
  LONGEST FLOWPATH FROM NODE    904.00 TO NODE    937.00 =     470.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    937.00 TO NODE    937.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.42
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     2.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.05

  ** CONFLUENCE DATA **
```

```
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       12.65     5.98        2.818         7.79
     2        6.05     3.42        3.162         2.20

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       13.28     3.42       3.162
     2       18.05     5.98       2.818

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      18.05   Tc(MIN.) =    5.98
  TOTAL AREA(ACRES) =       10.0
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    937.00 =    1519.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    937.00 TO NODE    940.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   185.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.02
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.05
  PIPE TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =   6.49
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    940.00 =    1704.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    940.00 TO NODE    940.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    460.00 TO NODE    461.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    538.00
  DOWNSTREAM ELEVATION(FEET) =    537.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    461.00 TO NODE    462.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   713.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.90
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.40
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.36
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.37
  STREET FLOW TRAVEL TIME(MIN.) =   8.74   Tc(MIN.) =  10.80
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.924
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.69      SUBAREA RUNOFF(CFS) =    1.16
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       1.34

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   8.86
  FLOW VELOCITY(FEET/SEC.) =  1.48   DEPTH*VELOCITY(FT*FT/SEC.) =   0.45
  LONGEST FLOWPATH FROM NODE    460.00 TO NODE    462.00 =     752.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    462.00 TO NODE    462.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.80
  RAINFALL INTENSITY(INCH/HR) =   1.92
  TOTAL STREAM AREA(ACRES) =     0.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.34

****************************************************************************
  FLOW PROCESS FROM NODE    906.00 TO NODE    907.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   450.00
  UPSTREAM ELEVATION(FEET) =    532.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.273
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.76
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.78
  TOTAL AREA(ACRES) =      2.10   TOTAL RUNOFF(CFS) =      5.78

****************************************************************************
  FLOW PROCESS FROM NODE    907.00 TO NODE    462.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
```

```
  FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.55
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.78
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   3.40
  LONGEST FLOWPATH FROM NODE    906.00 TO NODE    462.00 =     485.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    462.00 TO NODE    462.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.40
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =      2.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.78

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        1.34    10.80        1.924          0.80
     2        5.78     3.40        3.162          2.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        6.20     3.40       3.162
     2        4.86    10.80       1.924

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.20   Tc(MIN.) =    3.40
  TOTAL AREA(ACRES) =        2.9
  LONGEST FLOWPATH FROM NODE    460.00 TO NODE    462.00 =     752.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    462.00 TO NODE    938.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.60
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.20
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   3.47
  LONGEST FLOWPATH FROM NODE    460.00 TO NODE    938.00 =     770.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    938.00 TO NODE    938.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.47
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =      2.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.20

****************************************************************************
  FLOW PROCESS FROM NODE    457.00 TO NODE    458.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    538.00
  DOWNSTREAM ELEVATION(FEET) =    537.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    458.00 TO NODE    459.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   740.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.98
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.39
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.39
  STREET FLOW TRAVEL TIME(MIN.) =   8.89   Tc(MIN.) =  10.94
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.908
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.79      SUBAREA RUNOFF(CFS) =    1.31
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       1.49

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.30
  FLOW VELOCITY(FEET/SEC.) =  1.52   DEPTH*VELOCITY(FT*FT/SEC.) =   0.47
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    459.00 =     779.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    459.00 TO NODE    938.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.23
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.49
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =  11.28
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    938.00 =     844.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    938.00 TO NODE    938.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.28
  RAINFALL INTENSITY(INCH/HR) =   1.87
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.49

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1        6.20     3.47        3.162         2.90
      2        1.49    11.28        1.871         0.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        6.66     3.47        3.162
      2        5.16    11.28        1.871

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.66   Tc(MIN.) =    3.47
  TOTAL AREA(ACRES) =        3.8
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    938.00 =     844.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    938.00 TO NODE    940.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    88.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.65
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        6.66
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   3.78
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    940.00 =     932.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    940.00 TO NODE    940.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1        6.66     3.78        3.162         3.80
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    940.00 =     932.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       18.05     6.49        2.673         9.99
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    940.00 =    1704.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       17.18     3.78        3.162
      2       23.68     6.49        2.673

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      23.68   Tc(MIN.) =    6.49
  TOTAL AREA(ACRES) =       13.8

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    940.00 TO NODE    691.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   615.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.45
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      23.68
  PIPE TRAVEL TIME(MIN.) =   1.59    Tc(MIN.) =   8.08
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    691.50 =    2319.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    691.50 TO NODE    691.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.08
  RAINFALL INTENSITY(INCH/HR) =   2.32
  TOTAL STREAM AREA(ACRES) =    13.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.68

****************************************************************************
  FLOW PROCESS FROM NODE    690.00 TO NODE    691.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   451.00
  UPSTREAM ELEVATION(FEET) =    528.00
  DOWNSTREAM ELEVATION(FEET) =    524.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.274
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.74
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.70
  TOTAL AREA(ACRES) =      2.80   TOTAL RUNOFF(CFS) =      7.70

****************************************************************************
  FLOW PROCESS FROM NODE    691.00 TO NODE    691.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    61.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.92
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.70
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   3.48
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    691.50 =     512.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    691.50 TO NODE    691.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.48
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     2.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.70

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       23.68     8.08        2.320        13.79
     2        7.70     3.48        3.162         2.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       17.91     3.48       3.162
     2       29.33     8.08       2.320

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      29.33   Tc(MIN.) =    8.08
  TOTAL AREA(ACRES) =        16.6
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    691.50 =    2319.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    691.50 TO NODE    525.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.83
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      29.33
  PIPE TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =   8.66
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.50 =    2559.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.50 TO NODE    525.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.66
  RAINFALL INTENSITY(INCH/HR) =   2.22
  TOTAL STREAM AREA(ACRES) =    16.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.33

****************************************************************************
  FLOW PROCESS FROM NODE    419.00 TO NODE    420.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    420.00 TO NODE    421.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   800.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.15
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.27
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.44
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.42
  STREET FLOW TRAVEL TIME(MIN.) =   9.28   Tc(MIN.) =  11.33
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.865
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    1.62
  TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       1.80

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.03
  FLOW VELOCITY(FEET/SEC.) =  1.60   DEPTH*VELOCITY(FT*FT/SEC.) =   0.52
  LONGEST FLOWPATH FROM NODE    419.00 TO NODE    421.00 =     839.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    421.00 TO NODE    525.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.40
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.80
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  11.41
  LONGEST FLOWPATH FROM NODE    419.00 TO NODE    525.50 =     854.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.50 TO NODE    525.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.41
  RAINFALL INTENSITY(INCH/HR) =   1.86
  TOTAL STREAM AREA(ACRES) =     1.11
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.80

****************************************************************************
  FLOW PROCESS FROM NODE    422.00 TO NODE    423.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =     520.00
  DOWNSTREAM ELEVATION(FEET) =    519.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    423.00 TO NODE    424.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   320.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.04
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.40
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.40
  STREET FLOW TRAVEL TIME(MIN.) =   3.81   Tc(MIN.) =   5.86
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.854
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.59      SUBAREA RUNOFF(CFS) =    1.47
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       1.74

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.89
  FLOW VELOCITY(FEET/SEC.) =  1.59   DEPTH*VELOCITY(FT*FT/SEC.) =   0.51
  LONGEST FLOWPATH FROM NODE    422.00 TO NODE    424.00 =     359.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    424.00 TO NODE    525.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.37
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        1.74
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   6.18
  LONGEST FLOWPATH FROM NODE    422.00 TO NODE    525.50 =     424.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.50 TO NODE    525.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.18
  RAINFALL INTENSITY(INCH/HR) =   2.76
  TOTAL STREAM AREA(ACRES) =     0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.74

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       29.33     8.66        2.218        16.59
     2        1.80    11.41        1.857         1.11
     3        1.74     6.18        2.757         0.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       26.31     6.18       2.757
     2       32.10     8.66       2.218
     3       27.53    11.41       1.857

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      32.10   Tc(MIN.) =    8.66
  TOTAL AREA(ACRES) =       18.4
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.50 =    2559.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.50 TO NODE    525.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   185.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  24.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.92
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      32.10
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =   9.11
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.00 =    2744.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.00 TO NODE    525.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       32.10     9.11        2.147        18.40
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.00 =    2744.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       37.56     5.62        2.931        16.60
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    525.00 =    1775.00 FEET.

  ** PEAK FLOW RATE TABLE **
```

```
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1       57.37      5.62       2.931
     2       59.61      9.11       2.147

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      59.61   Tc(MIN.) =    9.11
  TOTAL AREA(ACRES) =       35.0

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    525.00 TO NODE    526.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   310.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.10
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      59.61
  PIPE TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =   9.75
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    526.00 =    3054.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    526.00 TO NODE    526.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.75
  RAINFALL INTENSITY(INCH/HR) =   2.06
  TOTAL STREAM AREA(ACRES) =    35.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     59.61

****************************************************************************
  FLOW PROCESS FROM NODE    710.00 TO NODE    711.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   468.00
  UPSTREAM ELEVATION(FEET) =    518.00
  DOWNSTREAM ELEVATION(FEET) =    510.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.836
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.09
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.60
  TOTAL AREA(ACRES) =      2.40   TOTAL RUNOFF(CFS) =      6.60

****************************************************************************
  FLOW PROCESS FROM NODE    711.00 TO NODE    526.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    77.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.64
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.60
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   3.11
  LONGEST FLOWPATH FROM NODE    710.00 TO NODE    526.00 =     545.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    526.00 TO NODE    526.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.11
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.60

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       59.61     9.75       2.056        35.00
     2        6.60     3.11       3.162         2.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       25.64     3.11       3.162
     2       63.90     9.75       2.056

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      63.90   Tc(MIN.) =    9.75
  TOTAL AREA(ACRES) =       37.4
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    526.00 =    3054.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    526.00 TO NODE    527.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  31.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.18
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      63.90
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   9.87
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    527.00 =    3117.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    527.00 TO NODE    527.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.87
  RAINFALL INTENSITY(INCH/HR) =   2.04
  TOTAL STREAM AREA(ACRES) =    37.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     63.90

****************************************************************************
  FLOW PROCESS FROM NODE    590.00 TO NODE    591.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   347.00
  UPSTREAM ELEVATION(FEET) =     520.00
  DOWNSTREAM ELEVATION(FEET) =    514.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.830
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.29
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.50
  TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =      5.50

****************************************************************************
  FLOW PROCESS FROM NODE    591.00 TO NODE    527.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.51
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.50
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   3.14
  LONGEST FLOWPATH FROM NODE    590.00 TO NODE    527.00 =     432.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    527.00 TO NODE    527.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.14
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =      2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.50

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        63.90     9.87       2.038        37.40
     2         5.50     3.14       3.162         2.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        46.70     3.14       3.162
     2        67.45     9.87       2.038

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      67.45   Tc(MIN.) =    9.87
  TOTAL AREA(ACRES) =      39.4
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    527.00 =    3117.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    527.00 TO NODE    528.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   147.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.21
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      67.45
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =  10.17
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    528.00 =    3264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    528.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.17
  RAINFALL INTENSITY(INCH/HR) =   2.00
  TOTAL STREAM AREA(ACRES) =    39.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     67.45

****************************************************************************
  FLOW PROCESS FROM NODE    720.00 TO NODE    721.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   304.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    506.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.756
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    69.74
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      3.85
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      3.85

****************************************************************************
  FLOW PROCESS FROM NODE    721.00 TO NODE    528.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.16
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.85
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   3.00
  LONGEST FLOWPATH FROM NODE    720.00 TO NODE    528.00 =     364.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    528.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.00
  RAINFALL INTENSITY(INCH/HR) =   3.16
```

```
TOTAL STREAM AREA(ACRES) =      1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.85

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       67.45    10.17       2.000         39.40
    2        3.85     3.00       3.162          1.40

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       46.51     3.00       3.162
    2       69.89    10.17       2.000

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      69.89   Tc(MIN.) =   10.17
TOTAL AREA(ACRES) =       40.8
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    528.00 =    3264.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    528.00 TO NODE    529.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  45.0 INCH PIPE IS  31.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   8.45
ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      69.89
PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =  10.32
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    529.00 =    3339.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    529.00 TO NODE    529.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  10.32
RAINFALL INTENSITY(INCH/HR) =   1.98
TOTAL STREAM AREA(ACRES) =    40.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =     69.89

****************************************************************************
FLOW PROCESS FROM NODE    580.00 TO NODE    581.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   335.00
UPSTREAM ELEVATION(FEET) =    516.00
DOWNSTREAM ELEVATION(FEET) =    510.00
ELEVATION DIFFERENCE(FEET) =      6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.809
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    67.91
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      4.40
TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =      4.40

****************************************************************************
FLOW PROCESS FROM NODE    581.00 TO NODE    529.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.29
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       4.40
PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   3.13
LONGEST FLOWPATH FROM NODE    580.00 TO NODE    529.00 =     417.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    529.00 TO NODE    529.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.13
RAINFALL INTENSITY(INCH/HR) =   3.16
TOTAL STREAM AREA(ACRES) =      1.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.40

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       69.89    10.32       1.981         40.80
    2        4.40     3.13       3.162          1.60

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       48.19     3.13       3.162
    2       72.64    10.32       1.981

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      72.64   Tc(MIN.) =   10.32
TOTAL AREA(ACRES) =       42.4
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    529.00 =    3339.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    529.00 TO NODE    534.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   186.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   8.50
ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      72.64
PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =  10.68
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    534.00 =    3525.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.68
  RAINFALL INTENSITY(INCH/HR) =   1.94
  TOTAL STREAM AREA(ACRES) =     42.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     72.64

****************************************************************************
  FLOW PROCESS FROM NODE     425.00 TO NODE     426.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     39.00
  UPSTREAM ELEVATION(FEET) =     524.00
  DOWNSTREAM ELEVATION(FEET) =     523.22
  ELEVATION DIFFERENCE(FEET) =       0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.30
  TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.30

****************************************************************************
  FLOW PROCESS FROM NODE     426.00 TO NODE     427.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1375.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =        1.36
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =     8.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =     1.50
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =     0.46
  STREET FLOW TRAVEL TIME(MIN.) =  15.24   Tc(MIN.) =  17.29
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.420
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     1.59      SUBAREA RUNOFF(CFS) =     1.96
  TOTAL AREA(ACRES) =        1.7        PEAK FLOW RATE(CFS) =       2.10

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.77
  FLOW VELOCITY(FEET/SEC.) =  1.64   DEPTH*VELOCITY(FT*FT/SEC.) =   0.56
  LONGEST FLOWPATH FROM NODE     425.00 TO NODE     427.00 =    1414.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     427.00 TO NODE     534.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.55
  ESTIMATED PIPE DIAMETER(INCH) =  18.00     NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.10
  PIPE TRAVEL TIME(MIN.) =   0.16     Tc(MIN.) =  17.46
  LONGEST FLOWPATH FROM NODE     425.00 TO NODE     534.00 =    1449.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     534.00 TO NODE     534.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.46
  RAINFALL INTENSITY(INCH/HR) =   1.41
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       2.10

****************************************************************************
  FLOW PROCESS FROM NODE     428.00 TO NODE     429.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     39.00
  UPSTREAM ELEVATION(FEET) =     516.00
  DOWNSTREAM ELEVATION(FEET) =     515.22
  ELEVATION DIFFERENCE(FEET) =       0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.30
  TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.30

****************************************************************************
  FLOW PROCESS FROM NODE     429.00 TO NODE     430.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =    742.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =        0.71
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =     6.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =     1.31
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =     0.34
  STREET FLOW TRAVEL TIME(MIN.) =   9.45   Tc(MIN.) =  11.50
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.847
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     0.49      SUBAREA RUNOFF(CFS) =     0.79
  TOTAL AREA(ACRES) =        0.6        PEAK FLOW RATE(CFS) =       0.96

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   7.62
  FLOW VELOCITY(FEET/SEC.) =  1.38   DEPTH*VELOCITY(FT*FT/SEC.) =   0.38
```

```
  LONGEST FLOWPATH FROM NODE    428.00 TO NODE    430.00 =     781.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    430.00 TO NODE    534.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    17.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.85
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.96
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  11.60
  LONGEST FLOWPATH FROM NODE    428.00 TO NODE    534.00 =     798.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.60
  RAINFALL INTENSITY(INCH/HR) =   1.84
  TOTAL STREAM AREA(ACRES) =     0.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.96

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        72.64    10.68       1.937        42.40
     2         2.10    17.46       1.412         1.70
     3         0.96    11.60       1.837         0.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        74.82    10.68       1.937
     2        71.25    11.60       1.837
     3        55.77    17.46       1.412

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      74.82   Tc(MIN.) =   10.68
  TOTAL AREA(ACRES) =      44.7
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    534.00 =    3525.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    535.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    32.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  33.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.54
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      74.82
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =  10.75
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    535.00 =    3557.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    535.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.75
  RAINFALL INTENSITY(INCH/HR) =   1.93
  TOTAL STREAM AREA(ACRES) =    44.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     74.82

****************************************************************************
  FLOW PROCESS FROM NODE    730.00 TO NODE    731.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   354.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    502.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.841
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.95
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.23
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      5.23

****************************************************************************
  FLOW PROCESS FROM NODE    731.00 TO NODE    535.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    61.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.23
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   3.07
  LONGEST FLOWPATH FROM NODE    730.00 TO NODE    535.00 =     415.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    535.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.07
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.23

****************************************************************************
  FLOW PROCESS FROM NODE    570.00 TO NODE    571.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   220.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    506.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.605
```

```
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    77.27
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      4.40
  TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =      4.40

****************************************************************************
  FLOW PROCESS FROM NODE    571.00 TO NODE    535.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.29
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.40
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   2.90
  LONGEST FLOWPATH FROM NODE    570.00 TO NODE    535.00 =     295.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    535.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.90
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.40

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       74.82    10.75        1.930         44.70
     2        5.23     3.07        3.162          1.90
     3        4.40     2.90        3.162          1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       55.00     2.90       3.162
     2       55.30     3.07       3.162
     3       80.70    10.75       1.930

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      80.70   Tc(MIN.) =   10.75
  TOTAL AREA(ACRES) =       48.2
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    535.00 =    3557.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    536.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  35.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.60
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      80.70
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  10.95
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    536.00 =    3662.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    536.00 TO NODE    512.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  35.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.60
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      80.70
  PIPE TRAVEL TIME(MIN.) =   0.58    Tc(MIN.) =  11.53
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    512.00 =    3962.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    512.00 TO NODE    512.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    740.00 TO NODE    741.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   375.00
  UPSTREAM ELEVATION(FEET) =    507.00
  DOWNSTREAM ELEVATION(FEET) =    505.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.634
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.67
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.23
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      5.23

****************************************************************************
  FLOW PROCESS FROM NODE    741.00 TO NODE    751.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   280.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.23
  PIPE TRAVEL TIME(MIN.) =   1.05    Tc(MIN.) =   4.68
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    751.50 =     655.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    751.50 TO NODE    751.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.68
  RAINFALL INTENSITY(INCH/HR) =   3.16
```

```
  TOTAL STREAM AREA(ACRES) =      1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       5.23

****************************************************************************
  FLOW PROCESS FROM NODE     750.00 TO NODE     751.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
  UPSTREAM ELEVATION(FEET) =     507.00
  DOWNSTREAM ELEVATION(FEET) =     504.00
  ELEVATION DIFFERENCE(FEET) =       3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     3.277
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =     57.65
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       4.68
  TOTAL AREA(ACRES) =       1.70   TOTAL RUNOFF(CFS) =       4.68

****************************************************************************
  FLOW PROCESS FROM NODE     751.00 TO NODE     751.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.36
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        4.68
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   3.32
  LONGEST FLOWPATH FROM NODE     750.00 TO NODE     751.50 =     352.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     751.50 TO NODE     751.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.32
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =      1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       4.68

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1          5.23      4.68        3.162          1.90
     2          4.68      3.32        3.162          1.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1          8.39      3.32        3.162
     2          9.90      4.68        3.162

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.90   Tc(MIN.) =    4.68
  TOTAL AREA(ACRES) =        3.6
```

```
  LONGEST FLOWPATH FROM NODE     740.00 TO NODE     751.50 =     655.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     751.50 TO NODE     512.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.14
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        9.90
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   4.72
  LONGEST FLOWPATH FROM NODE     740.00 TO NODE     512.00 =     667.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     512.00 TO NODE     512.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1          9.90      4.72        3.162          3.60
  LONGEST FLOWPATH FROM NODE     740.00 TO NODE     512.00 =     667.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1         80.70     11.53        1.844         48.20
  LONGEST FLOWPATH FROM NODE     451.00 TO NODE     512.00 =    3962.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1         42.92      4.72        3.162
     2         86.47     11.53        1.844

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      86.47   Tc(MIN.) =   11.53
  TOTAL AREA(ACRES) =        51.8

****************************************************************************
  FLOW PROCESS FROM NODE       0.00 TO NODE       0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     512.00 TO NODE     513.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  34.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.88
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       86.47
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =  11.61
  LONGEST FLOWPATH FROM NODE     451.00 TO NODE     513.00 =    4002.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     513.00 TO NODE     513.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================
```

```
** MAIN STREAM CONFLUENCE DATA **
STREAM     RUNOFF     Tc      INTENSITY     AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
    1       86.47    11.61       1.837      51.80
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    513.00 =    4002.00 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
STREAM     RUNOFF     Tc      INTENSITY     AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
    1       30.85    31.76       0.959      34.51
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    513.00 =    5481.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF       Tc      INTENSITY
NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
    1      97.74      11.61       1.837
    2      76.02      31.76       0.959

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      97.74   Tc(MIN.) =   11.61
TOTAL AREA(ACRES) =       86.3

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
>>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    513.00 TO NODE    998.00 IS CODE =  52
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =    500.00  DOWNSTREAM(FEET) =    498.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   300.00   CHANNEL SLOPE =  0.0067
CHANNEL FLOW THRU SUBAREA(CFS) =      97.74
FLOW VELOCITY(FEET/SEC) =   3.85 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   1.30   Tc(MIN.) =  12.91
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    998.00 =    5781.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    998.00 TO NODE    998.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.715
'USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT = 0.8421
SUBAREA AREA(ACRES) =    4.90   SUBAREA RUNOFF(CFS) =    2.94
TOTAL AREA(ACRES) =       91.2   TOTAL RUNOFF(CFS) =     131.72
TC(MIN.) =  12.91

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
>>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    760.00 TO NODE    761.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   302.00
UPSTREAM ELEVATION(FEET) =    522.00
DOWNSTREAM ELEVATION(FEET) =    517.00
ELEVATION DIFFERENCE(FEET) =      5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.855
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    66.56
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      3.85
TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      3.85

****************************************************************************
FLOW PROCESS FROM NODE    761.00 TO NODE    614.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   260.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.16
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       3.85
PIPE TRAVEL TIME(MIN.) =   1.04    Tc(MIN.) =   3.90
LONGEST FLOWPATH FROM NODE    760.00 TO NODE    614.00 =     562.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    614.00 TO NODE    614.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   3.90
RAINFALL INTENSITY(INCH/HR) =   3.16
TOTAL STREAM AREA(ACRES) =     1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.85

****************************************************************************
FLOW PROCESS FROM NODE    780.00 TO NODE    781.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.00
UPSTREAM ELEVATION(FEET) =    520.00
DOWNSTREAM ELEVATION(FEET) =    516.00
ELEVATION DIFFERENCE(FEET) =      4.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.973
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    63.75
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      4.68
TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =      4.68

****************************************************************************
FLOW PROCESS FROM NODE    781.00 TO NODE    614.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.36
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        4.68
  PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =   3.36
  LONGEST FLOWPATH FROM NODE    780.00 TO NODE    614.00 =     391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    614.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.36
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.68

****************************************************************************
  FLOW PROCESS FROM NODE    770.00 TO NODE    771.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   344.00
  UPSTREAM ELEVATION(FEET) =    519.00
  DOWNSTREAM ELEVATION(FEET) =    512.00
  ELEVATION DIFFERENCE(FEET) =      7.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.740
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.35
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      4.95
  TOTAL AREA(ACRES) =      1.80   TOTAL RUNOFF(CFS) =      4.95

****************************************************************************
  FLOW PROCESS FROM NODE    771.00 TO NODE    614.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.41
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        4.95
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =   3.04
  LONGEST FLOWPATH FROM NODE    770.00 TO NODE    614.00 =     424.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    614.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.04
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.95

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)     (ACRE)
     1        3.85      3.90        3.162          1.40
     2        4.68      3.36        3.162          1.70
     3        4.95      3.04        3.162          1.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
     1       12.20      3.04       3.162
     2       12.94      3.36       3.162
     3       13.48      3.90       3.162

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      13.48   Tc(MIN.) =    3.90
  TOTAL AREA(ACRES) =        4.9
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    614.00 =     562.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.59
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       13.48
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =   4.34
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    615.00 =     712.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.34
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     4.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.48

****************************************************************************
  FLOW PROCESS FROM NODE    810.00 TO NODE    811.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   287.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    508.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.964
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.94
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      3.03
  TOTAL AREA(ACRES) =      1.10   TOTAL RUNOFF(CFS) =      3.03

****************************************************************************
  FLOW PROCESS FROM NODE    811.00 TO NODE    615.00 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.91
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.03
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =   3.31
  LONGEST FLOWPATH FROM NODE    810.00 TO NODE    615.00 =     369.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.31
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.03

****************************************************************************
  FLOW PROCESS FROM NODE    790.00 TO NODE    791.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   230.00
  UPSTREAM ELEVATION(FEET) =    514.00
  DOWNSTREAM ELEVATION(FEET) =    510.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.826
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.39
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      2.48
  TOTAL AREA(ACRES) =      0.90   TOTAL RUNOFF(CFS) =      2.48

****************************************************************************
  FLOW PROCESS FROM NODE    791.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.71
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.48
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   3.12
  LONGEST FLOWPATH FROM NODE    790.00 TO NODE    615.00 =     295.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.12
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.48

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       13.48     4.34       3.162          4.90
     2        3.03     3.31       3.162          1.10
     3        2.48     3.12       3.162          0.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       18.80     3.12       3.162
     2       18.98     3.31       3.162
     3       18.98     4.34       3.162

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      18.98   Tc(MIN.) =    4.34
  TOTAL AREA(ACRES) =        6.9
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    615.00 =     712.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    616.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   210.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.06
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.98
  PIPE TRAVEL TIME(MIN.) =   0.58    Tc(MIN.) =   4.92
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    616.00 =     922.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.00 TO NODE    616.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.92
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     6.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.98

****************************************************************************
  FLOW PROCESS FROM NODE    830.00 TO NODE    831.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   317.00
  UPSTREAM ELEVATION(FEET) =    510.00
  DOWNSTREAM ELEVATION(FEET) =    504.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.779
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    68.93
           (Reference: Table 3-1B of Hydrology Manual)
```

```
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      3.85
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      3.85

****************************************************************************
  FLOW PROCESS FROM NODE    831.00 TO NODE    616.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.16
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.85
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   3.12
  LONGEST FLOWPATH FROM NODE    830.00 TO NODE    616.00 =     402.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.00 TO NODE    616.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.12
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.85

****************************************************************************
  FLOW PROCESS FROM NODE    820.00 TO NODE    821.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   298.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    506.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.746
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =   70.13
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      3.85
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      3.85

****************************************************************************
  FLOW PROCESS FROM NODE    821.00 TO NODE    616.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.16
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.85
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   3.01
  LONGEST FLOWPATH FROM NODE    820.00 TO NODE    616.00 =     363.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.00 TO NODE    616.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.01
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.85

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       18.98     4.92       3.162         6.90
     2        3.85     3.12       3.162         1.40
     3        3.85     3.01       3.162         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       26.54     3.01       3.162
     2       26.68     3.12       3.162
     3       26.68     4.92       3.162

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      26.68   Tc(MIN.) =    4.92
  TOTAL AREA(ACRES) =        9.7
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    616.00 =     922.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.00 TO NODE    616.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   121.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  23.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.55
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      26.68
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   5.23
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    616.50 =    1043.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.50 TO NODE    616.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.23
  RAINFALL INTENSITY(INCH/HR) =   3.07
  TOTAL STREAM AREA(ACRES) =     9.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     26.68

****************************************************************************
  FLOW PROCESS FROM NODE    437.00 TO NODE    438.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
```

```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.28
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.28

****************************************************************************
  FLOW PROCESS FROM NODE    438.00 TO NODE    439.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1360.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.20
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.45
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.43
  STREET FLOW TRAVEL TIME(MIN.) =  15.68   Tc(MIN.) =  17.74
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.397
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.40      SUBAREA RUNOFF(CFS) =    1.70
  TOTAL AREA(ACRES) =        1.5        PEAK FLOW RATE(CFS) =       1.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.11
  FLOW VELOCITY(FEET/SEC.) =  1.60   DEPTH*VELOCITY(FT*FT/SEC.) =   0.53
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    439.00 =    1399.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    439.00 TO NODE    616.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.41
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.82
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =  17.91
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    616.50 =    1435.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.50 TO NODE    616.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.91
  RAINFALL INTENSITY(INCH/HR) =   1.39
  TOTAL STREAM AREA(ACRES) =     1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.82

****************************************************************************
  FLOW PROCESS FROM NODE    440.00 TO NODE    441.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    518.00
  DOWNSTREAM ELEVATION(FEET) =    517.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    441.00 TO NODE    442.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   886.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.55
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.45
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.48
  STREET FLOW TRAVEL TIME(MIN.) =   9.62   Tc(MIN.) =  11.67
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.830
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.49      SUBAREA RUNOFF(CFS) =    2.37
  TOTAL AREA(ACRES) =        1.6        PEAK FLOW RATE(CFS) =       2.55

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.64
  FLOW VELOCITY(FEET/SEC.) =  1.73   DEPTH*VELOCITY(FT*FT/SEC.) =   0.62
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    442.00 =     925.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    442.00 TO NODE    616.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    16.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.74
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =        2.55
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  11.74
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    616.50 =     941.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.50 TO NODE    616.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.74
  RAINFALL INTENSITY(INCH/HR) =   1.82
  TOTAL STREAM AREA(ACRES) =     1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.55

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       26.68     5.23        3.072         9.70
     2        1.82    17.91        1.388         1.50
     3        2.55    11.74        1.823         1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       28.35     5.23        3.072
     2       19.57    11.74        1.823
     3       15.82    17.91        1.388

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      28.35   Tc(MIN.) =    5.23
  TOTAL AREA(ACRES) =       12.8
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    616.50 =    1435.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.50 TO NODE    617.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   168.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  21.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.78
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      28.35
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =   5.64
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    617.00 =    1603.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    617.00 TO NODE    617.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.64
  RAINFALL INTENSITY(INCH/HR) =   2.92
  TOTAL STREAM AREA(ACRES) =    12.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.35

****************************************************************************
  FLOW PROCESS FROM NODE    840.00 TO NODE    841.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   355.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    502.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.843
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.90
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.23
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      5.23

****************************************************************************
  FLOW PROCESS FROM NODE    841.00 TO NODE    617.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.23
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   3.07
  LONGEST FLOWPATH FROM NODE    840.00 TO NODE    617.00 =     415.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    617.00 TO NODE    617.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.07
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.23

****************************************************************************
  FLOW PROCESS FROM NODE    850.00 TO NODE    851.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   369.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    501.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.983
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.55
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.50
  TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =      5.50

****************************************************************************
  FLOW PROCESS FROM NODE    851.00 TO NODE    617.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.51
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.50
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =   3.29
  LONGEST FLOWPATH FROM NODE    850.00 TO NODE    617.00 =     451.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    617.00 TO NODE    617.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.29
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.50

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       28.35     5.64        2.925        12.60
     2        5.23     3.07        3.162         1.90
     3        5.50     3.29        3.162         2.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       36.59     3.07        3.162
     2       36.95     3.29        3.162
     3       38.27     5.64        2.925

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      38.27   Tc(MIN.) =    5.64
  TOTAL AREA(ACRES) =       16.7
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    617.00 =    1603.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    617.00 TO NODE    618.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.28
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      38.27
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =   5.80
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    618.00 =    1673.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.00 TO NODE    618.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    443.00 TO NODE    444.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.28
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.28

****************************************************************************
  FLOW PROCESS FROM NODE    444.00 TO NODE    445.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1965.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.45
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.15
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.52
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.47
  STREET FLOW TRAVEL TIME(MIN.) =  21.55   Tc(MIN.) =  23.60
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.162
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.10      SUBAREA RUNOFF(CFS) =    2.12
  TOTAL AREA(ACRES) =        2.2        PEAK FLOW RATE(CFS) =       2.22

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  10.98
  FLOW VELOCITY(FEET/SEC.) =  1.68   DEPTH*VELOCITY(FT*FT/SEC.) =   0.58
  LONGEST FLOWPATH FROM NODE    443.00 TO NODE    445.00 =    2004.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    445.00 TO NODE    618.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    23.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.61
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.22
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =  23.71
  LONGEST FLOWPATH FROM NODE    443.00 TO NODE    618.50 =    2027.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.50 TO NODE    618.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
```

```
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.71
  RAINFALL INTENSITY(INCH/HR) =   1.16
  TOTAL STREAM AREA(ACRES) =     2.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.22

****************************************************************************
  FLOW PROCESS FROM NODE    446.00 TO NODE    447.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    526.00
  DOWNSTREAM ELEVATION(FEET) =    525.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    447.00 TO NODE    448.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  2195.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.64
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.67
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.50
  STREET FLOW TRAVEL TIME(MIN.) =  23.45   Tc(MIN.) =  25.50
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.105
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.49      SUBAREA RUNOFF(CFS) =    2.39
  TOTAL AREA(ACRES) =        2.6        PEAK FLOW RATE(CFS) =       2.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.57
  FLOW VELOCITY(FEET/SEC.) =  1.72   DEPTH*VELOCITY(FT*FT/SEC.) =   0.61
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    448.00 =    2234.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    448.00 TO NODE    618.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.72
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.50
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  25.69
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.50 =    2278.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.50 TO NODE    618.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.69
  RAINFALL INTENSITY(INCH/HR) =   1.10
  TOTAL STREAM AREA(ACRES) =     2.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.50

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        2.22    23.71        1.159         2.20
     2        2.50    25.69        1.100         2.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        4.53    23.71       1.159
     2        4.61    25.69       1.100

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.61   Tc(MIN.) =   25.69
  TOTAL AREA(ACRES) =        4.8
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.50 =    2278.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.50 TO NODE    618.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   227.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.34
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.61
  PIPE TRAVEL TIME(MIN.) =   0.87    Tc(MIN.) =  26.57
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.00 =    2505.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.00 TO NODE    618.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        4.61    26.57        1.077         4.80
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.00 =    2505.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       38.27     5.80        2.872        16.70
```

```
LONGEST FLOWPATH FROM NODE    437.00 TO NODE    618.00 =    1673.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF       Tc      INTENSITY
NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
    1      39.28      5.80       2.872
    2      18.96     26.57       1.077

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      39.28   Tc(MIN.) =    5.80
TOTAL AREA(ACRES) =       21.5

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
>>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    618.00 TO NODE    619.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   293.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.31
ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      39.28
PIPE TRAVEL TIME(MIN.) =   0.67    Tc(MIN.) =   6.47
LONGEST FLOWPATH FROM NODE    446.00 TO NODE    619.00 =    2798.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    619.00 TO NODE    619.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
>>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    449.00 TO NODE    450.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    502.00
DOWNSTREAM ELEVATION(FEET) =    501.22
ELEVATION DIFFERENCE(FEET) =      0.78
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.30
TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
FLOW PROCESS FROM NODE    450.00 TO NODE    622.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =   365.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.79
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.33
  HALFSTREET FLOOD WIDTH(FEET) =   10.03
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.59
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.52
STREET FLOW TRAVEL TIME(MIN.) =   3.83   Tc(MIN.) =   5.88
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.848
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    1.19      SUBAREA RUNOFF(CFS) =    2.95
TOTAL AREA(ACRES) =        1.3        PEAK FLOW RATE(CFS) =       3.22

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.82
FLOW VELOCITY(FEET/SEC.) =  1.83   DEPTH*VELOCITY(FT*FT/SEC.) =   0.70
LONGEST FLOWPATH FROM NODE    449.00 TO NODE    622.00 =     404.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    622.00 TO NODE    619.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    74.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   3.97
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       3.22
PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   6.19
LONGEST FLOWPATH FROM NODE    449.00 TO NODE    619.00 =     478.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    619.00 TO NODE    619.00 IS CODE =  11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
STREAM     RUNOFF     Tc      INTENSITY     AREA
NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
    1        3.22    6.19       2.755        1.30
LONGEST FLOWPATH FROM NODE    449.00 TO NODE    619.00 =     478.00 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
STREAM     RUNOFF     Tc      INTENSITY     AREA
NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
    1       39.28    6.47       2.677       21.50
LONGEST FLOWPATH FROM NODE    446.00 TO NODE    619.00 =    2798.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF       Tc      INTENSITY
NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
    1      40.80      6.19       2.755
    2      42.41      6.47       2.677

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      42.41   Tc(MIN.) =    6.47
```

```
  TOTAL AREA(ACRES) =        22.8

****************************************************************************
  FLOW PROCESS FROM NODE       0.00 TO NODE       0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     619.00 TO NODE     623.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    96.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.38
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       42.41
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   6.69
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    623.00 =    2894.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     623.00 TO NODE     623.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.69
  RAINFALL INTENSITY(INCH/HR) =   2.62
  TOTAL STREAM AREA(ACRES) =    22.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     42.41

****************************************************************************
  FLOW PROCESS FROM NODE     860.00 TO NODE     861.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   265.00
  UPSTREAM ELEVATION(FEET) =    504.00
  DOWNSTREAM ELEVATION(FEET) =    501.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.111
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.32
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      3.03
  TOTAL AREA(ACRES) =      1.10   TOTAL RUNOFF(CFS) =      3.03

****************************************************************************
  FLOW PROCESS FROM NODE     861.00 TO NODE     623.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    23.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.91
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.03
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   3.21
  LONGEST FLOWPATH FROM NODE    860.00 TO NODE    623.00 =     288.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     623.00 TO NODE     623.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.21
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.03

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       42.41     6.69        2.621        22.80
     2        3.03     3.21        3.162         1.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       23.38     3.21        3.162
     2       44.92     6.69        2.621

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      44.92   Tc(MIN.) =    6.69
  TOTAL AREA(ACRES) =      23.9
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    623.00 =    2894.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     623.00 TO NODE     624.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   187.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  28.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.41
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       44.92
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =   7.11
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    624.00 =    3081.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     624.00 TO NODE     624.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.11
  RAINFALL INTENSITY(INCH/HR) =   2.52
  TOTAL STREAM AREA(ACRES) =    23.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     44.92

****************************************************************************
  FLOW PROCESS FROM NODE     870.00 TO NODE     871.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   245.00
```

```
UPSTREAM ELEVATION(FEET) =    504.00
DOWNSTREAM ELEVATION(FEET) =    501.50
ELEVATION DIFFERENCE(FEET) =      2.50
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.191
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    60.20
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      2.48
TOTAL AREA(ACRES) =      0.90   TOTAL RUNOFF(CFS) =      2.48

****************************************************************************
FLOW PROCESS FROM NODE    871.00 TO NODE    624.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   3.71
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       2.48
PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   3.30
LONGEST FLOWPATH FROM NODE    870.00 TO NODE    624.00 =     269.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    624.00 TO NODE    624.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.30
RAINFALL INTENSITY(INCH/HR) =   3.16
TOTAL STREAM AREA(ACRES) =     0.90
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.48

****************************************************************************
FLOW PROCESS FROM NODE   1050.00 TO NODE   1051.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   320.00
UPSTREAM ELEVATION(FEET) =    502.00
DOWNSTREAM ELEVATION(FEET) =    500.00
ELEVATION DIFFERENCE(FEET) =      2.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.508
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    52.50
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      3.85
TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      3.85

****************************************************************************
FLOW PROCESS FROM NODE   1051.00 TO NODE    624.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.16
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       3.85
PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   3.59
LONGEST FLOWPATH FROM NODE   1050.00 TO NODE    624.00 =     340.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    624.00 TO NODE    624.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =   3.59
RAINFALL INTENSITY(INCH/HR) =   3.16
TOTAL STREAM AREA(ACRES) =     1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.85

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       44.92     7.11        2.520        23.90
    2        2.48     3.30        3.162         0.90
    3        3.85     3.59        3.162         1.40

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       41.82     3.30       3.162
    2       42.13     3.59       3.162
    3       49.96     7.11       2.520

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      49.96   Tc(MIN.) =    7.11
TOTAL AREA(ACRES) =       26.2
LONGEST FLOWPATH FROM NODE    446.00 TO NODE    624.00 =    3081.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    624.00 TO NODE    625.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  39.0 INCH PIPE IS  28.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.74
ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      49.96
PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   7.32
LONGEST FLOWPATH FROM NODE    446.00 TO NODE    625.50 =    3181.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    625.50 TO NODE    625.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   7.32
RAINFALL INTENSITY(INCH/HR) =   2.47
TOTAL STREAM AREA(ACRES) =    26.20
PEAK FLOW RATE(CFS) AT CONFLUENCE =     49.96

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    928.00 TO NODE    929.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   255.00
  UPSTREAM ELEVATION(FEET) =    504.00
  DOWNSTREAM ELEVATION(FEET) =    501.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.082
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.76
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      4.68
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =      4.68

****************************************************************************
  FLOW PROCESS FROM NODE    929.00 TO NODE    625.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.36
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      4.68
  PIPE TRAVEL TIME(MIN.) =   0.96    Tc(MIN.) =   4.04
  LONGEST FLOWPATH FROM NODE    928.00 TO NODE    625.50 =     505.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.50 TO NODE    625.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.04
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.68

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       49.96     7.32        2.472        26.20
     2        4.68     4.04        3.162         1.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       43.74     4.04       3.162
     2       53.62     7.32       2.472

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     53.62   Tc(MIN.) =    7.32
  TOTAL AREA(ACRES) =      27.9
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    625.50 =    3181.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.50 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  30.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.80
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      53.62
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   7.46
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    625.00 =    3246.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    908.00 TO NODE    909.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   419.00
  UPSTREAM ELEVATION(FEET) =    522.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.232
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    59.09
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.98
  TOTAL AREA(ACRES) =      2.90   TOTAL RUNOFF(CFS) =      7.98

****************************************************************************
  FLOW PROCESS FROM NODE    909.00 TO NODE    941.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   124.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.96
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      7.98
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =   3.65
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    941.00 =     543.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    941.00 TO NODE    941.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.65
  RAINFALL INTENSITY(INCH/HR) =   3.16
```

```
  TOTAL STREAM AREA(ACRES) =      2.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.98

****************************************************************************
  FLOW PROCESS FROM NODE    910.00 TO NODE    911.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   260.00
  UPSTREAM ELEVATION(FEET) =    526.00
  DOWNSTREAM ELEVATION(FEET) =    524.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.363
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    55.38
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      4.95
  TOTAL AREA(ACRES) =      1.80   TOTAL RUNOFF(CFS) =      4.95

****************************************************************************
  FLOW PROCESS FROM NODE    911.00 TO NODE    941.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.41
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.95
  PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =   3.76
  LONGEST FLOWPATH FROM NODE    910.00 TO NODE    941.00 =     365.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    941.00 TO NODE    941.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.76
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =      1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.95

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        7.98     3.65        3.162         2.90
     2        4.95     3.76        3.162         1.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       12.78     3.65       3.162
     2       12.93     3.76       3.162

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      12.93   Tc(MIN.) =    3.76
  TOTAL AREA(ACRES) =        4.7
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    941.00 =     543.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    941.00 TO NODE    942.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   155.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.55
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.93
  PIPE TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =   4.23
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    942.00 =     698.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    942.00 TO NODE    942.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.23
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =      4.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.93

****************************************************************************
  FLOW PROCESS FROM NODE    910.50 TO NODE    911.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   250.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.337
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    56.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      2.48
  TOTAL AREA(ACRES) =      0.90   TOTAL RUNOFF(CFS) =      2.48

****************************************************************************
  FLOW PROCESS FROM NODE    911.50 TO NODE    942.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.71
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.48
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   3.70
  LONGEST FLOWPATH FROM NODE    910.50 TO NODE    942.00 =     330.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    942.00 TO NODE    942.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.70
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =      0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.48

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       12.93     4.23        3.162          4.70
     2        2.48     3.70        3.162          0.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       15.40     3.70        3.162
     2       15.40     4.23        3.162

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      15.40   Tc(MIN.) =    4.23
  TOTAL AREA(ACRES) =         5.6
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    942.00 =     698.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    942.00 TO NODE    943.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  19.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.66
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.40
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   4.46
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    943.00 =     778.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    943.00 TO NODE    943.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.46
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =      5.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.40

****************************************************************************
  FLOW PROCESS FROM NODE    914.00 TO NODE    915.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   451.00
  UPSTREAM ELEVATION(FEET) =      520.00
  DOWNSTREAM ELEVATION(FEET) =    516.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.274
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.74
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.53
  TOTAL AREA(ACRES) =      3.10   TOTAL RUNOFF(CFS) =      8.53

****************************************************************************
  FLOW PROCESS FROM NODE    915.00 TO NODE    943.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.02
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.53
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   3.48
  LONGEST FLOWPATH FROM NODE    914.00 TO NODE    943.00 =     513.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    943.00 TO NODE    943.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.48
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =      3.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.53

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       15.40     4.46        3.162          5.60
     2        8.53     3.48        3.162          3.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       23.93     3.48        3.162
     2       23.93     4.46        3.162

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      23.93   Tc(MIN.) =    4.46
  TOTAL AREA(ACRES) =         8.7
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    943.00 =     778.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    943.00 TO NODE    944.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.46
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      23.93
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   4.55
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    944.00 =     814.00 FEET.

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    944.00 TO NODE    944.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    932.00 TO NODE    933.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   516.00
  UPSTREAM ELEVATION(FEET) =    528.00
  DOWNSTREAM ELEVATION(FEET) =    522.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.091
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.63
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     11.83
  TOTAL AREA(ACRES) =      4.30   TOTAL RUNOFF(CFS) =     11.83

****************************************************************************
  FLOW PROCESS FROM NODE    933.00 TO NODE    935.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   195.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.46
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.83
  PIPE TRAVEL TIME(MIN.) =   0.60    Tc(MIN.) =   3.69
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    935.00 =     711.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    935.00 TO NODE    935.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.69
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     4.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.83

****************************************************************************
  FLOW PROCESS FROM NODE    934.00 TO NODE    935.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   690.00
  UPSTREAM ELEVATION(FEET) =    526.00
  DOWNSTREAM ELEVATION(FEET) =    520.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.286
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.39
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.93
  TOTAL AREA(ACRES) =      4.70   TOTAL RUNOFF(CFS) =     12.93

****************************************************************************
  FLOW PROCESS FROM NODE    935.00 TO NODE    935.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.29
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     4.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.93

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        11.83     3.69       3.162         4.30
     2        12.93     3.29       3.162         4.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        23.47     3.29       3.162
     2        24.76     3.69       3.162

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.76   Tc(MIN.) =    3.69
  TOTAL AREA(ACRES) =         9.0
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    935.00 =     711.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    935.00 TO NODE    944.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   630.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.49
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.76
  PIPE TRAVEL TIME(MIN.) =   1.62    Tc(MIN.) =   5.30
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    944.00 =    1341.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    944.00 TO NODE    944.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        24.76     5.30       3.044         9.00
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    944.00 =    1341.00 FEET.
```

```
** MEMORY BANK #  2 CONFLUENCE DATA **
STREAM     RUNOFF     Tc       INTENSITY     AREA
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
    1       23.93     4.55       3.162        8.70
LONGEST FLOWPATH FROM NODE    908.00 TO NODE    944.00 =     814.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF       Tc       INTENSITY
NUMBER     (CFS)     (MIN.)    (INCH/HOUR)
    1      45.19       4.55       3.162
    2      47.80       5.30       3.044

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      47.80   Tc(MIN.) =    5.30
TOTAL AREA(ACRES) =       17.7

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
>>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    944.00 TO NODE    945.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.69
ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      47.80
PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   5.58
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    945.00 =    1471.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    945.00 TO NODE    945.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   5.58
RAINFALL INTENSITY(INCH/HR) =   2.94
TOTAL STREAM AREA(ACRES) =    17.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =     47.80

****************************************************************************
FLOW PROCESS FROM NODE    916.00 TO NODE    917.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   593.00
UPSTREAM ELEVATION(FEET) =    518.00
DOWNSTREAM ELEVATION(FEET) =    514.00
ELEVATION DIFFERENCE(FEET) =      4.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.452
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    53.49
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      11.28
TOTAL AREA(ACRES) =      4.10   TOTAL RUNOFF(CFS) =     11.28

****************************************************************************
FLOW PROCESS FROM NODE    917.00 TO NODE    945.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    61.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.41
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      11.28
PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   3.64
LONGEST FLOWPATH FROM NODE    916.00 TO NODE    945.00 =     654.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    945.00 TO NODE    945.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.64
RAINFALL INTENSITY(INCH/HR) =   3.16
TOTAL STREAM AREA(ACRES) =     4.10
PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.28

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc       INTENSITY      AREA
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
    1       47.80     5.58        2.944         17.70
    2       11.28     3.64        3.162          4.10

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc       INTENSITY
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
    1       42.43     3.64        3.162
    2       58.30     5.58        2.944

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      58.30   Tc(MIN.) =    5.58
TOTAL AREA(ACRES) =       21.8
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    945.00 =    1471.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    945.00 TO NODE    946.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   473.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  42.0 INCH PIPE IS  29.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   8.08
ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      58.30
PIPE TRAVEL TIME(MIN.) =   0.98    Tc(MIN.) =   6.56
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    946.00 =    1944.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    946.00 TO NODE    946.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   6.56
```

```
  RAINFALL INTENSITY(INCH/HR) =   2.65
  TOTAL STREAM AREA(ACRES) =    21.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     58.30

****************************************************************************
  FLOW PROCESS FROM NODE    918.00 TO NODE    919.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   522.00
  UPSTREAM ELEVATION(FEET) =    515.00
  DOWNSTREAM ELEVATION(FEET) =    512.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.573
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.49
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      9.63
  TOTAL AREA(ACRES) =      3.50   TOTAL RUNOFF(CFS) =      9.63

****************************************************************************
  FLOW PROCESS FROM NODE    919.00 TO NODE    946.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.12
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.63
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   3.83
  LONGEST FLOWPATH FROM NODE    918.00 TO NODE    946.00 =     602.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    946.00 TO NODE    946.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.83
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     3.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.63

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       58.30     6.56        2.653        21.80
     2        9.63     3.83        3.162         3.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       58.55     3.83       3.162
     2       66.38     6.56       2.653

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      66.38   Tc(MIN.) =    6.56
  TOTAL AREA(ACRES) =       25.3
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    946.00 =    1944.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    946.00 TO NODE    947.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    52.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  32.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.21
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      66.38
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   6.67
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    947.00 =    1996.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    947.00 TO NODE    947.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.67
  RAINFALL INTENSITY(INCH/HR) =   2.63
  TOTAL STREAM AREA(ACRES) =    25.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     66.38

****************************************************************************
  FLOW PROCESS FROM NODE    912.00 TO NODE    913.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   381.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    514.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.885
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    65.75
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.43
  TOTAL AREA(ACRES) =      2.70   TOTAL RUNOFF(CFS) =      7.43

****************************************************************************
  FLOW PROCESS FROM NODE    913.00 TO NODE    947.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.88
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.43
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   3.24
  LONGEST FLOWPATH FROM NODE    912.00 TO NODE    947.00 =     486.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    947.00 TO NODE    947.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.24
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =      2.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.43

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       66.38     6.67        2.626        25.30
      2        7.43     3.24        3.162         2.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       62.56     3.24       3.162
      2       72.55     6.67       2.626

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      72.55   Tc(MIN.) =    6.67
  TOTAL AREA(ACRES) =      28.0
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    947.00 =    1996.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    947.00 TO NODE    948.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   212.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.50
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       72.55
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =   7.08
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    948.00 =    2208.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    948.00 TO NODE    948.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.08
  RAINFALL INTENSITY(INCH/HR) =   2.53
  TOTAL STREAM AREA(ACRES) =    28.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     72.55

****************************************************************************
  FLOW PROCESS FROM NODE    920.00 TO NODE    921.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   295.00
  UPSTREAM ELEVATION(FEET) =    516.00
  DOWNSTREAM ELEVATION(FEET) =    512.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.982
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.56
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      3.85
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      3.85

****************************************************************************
  FLOW PROCESS FROM NODE    921.00 TO NODE    948.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.16
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.85
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =   3.40
  LONGEST FLOWPATH FROM NODE    920.00 TO NODE    948.00 =     400.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    948.00 TO NODE    948.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.40
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.85

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       72.55     7.08        2.526        28.00
      2        3.85     3.40        3.162         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       61.80     3.40       3.162
      2       75.62     7.08       2.526

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      75.62   Tc(MIN.) =    7.08
  TOTAL AREA(ACRES) =      29.4
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    948.00 =    2208.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    948.00 TO NODE    949.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    31.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  33.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.55
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      75.62
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   7.14
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    949.00 =    2239.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    949.00 TO NODE    949.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.14
  RAINFALL INTENSITY(INCH/HR) =   2.51
  TOTAL STREAM AREA(ACRES) =    29.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     75.62

****************************************************************************
  FLOW PROCESS FROM NODE    922.00 TO NODE    923.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   469.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    509.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.491
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    52.79
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      9.63
  TOTAL AREA(ACRES) =      3.50   TOTAL RUNOFF(CFS) =      9.63

****************************************************************************
  FLOW PROCESS FROM NODE    923.00 TO NODE    949.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    88.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.12
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      9.63
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   3.78
  LONGEST FLOWPATH FROM NODE    922.00 TO NODE    949.00 =     557.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    949.00 TO NODE    949.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.78
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     3.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.63

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       75.62     7.14        2.512         29.40
     2        9.63     3.78        3.162          3.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       69.71     3.78        3.162
     2       83.27     7.14        2.512

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      83.27   Tc(MIN.) =    7.14
  TOTAL AREA(ACRES) =       32.9
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    949.00 =    2239.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    949.00 TO NODE    950.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  36.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.60
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      83.27
  PIPE TRAVEL TIME(MIN.) =   0.46    Tc(MIN.) =   7.61
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    950.00 =    2479.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    950.00 TO NODE    950.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.61
  RAINFALL INTENSITY(INCH/HR) =   2.41
  TOTAL STREAM AREA(ACRES) =    32.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     83.27

****************************************************************************
  FLOW PROCESS FROM NODE    924.00 TO NODE    925.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   336.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    508.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.073
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.90
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.50
  TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =      5.50

****************************************************************************
  FLOW PROCESS FROM NODE    925.00 TO NODE    950.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.51
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =        5.50
  PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =   3.46
  LONGEST FLOWPATH FROM NODE    924.00 TO NODE    950.00 =     441.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    950.00 TO NODE    950.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.46
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.50

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       83.27     7.61        2.412         32.90
     2        5.50     3.46        3.162          2.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       69.02     3.46        3.162
     2       87.47     7.61        2.412

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      87.47   Tc(MIN.) =    7.61
  TOTAL AREA(ACRES) =       34.9
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    950.00 =    2479.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    950.00 TO NODE    951.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    56.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  35.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.89
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      87.47
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   7.71
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    951.00 =    2535.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    951.00 TO NODE    951.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.71
  RAINFALL INTENSITY(INCH/HR) =   2.39
  TOTAL STREAM AREA(ACRES) =    34.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     87.47

****************************************************************************
  FLOW PROCESS FROM NODE    926.00 TO NODE    927.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   516.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    505.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.564
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.63
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      9.63
  TOTAL AREA(ACRES) =      3.50   TOTAL RUNOFF(CFS) =      9.63

****************************************************************************
  FLOW PROCESS FROM NODE    927.00 TO NODE    951.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   103.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.12
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.63
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   3.90
  LONGEST FLOWPATH FROM NODE    926.00 TO NODE    951.00 =     619.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    951.00 TO NODE    951.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.90
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     3.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.63

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       87.47     7.71        2.391         34.90
     2        9.63     3.90        3.162          3.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       75.76     3.90        3.162
     2       94.75     7.71        2.391

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      94.75   Tc(MIN.) =    7.71
  TOTAL AREA(ACRES) =       38.4
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    951.00 =    2535.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    951.00 TO NODE    952.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   310.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  37.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.97
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       94.75
  PIPE TRAVEL TIME(MIN.) =   0.58    Tc(MIN.) =   8.29
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    952.00 =    2845.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    952.00 TO NODE    952.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.29
  RAINFALL INTENSITY(INCH/HR) =   2.28
  TOTAL STREAM AREA(ACRES) =    38.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     94.75

****************************************************************************
  FLOW PROCESS FROM NODE    930.00 TO NODE    931.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   700.00
  UPSTREAM ELEVATION(FEET) =   506.00
  DOWNSTREAM ELEVATION(FEET) =    502.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.578
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.43
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.162
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.10
  TOTAL AREA(ACRES) =      4.40   TOTAL RUNOFF(CFS) =     12.10

****************************************************************************
  FLOW PROCESS FROM NODE    931.00 TO NODE    952.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.48
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       12.10
  PIPE TRAVEL TIME(MIN.) =   0.46    Tc(MIN.) =   4.03
  LONGEST FLOWPATH FROM NODE    930.00 TO NODE    952.00 =     850.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    952.00 TO NODE    952.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.03
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =     4.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.10

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
      1       94.75     8.29        2.282        38.40
      2       12.10     4.03        3.162         4.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
      1       80.49     4.03        3.162
      2      103.48     8.29        2.282

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     103.48   Tc(MIN.) =    8.29
  TOTAL AREA(ACRES) =       42.8
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    952.00 =    2845.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    952.00 TO NODE    953.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    42.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.27
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     103.48
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   8.36
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    953.00 =    2887.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    953.00 TO NODE    953.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
      1      103.48     8.36        2.269       42.80
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    953.00 =    2887.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
      1       53.62     7.46        2.442       27.90
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    953.00 =    3246.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF      Tc       INTENSITY
  NUMBER     (CFS)    (MIN.)    (INCH/HOUR)
      1     145.93     7.46        2.442
      2     153.29     8.36        2.269

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     153.29   Tc(MIN.) =    8.36
  TOTAL AREA(ACRES) =       70.7

****************************************************************************
  FLOW PROCESS FROM NODE    953.00 TO NODE    999.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    486.00  DOWNSTREAM(FEET) =    484.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   165.00   CHANNEL SLOPE =  0.0121
  CHANNEL FLOW THRU SUBAREA(CFS) =     153.29
  FLOW VELOCITY(FEET/SEC) =   5.95 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
```

```
  TRAVEL TIME(MIN.) =   0.46   Tc(MIN.) =   8.83
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    999.00 =    3411.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    999.00 TO NODE    999.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.191
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8522
  SUBAREA AREA(ACRES) =    2.50   SUBAREA RUNOFF(CFS) =    1.92
  TOTAL AREA(ACRES) =       73.2   TOTAL RUNOFF(CFS) =     153.29
  TC(MIN.) =   8.83
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE    999.00 TO NODE   1013.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  45.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.07
  ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     153.29
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   9.03
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1013.00 =    3531.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1010.00 TO NODE   1010.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  34.20   RAIN INTENSITY(INCH/HOUR) =  0.91
  TOTAL AREA(ACRES) =   625.90   TOTAL RUNOFF(CFS) =    514.50

****************************************************************************
  FLOW PROCESS FROM NODE   1010.00 TO NODE   1011.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    528.00  DOWNSTREAM(FEET) =    524.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   180.00   CHANNEL SLOPE =  0.0222
  CHANNEL FLOW THRU SUBAREA(CFS) =     514.50
  FLOW VELOCITY(FEET/SEC) =  11.78 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.25   Tc(MIN.) =  34.45
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1011.00 =    3711.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1011.00 TO NODE   1011.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  0.910
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8976
  SUBAREA AREA(ACRES) =    1.20   SUBAREA RUNOFF(CFS) =    0.38
  TOTAL AREA(ACRES) =      627.1   TOTAL RUNOFF(CFS) =     514.50
  TC(MIN.) =  34.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE   1011.00 TO NODE   1012.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   167.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  90.0 INCH PIPE IS  71.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.65
  ESTIMATED PIPE DIAMETER(INCH) =  90.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     514.50
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  34.66
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1012.00 =    3878.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1012.00 TO NODE   1013.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    518.00  DOWNSTREAM(FEET) =    486.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3050.00   CHANNEL SLOPE =  0.0105
  CHANNEL FLOW THRU SUBAREA(CFS) =     514.50
  FLOW VELOCITY(FEET/SEC) =   8.09 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   6.28   Tc(MIN.) =  40.94
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1013.00 =    6928.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1013.00 TO NODE   1013.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  0.815
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8880
  SUBAREA AREA(ACRES) =   11.20   SUBAREA RUNOFF(CFS) =    3.19
  TOTAL AREA(ACRES) =      638.3   TOTAL RUNOFF(CFS) =     514.50
  TC(MIN.) =  40.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =        0.0  TC(MIN.) =      5.00
  PEAK FLOW RATE(CFS)    =       1.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                          2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2006 Advanced Engineering Software (aes)
             Ver. 2.0 Release Date: 06/01/2005  License ID 1499

                          Analysis prepared by:

                      Kimley-Horn & Associates, Inc
                          401 B Street Suite 600
                           San Diego, CA 92101
                               619-234-9411

 ************************* DESCRIPTION OF STUDY *************************
* otay business park proposed condition                                 *
* 5 year storm; P = 1.6"                                                *
* 2010-04-12 AG                                                         *
 ************************************************************************

  FILE NAME: 5.DAT
  TIME/DATE OF STUDY: 17:06 04/12/2010
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) =   5.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   1.600
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150
  2   39.0     34.0    0.020/0.020/ ---    0.50    1.50 0.0313 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    657.00
  DOWNSTREAM ELEVATION(FEET) =    640.00
  ELEVATION DIFFERENCE(FEET) =     17.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.431
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.0, IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.16
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.16

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    640.00  DOWNSTREAM(FEET) =    540.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3300.00   CHANNEL SLOPE =  0.0303
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.16
  FLOW VELOCITY(FEET/SEC) =   2.61 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  21.06   Tc(MIN.) =  25.49
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    3350.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.474
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  101.30   SUBAREA RUNOFF(CFS) =   52.27
  TOTAL AREA(ACRES) =      101.4   TOTAL RUNOFF(CFS) =      52.32
  TC(MIN.) =  25.49

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  29.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.78
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      52.32
  PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =  26.03
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    203.00 =    3600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  26.03
  RAINFALL INTENSITY(INCH/HR) =   1.45
  TOTAL STREAM AREA(ACRES) =   101.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     52.32

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    601.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    638.00
  DOWNSTREAM ELEVATION(FEET) =    632.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.431
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.0, IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.16
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.16
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     601.00 TO NODE     602.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.00  DOWNSTREAM(FEET) =    531.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3766.00   CHANNEL SLOPE =  0.0268
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =        0.16
  FLOW VELOCITY(FEET/SEC) =   2.46 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.55   Tc(MIN.) =  29.98
  LONGEST FLOWPATH FROM NODE     600.00 TO NODE     602.00 =    3816.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     602.00 TO NODE     602.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.328
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  102.19   SUBAREA RUNOFF(CFS) =   47.49
  TOTAL AREA(ACRES) =      102.3   TOTAL RUNOFF(CFS) =      47.54
  TC(MIN.) =  29.98

****************************************************************************
  FLOW PROCESS FROM NODE     602.00 TO NODE     203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   440.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.68
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      47.54
  PIPE TRAVEL TIME(MIN.) =   0.96    Tc(MIN.) =  30.94
  LONGEST FLOWPATH FROM NODE     600.00 TO NODE     203.00 =    4256.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     203.00 TO NODE     203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  30.94
  RAINFALL INTENSITY(INCH/HR) =   1.30
  TOTAL STREAM AREA(ACRES) =   102.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     47.54

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1        52.32    26.03        1.454        101.41
     2        47.54    30.94        1.301        102.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
     1        92.32    26.03        1.454
     2        94.35    30.94        1.301
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      94.35   Tc(MIN.) =   30.94
  TOTAL AREA(ACRES) =      203.7
  LONGEST FLOWPATH FROM NODE     600.00 TO NODE     203.00 =    4256.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     203.00 TO NODE     204.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =  1200.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  37.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.97
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      94.35
  PIPE TRAVEL TIME(MIN.) =   2.23    Tc(MIN.) =  33.17
  LONGEST FLOWPATH FROM NODE     600.00 TO NODE     204.00 =    5456.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     204.00 TO NODE     204.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  33.17
  RAINFALL INTENSITY(INCH/HR) =   1.24
  TOTAL STREAM AREA(ACRES) =   203.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     94.35

****************************************************************************
  FLOW PROCESS FROM NODE     400.00 TO NODE     401.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     3.00
  UPSTREAM ELEVATION(FEET) =    555.00
  DOWNSTREAM ELEVATION(FEET) =    552.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.085
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.16
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.16

****************************************************************************
  FLOW PROCESS FROM NODE     401.00 TO NODE     402.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    552.00  DOWNSTREAM(FEET) =    519.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1517.00   CHANNEL SLOPE =  0.0218
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =        0.16
  FLOW VELOCITY(FEET/SEC) =   2.21 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  11.43   Tc(MIN.) =  12.51
  LONGEST FLOWPATH FROM NODE     400.00 TO NODE     402.00 =    1520.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     402.00 TO NODE     402.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.333
 *USER SPECIFIED(SUBAREA):
 DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =  97
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
 SUBAREA AREA(ACRES) =   21.69   SUBAREA RUNOFF(CFS) =   17.71
 TOTAL AREA(ACRES) =       21.8   TOTAL RUNOFF(CFS) =      17.80
 TC(MIN.) =  12.51

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 FLOW PROCESS FROM NODE    402.00 TO NODE    204.00 IS CODE =  31
----------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
 REPRESENTATIVE SLOPE =  0.0050
 FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.01
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      17.80
 PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =  12.65
 LONGEST FLOWPATH FROM NODE    400.00 TO NODE    204.00 =    1570.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 FLOW PROCESS FROM NODE    204.00 TO NODE    204.00 IS CODE =   1
----------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
======================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  12.65
 RAINFALL INTENSITY(INCH/HR) =   2.32
 TOTAL STREAM AREA(ACRES) =    21.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.80

 ** CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       94.35    33.17        1.244       203.71
     2       17.80    12.65        2.316        21.80

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       68.47    12.65       2.316
     2      103.90    33.17       1.244

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     103.90   Tc(MIN.) =   33.17
 TOTAL AREA(ACRES) =      225.5
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    204.00 =    5456.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 FLOW PROCESS FROM NODE    204.00 TO NODE    204.50 IS CODE =  31
----------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
 REPRESENTATIVE SLOPE =  0.0050
 FLOW LENGTH(FEET) =  1370.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.27
 ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     103.90
 PIPE TRAVEL TIME(MIN.) =   2.46    Tc(MIN.) =  35.63
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    204.50 =    6826.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 FLOW PROCESS FROM NODE    204.50 TO NODE    204.50 IS CODE =   1
----------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  35.63
 RAINFALL INTENSITY(INCH/HR) =   1.19
 TOTAL STREAM AREA(ACRES) =   225.51
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    103.90

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 FLOW PROCESS FROM NODE   1030.00 TO NODE   1031.00 IS CODE =  21
----------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    20.00
 UPSTREAM ELEVATION(FEET) =    524.00
 DOWNSTREAM ELEVATION(FEET) =    523.60
 ELEVATION DIFFERENCE(FEET) =      0.40
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.470
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.37
 TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.37

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 FLOW PROCESS FROM NODE   1031.00 TO NODE   1032.00 IS CODE =  62
----------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
======================================================================
 REPRESENTATIVE SLOPE =  0.0050
 STREET LENGTH(FEET) =  1300.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 39.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.50
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.31
   HALFSTREET FLOOD WIDTH(FEET) =    9.30
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.52
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.48
 STREET FLOW TRAVEL TIME(MIN.) =  14.23   Tc(MIN.) =  15.70
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.015
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
 SUBAREA AREA(ACRES) =    1.20     SUBAREA RUNOFF(CFS) =    2.10
 TOTAL AREA(ACRES) =        1.3       PEAK FLOW RATE(CFS) =       2.28

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.13
 FLOW VELOCITY(FEET/SEC.) =  1.68   DEPTH*VELOCITY(FT*FT/SEC.) =   0.59
 LONGEST FLOWPATH FROM NODE   1030.00 TO NODE   1032.00 =    1320.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 FLOW PROCESS FROM NODE   1032.00 TO NODE    204.50 IS CODE =  31
----------------------------------------------------------------------
```

```
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   3.63
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =        2.28
PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =  15.93
LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    204.50 =    1370.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    204.50 TO NODE    204.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  15.93
RAINFALL INTENSITY(INCH/HR) =   2.00
TOTAL STREAM AREA(ACRES) =      1.30
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.28

****************************************************************************
FLOW PROCESS FROM NODE    280.00 TO NODE    281.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    20.00
UPSTREAM ELEVATION(FEET) =    524.00
DOWNSTREAM ELEVATION(FEET) =    523.60
ELEVATION DIFFERENCE(FEET) =      0.40
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.470
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.37
TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.37

****************************************************************************
FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =  1300.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.89
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.27
  HALFSTREET FLOOD WIDTH(FEET) =    7.32
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.36
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.37
STREET FLOW TRAVEL TIME(MIN.) =  15.91   Tc(MIN.) =  17.38
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.887
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    0.60      SUBAREA RUNOFF(CFS) =    0.99
TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       1.15

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   8.27
FLOW VELOCITY(FEET/SEC.) =  1.43   DEPTH*VELOCITY(FT*FT/SEC.) =   0.42
LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =    1320.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    282.00 TO NODE    204.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   2.99
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =        1.15
PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =  17.66
LONGEST FLOWPATH FROM NODE    280.00 TO NODE    204.50 =    1370.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    204.50 TO NODE    204.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =  17.66
RAINFALL INTENSITY(INCH/HR) =   1.87
TOTAL STREAM AREA(ACRES) =      0.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.15

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1      103.90    35.63       1.188        225.51
    2        2.28    15.93       1.996          1.30
    3        1.15    17.66       1.868          0.70

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       65.14    15.93       1.996
    2       69.36    17.66       1.868
    3      105.99    35.63       1.188

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     105.99   Tc(MIN.) =   35.63
TOTAL AREA(ACRES) =      227.5
LONGEST FLOWPATH FROM NODE    600.00 TO NODE    204.50 =    6826.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    204.50 TO NODE    205.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    22.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  51.0 INCH PIPE IS  38.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.30
ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =     105.99
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =  35.67
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    205.00 =    6848.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    121.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    586.00
  DOWNSTREAM ELEVATION(FEET) =    583.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.254
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.083
  SUBAREA RUNOFF(CFS) =      0.16
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.16

****************************************************************************
  FLOW PROCESS FROM NODE    121.00 TO NODE    122.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    583.00  DOWNSTREAM(FEET) =    551.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   600.00   CHANNEL SLOPE =  0.0533
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.16
  FLOW VELOCITY(FEET/SEC) =   3.46 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.89   Tc(MIN.) =   8.14
  LONGEST FLOWPATH FROM NODE    120.00 TO NODE    122.00 =     650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.078
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =     5.80   SUBAREA RUNOFF(CFS) =     6.25
  TOTAL AREA(ACRES) =        5.9   TOTAL RUNOFF(CFS) =       6.37
  TC(MIN.) =   8.14

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.14
  RAINFALL INTENSITY(INCH/HR) =   3.08
  TOTAL STREAM AREA(ACRES) =      5.91
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.37

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   5.00   RAIN INTENSITY(INCH/HOUR) =  4.22
  TOTAL AREA(ACRES) =    59.90   TOTAL RUNOFF(CFS) =     52.30

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.00
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =    59.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     52.30

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        6.37     8.14        3.078         5.91
     2       52.30     5.00        4.216        59.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       56.21     5.00       4.216
     2       44.56     8.14       3.078

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      56.21   Tc(MIN.) =    5.00
  TOTAL AREA(ACRES) =       65.8
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    122.00 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    123.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  31.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.82
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      56.21
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =   5.35
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    123.00 =    1535.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    123.00 TO NODE    117.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    550.00  DOWNSTREAM(FEET) =    520.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1210.00   CHANNEL SLOPE =  0.0248
  CHANNEL FLOW THRU SUBAREA(CFS) =      56.21
  FLOW VELOCITY(FEET/SEC) =   6.30 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.20   Tc(MIN.) =   8.55
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    117.00 =    2745.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.982
 *USER SPECIFIED(SUBAREA):
 DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =  97
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.2433
 SUBAREA AREA(ACRES) =   14.40   SUBAREA RUNOFF(CFS) =   15.03
 TOTAL AREA(ACRES) =       80.2   TOTAL RUNOFF(CFS) =      58.20
 TC(MIN.) =   8.55

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.55
 RAINFALL INTENSITY(INCH/HR) =   2.98
 TOTAL STREAM AREA(ACRES) =    80.21
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     58.20

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   7
----------------------------------------------------------------------------
 >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN) =   5.00   RAIN INTENSITY(INCH/HOUR) =  4.22
 TOTAL AREA(ACRES) =   206.40   TOTAL RUNOFF(CFS) =    180.40

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.00
 RAINFALL INTENSITY(INCH/HR) =   4.22
 TOTAL STREAM AREA(ACRES) =   206.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    180.40

 ** CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       58.20     8.55        2.982        80.21
     2      180.40     5.00        4.216       206.40

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      221.57     5.00       4.216
     2      185.83     8.55       2.982

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     221.57   Tc(MIN.) =    5.00
 TOTAL AREA(ACRES) =      286.6
 LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    117.00 =    2745.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    118.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  66.0 INCH PIPE IS  51.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  11.09
 ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     221.57
 PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   5.26
 LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    118.00 =    2915.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
 >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    325.00 TO NODE    326.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
 UPSTREAM ELEVATION(FEET) =    618.00
 DOWNSTREAM ELEVATION(FEET) =    617.22
 ELEVATION DIFFERENCE(FEET) =      0.78
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.40
 TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
 FLOW PROCESS FROM NODE    326.00 TO NODE    327.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 STREET LENGTH(FEET) =  1580.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 39.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.86
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.33
   HALFSTREET FLOOD WIDTH(FEET) =   10.18
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.61
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.53
 STREET FLOW TRAVEL TIME(MIN.) =  16.36   Tc(MIN.) =  18.41
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.819
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
 SUBAREA AREA(ACRES) =    1.69      SUBAREA RUNOFF(CFS) =    2.67
 TOTAL AREA(ACRES) =        1.8        PEAK FLOW RATE(CFS) =       2.85

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.23
 FLOW VELOCITY(FEET/SEC.) =  1.76   DEPTH*VELOCITY(FT*FT/SEC.) =   0.65
 LONGEST FLOWPATH FROM NODE    325.00 TO NODE    327.00 =    1619.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    327.00 TO NODE    310.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.85
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        2.85
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =  18.69
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    310.00 =    1684.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.69
  RAINFALL INTENSITY(INCH/HR) =   1.80
  TOTAL STREAM AREA(ACRES) =      1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.85

****************************************************************************
  FLOW PROCESS FROM NODE    330.00 TO NODE    331.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    618.00
  DOWNSTREAM ELEVATION(FEET) =    617.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
  FLOW PROCESS FROM NODE    331.00 TO NODE    332.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1580.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.86
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   10.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.61
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.53
  STREET FLOW TRAVEL TIME(MIN.) =  16.36   Tc(MIN.) =  18.41
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.819
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.69      SUBAREA RUNOFF(CFS) =    2.67
  TOTAL AREA(ACRES) =        1.8        PEAK FLOW RATE(CFS) =       2.85

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.23
  FLOW VELOCITY(FEET/SEC.) =  1.76   DEPTH*VELOCITY(FT*FT/SEC.) =   0.65
  LONGEST FLOWPATH FROM NODE    330.00 TO NODE    332.00 =    1619.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    332.00 TO NODE    310.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.85
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        2.85
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =  18.50
  LONGEST FLOWPATH FROM NODE    330.00 TO NODE    310.00 =    1639.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.50
  RAINFALL INTENSITY(INCH/HR) =   1.81
  TOTAL STREAM AREA(ACRES) =      1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.85

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        2.85    18.69        1.801         1.80
     2        2.85    18.50        1.813         1.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        5.67    18.50        1.813
     2        5.68    18.69        1.801

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.68   Tc(MIN.) =   18.69
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    310.00 =    1684.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    311.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   920.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.54
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.68
  PIPE TRAVEL TIME(MIN.) =   3.38    Tc(MIN.) =  22.07
```

```
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    311.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  22.07
  RAINFALL INTENSITY(INCH/HR) =   1.62
  TOTAL STREAM AREA(ACRES) =      3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.68

****************************************************************************
  FLOW PROCESS FROM NODE    340.00 TO NODE    341.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    554.00
  DOWNSTREAM ELEVATION(FEET) =    553.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
  FLOW PROCESS FROM NODE    341.00 TO NODE    342.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   900.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.37
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.93
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.50
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.46
  STREET FLOW TRAVEL TIME(MIN.) =  10.02   Tc(MIN.) =  12.07
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.388
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.89      SUBAREA RUNOFF(CFS) =    1.85
  TOTAL AREA(ACRES) =        1.0        PEAK FLOW RATE(CFS) =       2.08

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.69
  FLOW VELOCITY(FEET/SEC.) =  1.65   DEPTH*VELOCITY(FT*FT/SEC.) =   0.56
  LONGEST FLOWPATH FROM NODE    340.00 TO NODE    342.00 =     939.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    342.00 TO NODE    311.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.54
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.08
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =  12.35
  LONGEST FLOWPATH FROM NODE    340.00 TO NODE    311.00 =     999.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.35
  RAINFALL INTENSITY(INCH/HR) =   2.35
  TOTAL STREAM AREA(ACRES) =      1.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.08

****************************************************************************
  FLOW PROCESS FROM NODE    350.00 TO NODE    351.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    554.00
  DOWNSTREAM ELEVATION(FEET) =    553.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
  FLOW PROCESS FROM NODE    351.00 TO NODE    352.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   900.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.49
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.30
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.52
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.47
  STREET FLOW TRAVEL TIME(MIN.) =   9.87   Tc(MIN.) =  11.92
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.407
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
```

```
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    0.99      SUBAREA RUNOFF(CFS) =    2.07
TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       2.30

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.20
FLOW VELOCITY(FEET/SEC.) =  1.68   DEPTH*VELOCITY(FT*FT/SEC.) =   0.59
LONGEST FLOWPATH FROM NODE    350.00 TO NODE    352.00 =     939.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    352.00 TO NODE    311.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   3.64
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       2.30
PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =  12.01
LONGEST FLOWPATH FROM NODE    350.00 TO NODE    311.00 =     959.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    311.00 TO NODE    311.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =  12.01
RAINFALL INTENSITY(INCH/HR) =   2.40
TOTAL STREAM AREA(ACRES) =     1.10
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.30

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1        5.68    22.07       1.618         3.60
    2        2.08    12.35       2.352         1.00
    3        2.30    12.01       2.396         1.10

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1        8.16    12.01       2.396
    2        8.24    12.35       2.352
    3        8.66    22.07       1.618

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =       8.66   Tc(MIN.) =   22.07
TOTAL AREA(ACRES) =        5.7
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    311.00 =    2604.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.04
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       8.66
PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =  22.34
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    312.00 =    2684.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    312.00 TO NODE    312.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    360.00 TO NODE    361.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    560.00
DOWNSTREAM ELEVATION(FEET) =    559.20
ELEVATION DIFFERENCE(FEET) =      0.80
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.40
TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
FLOW PROCESS FROM NODE    361.00 TO NODE    362.00 IS CODE =  61
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =  1130.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.70
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.32
  HALFSTREET FLOOD WIDTH(FEET) =    9.81
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.57
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.51
STREET FLOW TRAVEL TIME(MIN.) =  12.01   Tc(MIN.) =  14.04
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.166
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    2.43
TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       2.64

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.79
FLOW VELOCITY(FEET/SEC.) =  1.75   DEPTH*VELOCITY(FT*FT/SEC.) =   0.63
LONGEST FLOWPATH FROM NODE    360.00 TO NODE    362.00 =    1169.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    362.00 TO NODE    363.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.77
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        2.64
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =  14.37
  LONGEST FLOWPATH FROM NODE    360.00 TO NODE    363.00 =    1244.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    363.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.37
  RAINFALL INTENSITY(INCH/HR) =   2.13
  TOTAL STREAM AREA(ACRES) =      1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       2.64

****************************************************************************
  FLOW PROCESS FROM NODE    370.00 TO NODE    371.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    34.00
  UPSTREAM ELEVATION(FEET) =    560.00
  DOWNSTREAM ELEVATION(FEET) =    559.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.815
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
  FLOW PROCESS FROM NODE    371.00 TO NODE    372.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1220.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.66
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.55
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.50
  STREET FLOW TRAVEL TIME(MIN.) =  13.10   Tc(MIN.) =  14.92
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.083
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    2.34
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       2.54

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.64
  FLOW VELOCITY(FEET/SEC.) =  1.72   DEPTH*VELOCITY(FT*FT/SEC.) =   0.62
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    372.00 =    1254.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    372.00 TO NODE    363.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.74
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        2.54
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =  15.03
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    363.00 =    1279.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    363.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.03
  RAINFALL INTENSITY(INCH/HR) =   2.07
  TOTAL STREAM AREA(ACRES) =      1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       2.54

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.64    14.37        2.133         1.40
      2        2.54    15.03        2.073         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1        5.06    14.37       2.133
      2        5.10    15.03       2.073

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.10   Tc(MIN.) =   15.03
  TOTAL AREA(ACRES) =        2.8
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    363.00 =    1279.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    312.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.44
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.10
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =  15.48
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    312.00 =    1399.00 FEET.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    312.00 TO NODE    312.00 IS CODE =  11
--------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
====================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        5.10    15.48       2.034       2.80
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    312.00 =    1399.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        8.66    22.34       1.605       5.70
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    312.00 =    2684.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      11.10      15.48       2.034
     2      12.69      22.34       1.605

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      12.69   Tc(MIN.) =   22.34
  TOTAL AREA(ACRES) =        8.5

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
--------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
====================================================================

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    312.00 TO NODE    313.00 IS CODE =  31
--------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
====================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   354.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.53
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.69
  PIPE TRAVEL TIME(MIN.) =   1.07    Tc(MIN.) =  23.40
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    313.00 =    3038.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =   1
--------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
====================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.40
  RAINFALL INTENSITY(INCH/HR) =   1.56
  TOTAL STREAM AREA(ACRES) =      8.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.69

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    500.00 TO NODE    501.00 IS CODE =  21
--------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
====================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
  UPSTREAM ELEVATION(FEET) =    546.00
  DOWNSTREAM ELEVATION(FEET) =    540.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.818
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.65
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.97
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      6.97

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    501.00 TO NODE    313.00 IS CODE =  31
--------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
====================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.97
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   2.96
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    313.00 =     380.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =   1
--------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
====================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.96
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.97

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       12.69    23.40        1.558          8.50
     2        6.97     2.96        4.216          1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        8.57     2.96        4.216
     2       15.26    23.40        1.558

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      15.26   Tc(MIN.) =   23.40
  TOTAL AREA(ACRES) =       10.4
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    313.00 =    3038.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    313.00 TO NODE    314.00 IS CODE =  31
--------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
====================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  19.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.65
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =       15.26
  PIPE TRAVEL TIME(MIN.) =   0.88    Tc(MIN.) =  24.29
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    314.00 =    3338.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    314.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  24.29
  RAINFALL INTENSITY(INCH/HR) =   1.52
  TOTAL STREAM AREA(ACRES) =    10.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.26

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    511.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   370.00
  UPSTREAM ELEVATION(FEET) =    540.00
  DOWNSTREAM ELEVATION(FEET) =    534.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.868
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.22
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.97
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      6.97

****************************************************************************
  FLOW PROCESS FROM NODE    511.00 TO NODE    314.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        6.97
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   3.01
  LONGEST FLOWPATH FROM NODE    510.00 TO NODE    314.00 =     410.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    314.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.01
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.97

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       15.26    24.29        1.521        10.40
     2        6.97     3.01        4.216         1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       12.47     3.01        4.216
     2       17.78    24.29        1.521

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      17.78   Tc(MIN.) =   24.29
  TOTAL AREA(ACRES) =       12.3
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    314.00 =    3338.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    315.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.01
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.78
  PIPE TRAVEL TIME(MIN.) =   0.83    Tc(MIN.) =  25.12
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    315.00 =    3638.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    315.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.12
  RAINFALL INTENSITY(INCH/HR) =   1.49
  TOTAL STREAM AREA(ACRES) =    12.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.78

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    521.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   365.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.859
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.44
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.97
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      6.97

****************************************************************************
  FLOW PROCESS FROM NODE    521.00 TO NODE    315.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
```

```
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =          6.97
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   3.00
  LONGEST FLOWPATH FROM NODE    520.00 TO NODE    315.00 =     405.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    315.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.00
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.97

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        17.78    25.12        1.488        12.30
     2         6.97     3.00        4.216         1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        13.24     3.00        4.216
     2        20.24    25.12        1.488

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      20.24   Tc(MIN.) =   25.12
  TOTAL AREA(ACRES) =       14.2
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    315.00 =    3638.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    316.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.11
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      20.24
  PIPE TRAVEL TIME(MIN.) =   0.65    Tc(MIN.) =  25.78
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    316.00 =    3878.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    316.00 TO NODE    316.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.78
  RAINFALL INTENSITY(INCH/HR) =   1.46
  TOTAL STREAM AREA(ACRES) =    14.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.24

****************************************************************************
  FLOW PROCESS FROM NODE    390.00 TO NODE    391.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    544.00
  DOWNSTREAM ELEVATION(FEET) =    543.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
  FLOW PROCESS FROM NODE    391.00 TO NODE    392.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1200.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.65
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.67
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.57
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.50
  STREET FLOW TRAVEL TIME(MIN.) =  12.73   Tc(MIN.) =  14.76
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.097
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    2.35
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       2.55

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.64
  FLOW VELOCITY(FEET/SEC.) =  1.73   DEPTH*VELOCITY(FT*FT/SEC.) =   0.62
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    392.00 =    1239.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    316.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.74
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.55
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =  15.05
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    316.00 =    1304.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    316.00 TO NODE    316.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  15.05
RAINFALL INTENSITY(INCH/HR) =   2.07
TOTAL STREAM AREA(ACRES) =     1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.55

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       20.24    25.78        1.464        14.20
    2        2.55    15.05        2.071         1.40

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       16.86    15.05       2.071
    2       22.04    25.78       1.464

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      22.04   Tc(MIN.) =   25.78
TOTAL AREA(ACRES) =       15.6
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    316.00 =    3878.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    316.00 TO NODE    317.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  30.0 INCH PIPE IS  19.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.37
ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      22.04
PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =  25.89
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    317.00 =    3923.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    317.00 TO NODE    317.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    530.00 TO NODE    531.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   350.00
UPSTREAM ELEVATION(FEET) =    528.00
DOWNSTREAM ELEVATION(FEET) =    522.00
ELEVATION DIFFERENCE(FEET) =      6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.835
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    67.14
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      6.60
TOTAL AREA(ACRES) =      1.80   TOTAL RUNOFF(CFS) =      6.60

****************************************************************************
FLOW PROCESS FROM NODE    531.00 TO NODE    532.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.64
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       6.60
PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   2.91
LONGEST FLOWPATH FROM NODE    530.00 TO NODE    532.00 =     370.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    532.00 TO NODE    532.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   2.91
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =     1.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.60

****************************************************************************
FLOW PROCESS FROM NODE    380.00 TO NODE    381.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    34.00
UPSTREAM ELEVATION(FEET) =    542.00
DOWNSTREAM ELEVATION(FEET) =    541.20
ELEVATION DIFFERENCE(FEET) =      0.80
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.815
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.40
TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
FLOW PROCESS FROM NODE    381.00 TO NODE    532.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =  1200.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.67
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.32
  HALFSTREET FLOOD WIDTH(FEET) =    9.74
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.56
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.50
STREET FLOW TRAVEL TIME(MIN.) =  12.80   Tc(MIN.) =  14.61
```

```
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.111
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =     1.29      SUBAREA RUNOFF(CFS) =     2.37
TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       2.57

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.72
FLOW VELOCITY(FEET/SEC.) =  1.72   DEPTH*VELOCITY(FT*FT/SEC.) =   0.62
LONGEST FLOWPATH FROM NODE    380.00 TO NODE    532.00 =    1234.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    532.00 TO NODE    532.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  14.61
RAINFALL INTENSITY(INCH/HR) =   2.11
TOTAL STREAM AREA(ACRES) =     1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.57

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1        6.60     2.91        4.216         1.80
    2        2.57    14.61        2.111         1.40

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1        7.11     2.91       4.216
    2        5.88    14.61       2.111

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =       7.11   Tc(MIN.) =    2.91
TOTAL AREA(ACRES) =        3.2
LONGEST FLOWPATH FROM NODE    380.00 TO NODE    532.00 =    1234.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    532.00 TO NODE    517.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.67
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       7.11
PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   2.95
LONGEST FLOWPATH FROM NODE    380.00 TO NODE    517.00 =    1246.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    317.00 TO NODE    317.00 IS CODE =  11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
STREAM     RUNOFF     Tc      INTENSITY     AREA
NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
    1        7.11    2.95       4.216        3.20
LONGEST FLOWPATH FROM NODE    380.00 TO NODE    317.00 =    1246.00 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
STREAM     RUNOFF     Tc      INTENSITY     AREA
NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
    1       22.04   25.89       1.459       15.60
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    317.00 =    3923.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF       Tc      INTENSITY
NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
    1       9.62      2.95       4.216
    2      24.50     25.89       1.459

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      24.50   Tc(MIN.) =   25.89
TOTAL AREA(ACRES) =       18.8

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
>>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    317.00 TO NODE    318.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.48
ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      24.50
PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =  26.10
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    318.00 =    4003.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    318.00 TO NODE    318.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    240.00 TO NODE    241.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    540.00
DOWNSTREAM ELEVATION(FEET) =    539.20
ELEVATION DIFFERENCE(FEET) =      0.80
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.40
TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
FLOW PROCESS FROM NODE    241.00 TO NODE    242.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =  1200.00   CURB HEIGHT(INCHES) =  6.0
```

```
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.65
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.32
  HALFSTREET FLOOD WIDTH(FEET) =    9.67
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.57
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.50
STREET FLOW TRAVEL TIME(MIN.) =  12.73   Tc(MIN.) =  14.76
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.097
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    2.35
TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       2.55

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.64
FLOW VELOCITY(FEET/SEC.) =  1.73   DEPTH*VELOCITY(FT*FT/SEC.) =   0.62
LONGEST FLOWPATH FROM NODE    240.00 TO NODE    242.00 =    1239.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    242.00 TO NODE    243.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   3.74
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =        2.55
PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =  14.99
LONGEST FLOWPATH FROM NODE    240.00 TO NODE    243.00 =    1289.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    243.00 TO NODE    243.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  14.99
RAINFALL INTENSITY(INCH/HR) =   2.08
TOTAL STREAM AREA(ACRES) =     1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =       2.55

****************************************************************************
FLOW PROCESS FROM NODE    250.00 TO NODE    251.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    547.50
DOWNSTREAM ELEVATION(FEET) =    547.20
ELEVATION DIFFERENCE(FEET) =       0.30
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.822
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =       0.40
TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.40

****************************************************************************
FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =  2039.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.22
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.35
  HALFSTREET FLOOD WIDTH(FEET) =   10.98
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.67
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.58
STREET FLOW TRAVEL TIME(MIN.) =  20.30   Tc(MIN.) =  23.12
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.570
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    2.40      SUBAREA RUNOFF(CFS) =    3.28
TOTAL AREA(ACRES) =        2.5        PEAK FLOW RATE(CFS) =       3.43

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.18
FLOW VELOCITY(FEET/SEC.) =  1.85   DEPTH*VELOCITY(FT*FT/SEC.) =   0.72
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L = 2039.0 FT WITH ELEVATION-DROP =  10.2 FT, IS    8.8 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    252.00
LONGEST FLOWPATH FROM NODE    250.00 TO NODE    252.00 =    2078.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    252.00 TO NODE    243.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    54.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.04
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =        3.43
PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =  23.35
LONGEST FLOWPATH FROM NODE    250.00 TO NODE    243.00 =    2132.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    243.00 TO NODE    243.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  23.35
RAINFALL INTENSITY(INCH/HR) =   1.56
TOTAL STREAM AREA(ACRES) =     2.51
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.43

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        2.55     14.99        2.077         1.40
     2        3.43     23.35        1.560         2.51

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        4.75     14.99       2.077
     2        5.35     23.35       1.560

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.35   Tc(MIN.) =   23.35
  TOTAL AREA(ACRES) =        3.9
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    243.00 =    2132.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    243.00 TO NODE    318.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   112.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.48
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.35
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =  23.76
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    318.00 =    2244.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    318.00 TO NODE    318.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        5.35     23.76       1.543         3.91
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    318.00 =    2244.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       24.50     26.10       1.452        18.80
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    318.00 =    4003.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       27.66     23.76       1.543
     2       29.54     26.10       1.452

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      29.54   Tc(MIN.) =   26.10
  TOTAL AREA(ACRES) =       22.7

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    318.00 TO NODE    319.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.83
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      29.54
  PIPE TRAVEL TIME(MIN.) =   0.66    Tc(MIN.) =  26.76
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.00 =    4273.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.00 TO NODE    319.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  26.76
  RAINFALL INTENSITY(INCH/HR) =   1.43
  TOTAL STREAM AREA(ACRES) =    22.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.54

****************************************************************************
  FLOW PROCESS FROM NODE    540.00 TO NODE    541.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   345.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.826
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.39
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.23
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =      6.23

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    319.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.61
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.23
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   2.97
  LONGEST FLOWPATH FROM NODE    540.00 TO NODE    319.00 =     385.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.00 TO NODE    319.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```

```
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   2.97
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =     1.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.23

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       29.54    26.76        1.429        22.71
    2        6.23     2.97        4.216         1.70

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1        9.51     2.97       4.216
    2       31.65    26.76       1.429

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      31.65   Tc(MIN.) =   26.76
TOTAL AREA(ACRES) =       24.4
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.00 =    4273.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    319.00 TO NODE    319.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   220.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.91
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      31.65
PIPE TRAVEL TIME(MIN.) =   0.53    Tc(MIN.) =  27.29
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.50 =    4493.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    319.50 TO NODE    319.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  27.29
RAINFALL INTENSITY(INCH/HR) =   1.41
TOTAL STREAM AREA(ACRES) =    24.41
PEAK FLOW RATE(CFS) AT CONFLUENCE =     31.65

****************************************************************************
FLOW PROCESS FROM NODE    550.00 TO NODE    551.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
UPSTREAM ELEVATION(FEET) =    518.00
DOWNSTREAM ELEVATION(FEET) =    512.00
ELEVATION DIFFERENCE(FEET) =      6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.818
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    67.65
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      5.87
TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =      5.87

****************************************************************************
FLOW PROCESS FROM NODE    551.00 TO NODE    319.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.56
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       5.87
PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   2.96
LONGEST FLOWPATH FROM NODE    550.00 TO NODE    319.50 =     380.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    319.50 TO NODE    319.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   2.96
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =     1.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.87

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       31.65    27.29        1.411        24.41
    2        5.87     2.96        4.216         1.60

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       16.46     2.96       4.216
    2       33.61    27.29       1.411

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      33.61   Tc(MIN.) =   27.29
TOTAL AREA(ACRES) =       26.0
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.50 =    4493.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    319.50 TO NODE    320.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   280.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.96
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      33.61
PIPE TRAVEL TIME(MIN.) =   0.67    Tc(MIN.) =  27.96
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    320.00 =    4773.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
```

```
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
------------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE    280.00 TO NODE    281.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

******************************************************************************
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  62
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   700.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.11
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.13
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.41
  STREET FLOW TRAVEL TIME(MIN.) =   8.18   Tc(MIN.) =  10.23
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.656
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.59      SUBAREA RUNOFF(CFS) =    1.36
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       1.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.59
  FLOW VELOCITY(FEET/SEC.) =  1.56   DEPTH*VELOCITY(FT*FT/SEC.) =   0.50
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =     739.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    282.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.23
  RAINFALL INTENSITY(INCH/HR) =   2.66
  TOTAL STREAM AREA(ACRES) =     0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.62

******************************************************************************
  FLOW PROCESS FROM NODE    560.00 TO NODE    561.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   330.00
  UPSTREAM ELEVATION(FEET) =    514.00
  DOWNSTREAM ELEVATION(FEET) =    508.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.801
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    68.18
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.87
  TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =      5.87

******************************************************************************
  FLOW PROCESS FROM NODE    561.00 TO NODE    282.00 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.56
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.87
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   2.89
  LONGEST FLOWPATH FROM NODE    560.00 TO NODE    282.00 =     355.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    282.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.89
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.87

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        1.62    10.23        2.656         0.70
     2        5.87     2.89        4.216         1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        6.33     2.89        4.216
     2        5.31    10.23        2.656

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.33   Tc(MIN.) =    2.89
```

```
  TOTAL AREA(ACRES) =        2.3
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =     739.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    320.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.62
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        6.33
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   2.95
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    320.00 =     754.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1         6.33     2.95       4.216        2.30
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    320.00 =     754.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        33.61    27.96       1.389       26.01
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    320.00 =    4773.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1        9.87      2.95       4.216
     2       35.70     27.96       1.389

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      35.70   Tc(MIN.) =   27.96
  TOTAL AREA(ACRES) =        28.3

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    321.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  26.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.99
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       35.70
  PIPE TRAVEL TIME(MIN.) =   0.71    Tc(MIN.) =  28.67
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    321.00 =    5073.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  28.67
  RAINFALL INTENSITY(INCH/HR) =   1.37
  TOTAL STREAM AREA(ACRES) =    28.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     35.70

****************************************************************************
  FLOW PROCESS FROM NODE    290.00 TO NODE    291.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    507.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.40
  TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.40

****************************************************************************
  FLOW PROCESS FROM NODE    291.00 TO NODE    292.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   420.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.47
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.52
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.47
  STREET FLOW TRAVEL TIME(MIN.) =   4.61   Tc(MIN.) =   6.65
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.508
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     0.69      SUBAREA RUNOFF(CFS) =    2.11
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       2.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.42
  FLOW VELOCITY(FEET/SEC.) =  1.72   DEPTH*VELOCITY(FT*FT/SEC.) =   0.61
  LONGEST FLOWPATH FROM NODE    290.00 TO NODE    292.00 =     459.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    292.00 TO NODE    321.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
```

```
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.70
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        2.44
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   6.76
  LONGEST FLOWPATH FROM NODE    290.00 TO NODE    321.00 =     484.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.76
  RAINFALL INTENSITY(INCH/HR) =   3.47
  TOTAL STREAM AREA(ACRES) =     0.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.44

****************************************************************************
  FLOW PROCESS FROM NODE    410.00 TO NODE    411.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    507.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
  FLOW PROCESS FROM NODE    411.00 TO NODE    412.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   400.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.33
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.49
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.45
  STREET FLOW TRAVEL TIME(MIN.) =   4.47   Tc(MIN.) =   6.51
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.557
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.59      SUBAREA RUNOFF(CFS) =    1.83
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       2.17

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.91
  FLOW VELOCITY(FEET/SEC.) =  1.66   DEPTH*VELOCITY(FT*FT/SEC.) =   0.57
  LONGEST FLOWPATH FROM NODE    410.00 TO NODE    412.00 =     439.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    412.00 TO NODE    321.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.58
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        2.17
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   6.71
  LONGEST FLOWPATH FROM NODE    410.00 TO NODE    321.00 =     483.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.71
  RAINFALL INTENSITY(INCH/HR) =   3.49
  TOTAL STREAM AREA(ACRES) =     0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.17

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       35.70    28.67        1.367        28.31
     2        2.44     6.76        3.470         0.80
     3        2.17     6.71        3.487         0.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       12.95     6.71       3.487
     2       13.02     6.76       3.470
     3       37.51    28.67       1.367

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      37.51   Tc(MIN.) =   28.67
  TOTAL AREA(ACRES) =       29.8
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    321.00 =    5073.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    322.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   350.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  24.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.25
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      37.51
  PIPE TRAVEL TIME(MIN.) =   0.80    Tc(MIN.) =  29.48
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    322.00 =    5423.00 FEET.

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  29.48
  RAINFALL INTENSITY(INCH/HR) =   1.34
  TOTAL STREAM AREA(ACRES) =    29.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     37.51

****************************************************************************
  FLOW PROCESS FROM NODE   1002.00 TO NODE   1003.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   360.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    499.00
  ELEVATION DIFFERENCE(FEET) =      7.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.764
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    69.44
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.97
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      6.97

****************************************************************************
  FLOW PROCESS FROM NODE   1003.00 TO NODE    322.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.97
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   2.82
  LONGEST FLOWPATH FROM NODE   1002.00 TO NODE    322.00 =     375.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    322.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.82
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.97

****************************************************************************
  FLOW PROCESS FROM NODE   1000.00 TO NODE   1001.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   360.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    504.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.600
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.11
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     10.27
  TOTAL AREA(ACRES) =      2.80   TOTAL RUNOFF(CFS) =     10.27

****************************************************************************
  FLOW PROCESS FROM NODE   1001.00 TO NODE    322.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.16
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.27
  PIPE TRAVEL TIME(MIN.) =   0.94    Tc(MIN.) =   4.54
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE    322.00 =     650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    322.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.54
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     2.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       37.51    29.48        1.342        29.81
     2        6.97     2.82        4.216         1.90
     3       10.27     4.54        4.216         2.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       25.29     2.82        4.216
     2       29.18     4.54        4.216
     3       43.00    29.48        1.342

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      43.00   Tc(MIN.) =   29.48
  TOTAL AREA(ACRES) =       34.5
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    322.00 =    5423.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    323.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    58.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.39
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       43.00
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  29.61
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    323.00 =    5481.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    323.00 TO NODE    323.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    641.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   350.00
  UPSTREAM ELEVATION(FEET) =    540.00
  DOWNSTREAM ELEVATION(FEET) =    534.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.835
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.14
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.23
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =      6.23

****************************************************************************
  FLOW PROCESS FROM NODE    641.00 TO NODE    514.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.61
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.23
  PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =   3.21
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    514.00 =     455.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    514.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.21
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.23

****************************************************************************
  FLOW PROCESS FROM NODE    650.00 TO NODE    651.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   195.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    530.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.736
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.51
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      4.77
  TOTAL AREA(ACRES) =      1.30   TOTAL RUNOFF(CFS) =      4.77

****************************************************************************
  FLOW PROCESS FROM NODE    651.00 TO NODE    514.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.38
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.77
  PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =   3.12
  LONGEST FLOWPATH FROM NODE    650.00 TO NODE    514.00 =     295.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    514.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.12
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.77

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        6.23     3.21        4.216         1.70
     2        4.77     3.12        4.216         1.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       10.81     3.12       4.216
     2       11.00     3.21       4.216

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.00   Tc(MIN.) =    3.21
  TOTAL AREA(ACRES) =      3.0
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    514.00 =     455.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   202.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.38
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.00
  PIPE TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =   3.84
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.00 =     657.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.84
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     3.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.00

****************************************************************************
  FLOW PROCESS FROM NODE    660.00 TO NODE    661.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   297.00
  UPSTREAM ELEVATION(FEET) =    532.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.987
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.47
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.50
  TOTAL AREA(ACRES) =      1.50   TOTAL RUNOFF(CFS) =      5.50

****************************************************************************
  FLOW PROCESS FROM NODE    661.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.51
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.50
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   3.30
  LONGEST FLOWPATH FROM NODE    660.00 TO NODE    515.00 =     382.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.30
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.50

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       11.00     3.84        4.216         3.00
     2        5.50     3.30        4.216         1.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       16.50     3.30        4.216
     2       16.50     3.84        4.216

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      16.50   Tc(MIN.) =    3.84
  TOTAL AREA(ACRES) =        4.5
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.00 =     657.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    90.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.93
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.50
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   4.09
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.50 =     747.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.50 TO NODE    515.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.09
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     4.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.50

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    631.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   364.00
  UPSTREAM ELEVATION(FEET) =    536.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.702
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    71.98
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.97
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      6.97

****************************************************************************
  FLOW PROCESS FROM NODE    631.00 TO NODE    515.50 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        6.97
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   2.97
  LONGEST FLOWPATH FROM NODE    630.00 TO NODE    515.50 =     439.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.50 TO NODE    515.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.97
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.97

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       16.50     4.09        4.216         4.50
     2        6.97     2.97        4.216         1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       23.47     2.97       4.216
     2       23.47     4.09       4.216

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      23.47   Tc(MIN.) =    4.09
  TOTAL AREA(ACRES) =          6.4
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.50 =     747.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.50 TO NODE    516.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.44
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      23.47
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   4.40
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    516.00 =     867.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    516.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.40
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     6.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.47

****************************************************************************
  FLOW PROCESS FROM NODE    670.00 TO NODE    671.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   298.00
  UPSTREAM ELEVATION(FEET) =     528.00
  DOWNSTREAM ELEVATION(FEET) =    524.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.989
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.42
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.50
  TOTAL AREA(ACRES) =      1.50   TOTAL RUNOFF(CFS) =      5.50

****************************************************************************
  FLOW PROCESS FROM NODE    671.00 TO NODE    516.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.51
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.50
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =   3.28
  LONGEST FLOWPATH FROM NODE    670.00 TO NODE    516.00 =     378.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    516.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.28
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.50

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       23.47     4.40        4.216         6.40
     2        5.50     3.28        4.216         1.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       28.97     3.28       4.216
     2       28.97     4.40       4.216

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      28.97   Tc(MIN.) =    4.40
  TOTAL AREA(ACRES) =         7.9
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    516.00 =     867.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    517.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   190.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.81
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      28.97
  PIPE TRAVEL TIME(MIN.) =   0.46    Tc(MIN.) =   4.87
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    517.00 =    1057.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    517.00 TO NODE    517.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.87
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     7.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.97

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    621.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   363.00
  UPSTREAM ELEVATION(FEET) =    530.00
  DOWNSTREAM ELEVATION(FEET) =    522.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.700
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    72.04
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.97
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      6.97

****************************************************************************
  FLOW PROCESS FROM NODE    621.00 TO NODE    517.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    77.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.97
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   2.98
  LONGEST FLOWPATH FROM NODE    620.00 TO NODE    517.00 =     440.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    517.00 TO NODE    517.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.98
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.97

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       28.97     4.87        4.216         7.90
     2        6.97     2.98        4.216         1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       35.94     2.98        4.216
     2       35.94     4.87        4.216

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      35.94   Tc(MIN.) =    4.87
  TOTAL AREA(ACRES) =        9.8
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    517.00 =    1057.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    517.00 TO NODE    518.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   145.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  26.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.00
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      35.94
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =   5.21
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    518.00 =    1202.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.21
  RAINFALL INTENSITY(INCH/HR) =   4.10
  TOTAL STREAM AREA(ACRES) =     9.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     35.94

****************************************************************************
  FLOW PROCESS FROM NODE    413.00 TO NODE    414.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    542.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =     24.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.200
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.0, IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.40
```

```
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
  FLOW PROCESS FROM NODE    414.00 TO NODE    415.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1600.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.51
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.57
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.62
  STREET FLOW TRAVEL TIME(MIN.) =  15.47   Tc(MIN.) =  16.68
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.938
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.29      SUBAREA RUNOFF(CFS) =    3.86
  TOTAL AREA(ACRES) =        2.4        PEAK FLOW RATE(CFS) =       4.05

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.06
  FLOW VELOCITY(FEET/SEC.) =  1.93   DEPTH*VELOCITY(FT*FT/SEC.) =   0.79
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1600.0 FT WITH ELEVATION-DROP =   8.0 FT, IS    8.4 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    415.00
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    415.00 =    1639.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    415.00 TO NODE    518.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.21
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.05
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =  16.82
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    518.00 =    1675.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.82
  RAINFALL INTENSITY(INCH/HR) =   1.93
  TOTAL STREAM AREA(ACRES) =      2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.05

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    416.00 TO NODE    417.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    533.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
  FLOW PROCESS FROM NODE    417.00 TO NODE    418.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   975.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.11
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.13
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.42
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.41
  STREET FLOW TRAVEL TIME(MIN.) =  11.44   Tc(MIN.) =  13.49
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.222
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.69      SUBAREA RUNOFF(CFS) =    1.33
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       1.55

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.45
  FLOW VELOCITY(FEET/SEC.) =  1.53   DEPTH*VELOCITY(FT*FT/SEC.) =   0.48
  LONGEST FLOWPATH FROM NODE    416.00 TO NODE    418.00 =    1014.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    418.00 TO NODE    518.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    17.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.26
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.55
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =  13.58
  LONGEST FLOWPATH FROM NODE    416.00 TO NODE    518.00 =    1031.00 FEET.

****************************************************************************
```

```
FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =   1
----------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
======================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =  13.58
RAINFALL INTENSITY(INCH/HR) =   2.21
TOTAL STREAM AREA(ACRES) =      0.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.55

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       35.94     5.21       4.103         9.80
    2        4.05    16.82       1.928         2.40
    3        1.55    13.58       2.213         0.80

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       37.79     5.21       4.103
    2       24.20    13.58       2.213
    3       22.28    16.82       1.928

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      37.79   Tc(MIN.) =    5.21
TOTAL AREA(ACRES) =        13.0
LONGEST FLOWPATH FROM NODE    413.00 TO NODE    518.00 =    1675.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    518.00 TO NODE    519.00 IS CODE =  31
----------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  36.0 INCH PIPE IS  24.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.26
ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      37.79
PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   5.31
LONGEST FLOWPATH FROM NODE    413.00 TO NODE    519.00 =    1715.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    519.00 TO NODE    519.00 IS CODE =   1
----------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   5.31
RAINFALL INTENSITY(INCH/HR) =   4.06
TOTAL STREAM AREA(ACRES) =     13.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =     37.79

****************************************************************************
FLOW PROCESS FROM NODE    680.00 TO NODE    681.00 IS CODE =  21
----------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   390.00
UPSTREAM ELEVATION(FEET) =    524.00
DOWNSTREAM ELEVATION(FEET) =    518.00
ELEVATION DIFFERENCE(FEET) =      6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.900
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    65.38
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      7.34
TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =      7.34

****************************************************************************
FLOW PROCESS FROM NODE    681.00 TO NODE    519.00 IS CODE =  31
----------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.87
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      7.34
PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   3.11
LONGEST FLOWPATH FROM NODE    680.00 TO NODE    519.00 =     452.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    519.00 TO NODE    519.00 IS CODE =   1
----------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.11
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =      2.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.34

****************************************************************************
FLOW PROCESS FROM NODE    610.00 TO NODE    611.00 IS CODE =  21
----------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   316.00
UPSTREAM ELEVATION(FEET) =    524.00
DOWNSTREAM ELEVATION(FEET) =    518.00
ELEVATION DIFFERENCE(FEET) =      6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.777
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    68.99
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      5.87
TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =      5.87

****************************************************************************
FLOW PROCESS FROM NODE    611.00 TO NODE    519.00 IS CODE =  31
----------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.56
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.87
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   3.05
  LONGEST FLOWPATH FROM NODE    610.00 TO NODE    519.00 =     391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    519.00 TO NODE    519.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.05
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.87

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       37.79     5.31       4.057        13.00
      2        7.34     3.11       4.216         2.00
      3        5.87     3.05       4.216         1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       49.43     3.05       4.216
      2       49.57     3.11       4.216
      3       50.50     5.31       4.057

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      50.50   Tc(MIN.) =    5.31
  TOTAL AREA(ACRES) =       16.6
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    519.00 =    1715.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    519.00 TO NODE    525.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  28.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.75
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      50.50
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   5.44
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    525.00 =    1775.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.00 TO NODE    525.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    900.00 TO NODE    900.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    531.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.611
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.37
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.37

****************************************************************************
  FLOW PROCESS FROM NODE    900.50 TO NODE    901.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   270.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 15.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.010
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.010

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.13
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =   15.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.50
  STREET FLOW TRAVEL TIME(MIN.) =   2.86   Tc(MIN.) =   4.47
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.60      SUBAREA RUNOFF(CFS) =    9.54
  TOTAL AREA(ACRES) =        2.7        PEAK FLOW RATE(CFS) =       9.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  15.00
  FLOW VELOCITY(FEET/SEC.) =  2.05   DEPTH*VELOCITY(FT*FT/SEC.) =   0.76
  LONGEST FLOWPATH FROM NODE    900.00 TO NODE    901.00 =     320.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    901.00 TO NODE    936.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   293.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.14
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.90
  PIPE TRAVEL TIME(MIN.) =   0.95    Tc(MIN.) =   5.42
  LONGEST FLOWPATH FROM NODE    900.00 TO NODE    936.00 =     613.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    936.00 TO NODE    936.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.42
  RAINFALL INTENSITY(INCH/HR) =   4.00
  TOTAL STREAM AREA(ACRES) =      2.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       9.90

******************************************************************************
  FLOW PROCESS FROM NODE     451.00 TO NODE     452.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     39.00
  UPSTREAM ELEVATION(FEET) =     544.00
  DOWNSTREAM ELEVATION(FEET) =     543.22
  ELEVATION DIFFERENCE(FEET) =       0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     2.052
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.37
  TOTAL AREA(ACRES) =       0.10   TOTAL RUNOFF(CFS) =       0.37

******************************************************************************
  FLOW PROCESS FROM NODE     452.00 TO NODE     453.00 IS CODE =  62
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1410.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.44
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   11.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =     0.61
  STREET FLOW TRAVEL TIME(MIN.) =  13.70   Tc(MIN.) =  15.75
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.011
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     2.20      SUBAREA RUNOFF(CFS) =     3.85
  TOTAL AREA(ACRES) =        2.3        PEAK FLOW RATE(CFS) =       4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.06
  FLOW VELOCITY(FEET/SEC.) =  1.92   DEPTH*VELOCITY(FT*FT/SEC.) =   0.78
  LONGEST FLOWPATH FROM NODE     451.00 TO NODE     453.00 =    1449.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE     453.00 TO NODE     936.00 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.20
  ESTIMATED PIPE DIAMETER(INCH) =  18.00     NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.02
  PIPE TRAVEL TIME(MIN.) =   0.08     Tc(MIN.) =  15.83
  LONGEST FLOWPATH FROM NODE     451.00 TO NODE     936.00 =    1468.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE     936.00 TO NODE     936.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.83
  RAINFALL INTENSITY(INCH/HR) =   2.00
  TOTAL STREAM AREA(ACRES) =      2.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       4.02

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1          9.90      5.42        4.003          2.70
     2          4.02     15.83        2.005          2.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1         11.28      5.42        4.003
     2          8.98     15.83        2.005

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       11.28   Tc(MIN.) =    5.42
  TOTAL AREA(ACRES) =         5.0
  LONGEST FLOWPATH FROM NODE     451.00 TO NODE     936.00 =    1468.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE     936.00 TO NODE     936.00 IS CODE =  10
------------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE     454.00 TO NODE     455.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     39.00
  UPSTREAM ELEVATION(FEET) =     534.00
  DOWNSTREAM ELEVATION(FEET) =     533.22
  ELEVATION DIFFERENCE(FEET) =       0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     2.052
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.40
  TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.40

******************************************************************************
  FLOW PROCESS FROM NODE     455.00 TO NODE     456.00 IS CODE =  62
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
```

```
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   705.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.37
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.93
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.49
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.46
  STREET FLOW TRAVEL TIME(MIN.) =   7.86   Tc(MIN.) =   9.92
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.711
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.79      SUBAREA RUNOFF(CFS) =    1.86
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       2.12

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.77
  FLOW VELOCITY(FEET/SEC.) =  1.66   DEPTH*VELOCITY(FT*FT/SEC.) =   0.57
  LONGEST FLOWPATH FROM NODE    454.00 TO NODE    456.00 =     744.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    456.00 TO NODE    456.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.92
  RAINFALL INTENSITY(INCH/HR) =   2.71
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.12

****************************************************************************
  FLOW PROCESS FROM NODE    902.00 TO NODE    902.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    532.00
  DOWNSTREAM ELEVATION(FEET) =    530.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.844
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.37
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.37

****************************************************************************
  FLOW PROCESS FROM NODE    902.50 TO NODE    903.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   400.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 15.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.010
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.010

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.08
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) =    0.29   FLOOD WIDTH(FEET) =   15.00
    FULL HALF-STREET VELOCITY(FEET/SEC.) =    1.32
    SPLIT DEPTH(FEET) =    0.28   SPLIT FLOOD WIDTH(FEET) =   14.00
    SPLIT FLOW(CFS) =    1.42   SPLIT VELOCITY(FEET/SEC.) =    1.28
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =   15.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.38
  STREET FLOW TRAVEL TIME(MIN.) =   5.05   Tc(MIN.) =   6.89
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.427
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.79      SUBAREA RUNOFF(CFS) =    5.34
  TOTAL AREA(ACRES) =        1.9        PEAK FLOW RATE(CFS) =       5.63

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =  15.00
  FLOW VELOCITY(FEET/SEC.) =  1.64   DEPTH*VELOCITY(FT*FT/SEC.) =   0.53
  LONGEST FLOWPATH FROM NODE    902.00 TO NODE    903.00 =     450.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    903.00 TO NODE    456.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.53
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.63
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   6.96
  LONGEST FLOWPATH FROM NODE    902.00 TO NODE    456.00 =     469.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    456.00 TO NODE    456.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.96
  RAINFALL INTENSITY(INCH/HR) =   3.40
  TOTAL STREAM AREA(ACRES) =     1.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.63

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        2.12     9.92        2.711         0.90
     2        5.63     6.96        3.405         1.89

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
```

```
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
     1         7.13     6.96        3.405
     2         6.61     9.92        2.711

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =        7.13   Tc(MIN.) =    6.96
  TOTAL AREA(ACRES) =         2.8
  LONGEST FLOWPATH FROM NODE    454.00 TO NODE    456.00 =     744.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    456.00 TO NODE    936.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.67
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        7.13
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   7.18
  LONGEST FLOWPATH FROM NODE    454.00 TO NODE    936.00 =     804.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    936.00 TO NODE    936.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1         7.13     7.18        3.339         2.79
  LONGEST FLOWPATH FROM NODE    454.00 TO NODE    936.00 =     804.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1        11.28     5.42        4.003         5.00
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    936.00 =    1468.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)    (INCH/HOUR)
     1       16.66       5.42        4.003
     2       16.53       7.18        3.339

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       16.66   Tc(MIN.) =    5.42
  TOTAL AREA(ACRES) =         7.8

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    936.00 TO NODE    937.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    51.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.94
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       16.66
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   5.56
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    937.00 =    1519.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    937.00 TO NODE    937.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.56
  RAINFALL INTENSITY(INCH/HR) =   3.94
  TOTAL STREAM AREA(ACRES) =     7.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.66

****************************************************************************
  FLOW PROCESS FROM NODE    904.00 TO NODE    905.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   420.00
  UPSTREAM ELEVATION(FEET) =    532.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.233
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    59.05
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.07
  TOTAL AREA(ACRES) =      2.20   TOTAL RUNOFF(CFS) =      8.07

****************************************************************************
  FLOW PROCESS FROM NODE    905.00 TO NODE    937.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.97
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        8.07
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   3.40
  LONGEST FLOWPATH FROM NODE    904.00 TO NODE    937.00 =     470.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    937.00 TO NODE    937.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.40
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     2.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.07

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1       16.66     5.56        3.936         7.79
     2        8.07     3.40        4.216         2.20
```

```
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
     1        18.26     3.40        4.216
     2        24.19     5.56        3.936

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.19   Tc(MIN.) =    5.56
  TOTAL AREA(ACRES) =        10.0
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    937.00 =    1519.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    937.00 TO NODE    940.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   185.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.47
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.19
  PIPE TRAVEL TIME(MIN.) =   0.48    Tc(MIN.) =   6.04
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    940.00 =    1704.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    940.00 TO NODE    940.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    460.00 TO NODE    461.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    538.00
  DOWNSTREAM ELEVATION(FEET) =    537.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.40
  TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.40

****************************************************************************
  FLOW PROCESS FROM NODE    461.00 TO NODE    462.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   713.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.23
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.49
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.43
  STREET FLOW TRAVEL TIME(MIN.) =   8.10   Tc(MIN.) =  10.16
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.669
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.69      SUBAREA RUNOFF(CFS) =    1.60
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       1.86

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.18
  FLOW VELOCITY(FEET/SEC.) =  1.61   DEPTH*VELOCITY(FT*FT/SEC.) =   0.53
  LONGEST FLOWPATH FROM NODE    460.00 TO NODE    462.00 =     752.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    462.00 TO NODE    462.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.16
  RAINFALL INTENSITY(INCH/HR) =   2.67
  TOTAL STREAM AREA(ACRES) =     0.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.86

****************************************************************************
  FLOW PROCESS FROM NODE    906.00 TO NODE    907.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   450.00
  UPSTREAM ELEVATION(FEET) =    532.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.273
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.78
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.70
  TOTAL AREA(ACRES) =      2.10   TOTAL RUNOFF(CFS) =      7.70

****************************************************************************
  FLOW PROCESS FROM NODE    907.00 TO NODE    462.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.92
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.70
```

```
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   3.39
  LONGEST FLOWPATH FROM NODE    906.00 TO NODE    462.00 =     485.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    462.00 TO NODE    462.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.39
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     2.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.70

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        1.86    10.16       2.669          0.80
     2        7.70     3.39       4.216          2.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        8.32     3.39       4.216
     2        6.73    10.16       2.669

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       8.32   Tc(MIN.) =    3.39
  TOTAL AREA(ACRES) =         2.9
  LONGEST FLOWPATH FROM NODE    460.00 TO NODE    462.00 =     752.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    462.00 TO NODE    938.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.00
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        8.32
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   3.45
  LONGEST FLOWPATH FROM NODE    460.00 TO NODE    938.00 =     770.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    938.00 TO NODE    938.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.45
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     2.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.32

****************************************************************************
  FLOW PROCESS FROM NODE    457.00 TO NODE    458.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    538.00
  DOWNSTREAM ELEVATION(FEET) =    537.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
  FLOW PROCESS FROM NODE    458.00 TO NODE    459.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   740.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.35
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.49
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.45
  STREET FLOW TRAVEL TIME(MIN.) =   8.28   Tc(MIN.) =  10.33
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.640
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.79      SUBAREA RUNOFF(CFS) =    1.81
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       2.07

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.69
  FLOW VELOCITY(FEET/SEC.) =  1.64   DEPTH*VELOCITY(FT*FT/SEC.) =   0.56
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    459.00 =     779.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    459.00 TO NODE    938.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.54
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        2.07
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =  10.64
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    938.00 =     844.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    938.00 TO NODE    938.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
```

```
  TIME OF CONCENTRATION(MIN.) =  10.64
  RAINFALL INTENSITY(INCH/HR) =   2.59
  TOTAL STREAM AREA(ACRES) =      0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.07

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        8.32     3.45        4.216         2.90
     2        2.07    10.64        2.591         0.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        8.99     3.45        4.216
     2        7.18    10.64        2.591

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       8.99   Tc(MIN.) =    3.45
  TOTAL AREA(ACRES) =        3.8
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    938.00 =     844.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    938.00 TO NODE    940.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    88.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.07
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        8.99
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   3.74
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    940.00 =     932.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    940.00 TO NODE    940.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        8.99     3.74        4.216         3.80
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    940.00 =     932.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       24.19     6.04        3.733         9.99
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    940.00 =    1704.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       23.98     3.74        4.216
     2       32.16     6.04        3.733

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      32.16   Tc(MIN.) =    6.04
  TOTAL AREA(ACRES) =       13.8

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    940.00 TO NODE    691.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   615.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  24.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.93
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       32.16
  PIPE TRAVEL TIME(MIN.) =   1.48    Tc(MIN.) =   7.52
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    691.50 =    2319.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    691.50 TO NODE    691.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.52
  RAINFALL INTENSITY(INCH/HR) =   3.24
  TOTAL STREAM AREA(ACRES) =     13.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.16

****************************************************************************
  FLOW PROCESS FROM NODE    690.00 TO NODE    691.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   451.00
  UPSTREAM ELEVATION(FEET) =    528.00
  DOWNSTREAM ELEVATION(FEET) =    524.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.274
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.74
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     10.27
  TOTAL AREA(ACRES) =      2.80   TOTAL RUNOFF(CFS) =     10.27

****************************************************************************
  FLOW PROCESS FROM NODE    691.00 TO NODE    691.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    61.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.16
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.27
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   3.47
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    691.50 =     512.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    691.50 TO NODE    691.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.47
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     2.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       32.16     7.52        3.241        13.79
     2       10.27     3.47        4.216         2.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       25.12     3.47       4.216
     2       40.05     7.52       3.241

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      40.05   Tc(MIN.) =    7.52
  TOTAL AREA(ACRES) =       16.6
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    691.50 =    2319.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    691.50 TO NODE    525.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.33
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       40.05
  PIPE TRAVEL TIME(MIN.) =   0.55    Tc(MIN.) =   8.06
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.50 =    2559.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.50 TO NODE    525.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.06
  RAINFALL INTENSITY(INCH/HR) =   3.10
  TOTAL STREAM AREA(ACRES) =    16.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     40.05

****************************************************************************
  FLOW PROCESS FROM NODE    419.00 TO NODE    420.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
  FLOW PROCESS FROM NODE    420.00 TO NODE    421.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   800.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.57
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.54
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.49
  STREET FLOW TRAVEL TIME(MIN.) =   8.68   Tc(MIN.) =  10.74
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.575
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    2.24
  TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       2.49

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.50
  FLOW VELOCITY(FEET/SEC.) =  1.73   DEPTH*VELOCITY(FT*FT/SEC.) =   0.62
  LONGEST FLOWPATH FROM NODE    419.00 TO NODE    421.00 =     839.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    421.00 TO NODE    525.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.72
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.49
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  10.80
  LONGEST FLOWPATH FROM NODE    419.00 TO NODE    525.50 =     854.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.50 TO NODE    525.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.80
  RAINFALL INTENSITY(INCH/HR) =   2.56
  TOTAL STREAM AREA(ACRES) =     1.11
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.49

****************************************************************************
  FLOW PROCESS FROM NODE    422.00 TO NODE    423.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    520.00
DOWNSTREAM ELEVATION(FEET) =    519.22
ELEVATION DIFFERENCE(FEET) =      0.78
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.40
TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

******************************************************************************
FLOW PROCESS FROM NODE    423.00 TO NODE    424.00 IS CODE =  62
------------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =   320.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.42
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.31
  HALFSTREET FLOOD WIDTH(FEET) =    9.08
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.50
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.46
STREET FLOW TRAVEL TIME(MIN.) =   3.55   Tc(MIN.) =   5.60
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.918
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    0.59      SUBAREA RUNOFF(CFS) =    2.01
TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       2.39

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.35
FLOW VELOCITY(FEET/SEC.) =  1.70   DEPTH*VELOCITY(FT*FT/SEC.) =   0.60
LONGEST FLOWPATH FROM NODE    422.00 TO NODE    424.00 =     359.00 FEET.

******************************************************************************
FLOW PROCESS FROM NODE    424.00 TO NODE    525.50 IS CODE =  31
------------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   3.67
ESTIMATED PIPE DIAMETER(INCH) =  18.00     NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       2.39
PIPE TRAVEL TIME(MIN.) =   0.30     Tc(MIN.) =   5.90
LONGEST FLOWPATH FROM NODE    422.00 TO NODE    525.50 =     424.00 FEET.

******************************************************************************
FLOW PROCESS FROM NODE    525.50 TO NODE    525.50 IS CODE =   1
------------------------------------------------------------------------------
```

```
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =   5.90
RAINFALL INTENSITY(INCH/HR) =   3.79
TOTAL STREAM AREA(ACRES) =     0.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.39

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       40.05     8.06        3.097        16.59
    2        2.49    10.80        2.565         1.11
    3        2.39     5.90        3.791         0.70

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       36.47     5.90       3.791
    2       43.86     8.06       3.097
    3       37.26    10.80       2.565

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      43.86   Tc(MIN.) =    8.06
TOTAL AREA(ACRES) =       18.4
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.50 =    2559.00 FEET.

******************************************************************************
FLOW PROCESS FROM NODE    525.50 TO NODE    525.00 IS CODE =  31
------------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   185.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  36.0 INCH PIPE IS  28.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.40
ESTIMATED PIPE DIAMETER(INCH) =  36.00     NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      43.86
PIPE TRAVEL TIME(MIN.) =   0.42     Tc(MIN.) =   8.48
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.00 =    2744.00 FEET.

******************************************************************************
FLOW PROCESS FROM NODE    525.00 TO NODE    525.00 IS CODE =  11
------------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

** MAIN STREAM CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       43.86     8.48        2.998        18.40
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.00 =    2744.00 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       50.50     5.44        3.995        16.60
LONGEST FLOWPATH FROM NODE    413.00 TO NODE    525.00 =    1775.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       78.61     5.44       3.995
    2       81.76     8.48       2.998
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      81.76   Tc(MIN.) =    8.48
  TOTAL AREA(ACRES) =       35.0

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    525.00 TO NODE    526.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   310.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  36.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.60
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      81.76
  PIPE TRAVEL TIME(MIN.) =   0.60    Tc(MIN.) =   9.08
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    526.00 =    3054.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    526.00 TO NODE    526.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.08
  RAINFALL INTENSITY(INCH/HR) =   2.87
  TOTAL STREAM AREA(ACRES) =    35.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     81.76

****************************************************************************
  FLOW PROCESS FROM NODE    710.00 TO NODE    711.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   468.00
  UPSTREAM ELEVATION(FEET) =    518.00
  DOWNSTREAM ELEVATION(FEET) =    510.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.836
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.09
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.80
  TOTAL AREA(ACRES) =      2.40   TOTAL RUNOFF(CFS) =      8.80

****************************************************************************
  FLOW PROCESS FROM NODE    711.00 TO NODE    526.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    77.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.05
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.80
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   3.09
  LONGEST FLOWPATH FROM NODE    710.00 TO NODE    526.00 =     545.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    526.00 TO NODE    526.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.09
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.80

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       81.76     9.08        2.869        35.00
     2        8.80     3.09        4.216         2.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       36.63     3.09        4.216
     2       87.75     9.08        2.869

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      87.75   Tc(MIN.) =    9.08
  TOTAL AREA(ACRES) =       37.4
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    526.00 =    3054.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    526.00 TO NODE    527.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  35.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.90
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      87.75
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   9.20
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    527.00 =    3117.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    527.00 TO NODE    527.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.20
  RAINFALL INTENSITY(INCH/HR) =   2.85
  TOTAL STREAM AREA(ACRES) =    37.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     87.75

****************************************************************************
  FLOW PROCESS FROM NODE    590.00 TO NODE    591.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
```

```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   347.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    514.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.830
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.29
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.34
  TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =      7.34

****************************************************************************
  FLOW PROCESS FROM NODE    591.00 TO NODE    527.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.87
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.34
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   3.12
  LONGEST FLOWPATH FROM NODE    590.00 TO NODE    527.00 =     432.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    527.00 TO NODE    527.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.12
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.34

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       87.75     9.20        2.845        37.40
      2        7.34     3.12        4.216         2.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       66.56     3.12       4.216
      2       92.70     9.20       2.845

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      92.70   Tc(MIN.) =    9.20
  TOTAL AREA(ACRES) =       39.4
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    527.00 =    3117.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    527.00 TO NODE    528.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   147.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  36.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.95
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      92.70
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   9.47
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    528.00 =    3264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    528.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.47
  RAINFALL INTENSITY(INCH/HR) =   2.79
  TOTAL STREAM AREA(ACRES) =    39.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     92.70

****************************************************************************
  FLOW PROCESS FROM NODE    720.00 TO NODE    721.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   304.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    506.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.756
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    69.74
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.13
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      5.13

****************************************************************************
  FLOW PROCESS FROM NODE    721.00 TO NODE    528.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.44
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.13
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   2.98
  LONGEST FLOWPATH FROM NODE    720.00 TO NODE    528.00 =     364.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    528.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.98
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.13

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
```

```
     1       92.70     9.47        2.792         39.40
     2        5.13     2.98        4.216          1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       66.53     2.98       4.216
     2       96.10     9.47       2.792

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      96.10   Tc(MIN.) =    9.47
  TOTAL AREA(ACRES) =       40.8
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    528.00 =    3264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    529.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  38.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.98
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      96.10
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   9.61
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    529.00 =    3339.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    529.00 TO NODE    529.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.61
  RAINFALL INTENSITY(INCH/HR) =   2.77
  TOTAL STREAM AREA(ACRES) =    40.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     96.10

****************************************************************************
  FLOW PROCESS FROM NODE    580.00 TO NODE    581.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   335.00
  UPSTREAM ELEVATION(FEET) =    516.00
  DOWNSTREAM ELEVATION(FEET) =    510.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.809
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.91
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.87
  TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =      5.87

****************************************************************************
  FLOW PROCESS FROM NODE    581.00 TO NODE    529.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.56
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.87
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =   3.11
  LONGEST FLOWPATH FROM NODE    580.00 TO NODE    529.00 =     417.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    529.00 TO NODE    529.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.11
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.87

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       96.10     9.61       2.766         40.80
     2        5.87     3.11       4.216          1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       68.92     3.11       4.216
     2       99.95     9.61       2.766

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      99.95   Tc(MIN.) =    9.61
  TOTAL AREA(ACRES) =       42.4
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    529.00 =    3339.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    529.00 TO NODE    534.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   186.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  36.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.22
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      99.95
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   9.95
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    534.00 =    3525.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.95
  RAINFALL INTENSITY(INCH/HR) =   2.71
  TOTAL STREAM AREA(ACRES) =    42.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     99.95

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    425.00 TO NODE    426.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    426.00 TO NODE    427.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1375.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.87
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   10.25
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.60
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.53
  STREET FLOW TRAVEL TIME(MIN.) =  14.31   Tc(MIN.) =  16.36
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.962
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.59      SUBAREA RUNOFF(CFS) =    2.71
  TOTAL AREA(ACRES) =        1.7        PEAK FLOW RATE(CFS) =       2.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.30
  FLOW VELOCITY(FEET/SEC.) =  1.78   DEPTH*VELOCITY(FT*FT/SEC.) =   0.66
  LONGEST FLOWPATH FROM NODE    425.00 TO NODE    427.00 =    1414.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    427.00 TO NODE    534.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.87
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      2.90
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =  16.51
  LONGEST FLOWPATH FROM NODE    425.00 TO NODE    534.00 =    1449.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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  FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.51
  RAINFALL INTENSITY(INCH/HR) =   1.95
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.90

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    428.00 TO NODE    429.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    516.00
  DOWNSTREAM ELEVATION(FEET) =    515.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    429.00 TO NODE    430.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   742.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.96
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.38
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.38
  STREET FLOW TRAVEL TIME(MIN.) =   8.95   Tc(MIN.) =  11.01
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.534
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.49      SUBAREA RUNOFF(CFS) =    1.08
  TOTAL AREA(ACRES) =        0.6        PEAK FLOW RATE(CFS) =       1.32

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   8.79
  FLOW VELOCITY(FEET/SEC.) =  1.49   DEPTH*VELOCITY(FT*FT/SEC.) =   0.45
  LONGEST FLOWPATH FROM NODE    428.00 TO NODE    430.00 =     781.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    430.00 TO NODE    534.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    17.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.11
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        1.32
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =  11.10
  LONGEST FLOWPATH FROM NODE    428.00 TO NODE    534.00 =     798.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.10
  RAINFALL INTENSITY(INCH/HR) =   2.52
  TOTAL STREAM AREA(ACRES) =      0.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       1.32

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        99.95     9.95       2.705        42.40
     2         2.90    16.51       1.951         1.70
     3         1.32    11.10       2.521         0.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       102.89     9.95       2.705
     2        96.41    11.10       2.521
     3        76.01    16.51       1.951

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     102.89   Tc(MIN.) =    9.95
  TOTAL AREA(ACRES) =        44.7
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    534.00 =    3525.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    535.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    32.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.26
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      102.89
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =  10.00
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    535.00 =    3557.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    535.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.00
  RAINFALL INTENSITY(INCH/HR) =   2.70
  TOTAL STREAM AREA(ACRES) =    44.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    102.89

****************************************************************************
  FLOW PROCESS FROM NODE    730.00 TO NODE    731.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   354.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    502.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.841
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.95
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.97
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      6.97

****************************************************************************
  FLOW PROCESS FROM NODE    731.00 TO NODE    535.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    61.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.97
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   3.06
  LONGEST FLOWPATH FROM NODE    730.00 TO NODE    535.00 =     415.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    535.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.06
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =      1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.97

****************************************************************************
  FLOW PROCESS FROM NODE    570.00 TO NODE    571.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   220.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    506.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.605
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    77.27
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.87
```

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  TOTAL AREA(ACRES) =       1.60   TOTAL RUNOFF(CFS) =       5.87

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    571.00 TO NODE    535.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.56
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.87
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   2.88
  LONGEST FLOWPATH FROM NODE    570.00 TO NODE    535.00 =     295.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    535.00 TO NODE    535.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.88
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =      1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       5.87

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       102.89    10.00       2.695        44.70
     2         6.97     3.06       4.216         1.90
     3         5.87     2.88       4.216         1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        78.20     2.88       4.216
     2        78.61     3.06       4.216
     3       111.09    10.00       2.695

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     111.09   Tc(MIN.) =   10.00
  TOTAL AREA(ACRES) =       48.2
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    535.00 =    3557.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    535.00 TO NODE    536.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  39.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.34
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     111.09
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =  10.19
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    536.00 =    3662.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    536.00 TO NODE    512.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  39.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.34
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     111.09
  PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =  10.73
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    512.00 =    3962.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    512.00 TO NODE    512.00 IS CODE =  10
----------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
======================================================================

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    740.00 TO NODE    741.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   375.00
  UPSTREAM ELEVATION(FEET) =    507.00
  DOWNSTREAM ELEVATION(FEET) =    505.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.634
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.67
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.97
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      6.97

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    741.00 TO NODE    751.50 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   280.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.97
  PIPE TRAVEL TIME(MIN.) =   1.00    Tc(MIN.) =   4.63
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    751.50 =     655.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    741.50 TO NODE    751.50 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.63
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =      1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       6.97

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    750.00 TO NODE    751.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
```

```
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
  UPSTREAM ELEVATION(FEET) =    507.00
  DOWNSTREAM ELEVATION(FEET) =    504.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.277
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.65
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.23
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =      6.23

****************************************************************************
  FLOW PROCESS FROM NODE    751.00 TO NODE    751.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.61
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.23
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   3.32
  LONGEST FLOWPATH FROM NODE    750.00 TO NODE    751.50 =     352.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    751.50 TO NODE    751.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.32
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.23

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1        6.97     4.63        4.216         1.90
      2        6.23     3.32        4.216         1.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       11.23     3.32       4.216
      2       13.20     4.63       4.216

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      13.20   Tc(MIN.) =    4.63
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    751.50 =     655.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    751.50 TO NODE    512.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.57
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.20
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   4.67
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    512.00 =     667.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    512.00 TO NODE    512.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       13.20     4.67       4.216         3.60
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    512.00 =     667.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1      111.09    10.73       2.576        48.20
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    512.00 =    3962.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       61.56     4.67       4.216
      2      119.16    10.73       2.576

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     119.16   Tc(MIN.) =   10.73
  TOTAL AREA(ACRES) =        51.8

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    512.00 TO NODE    513.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  39.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.61
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     119.16
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  10.80
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    513.00 =    4002.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    513.00 TO NODE    513.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1      119.16    10.80       2.566        51.80
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    513.00 =    4002.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
```

```
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        43.00    29.61       1.339      34.51
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    513.00 =    5481.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1     134.84      10.80        2.566
     2     105.16      29.61        1.339

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     134.84   Tc(MIN.) =   10.80
  TOTAL AREA(ACRES) =       86.3

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
======================================================================

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    513.00 TO NODE    998.00 IS CODE =  52
----------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
======================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    500.00  DOWNSTREAM(FEET) =    498.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   300.00   CHANNEL SLOPE =  0.0067
  CHANNEL FLOW THRU SUBAREA(CFS) =     134.84
  FLOW VELOCITY(FEET/SEC) =   4.24 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.18   Tc(MIN.) =  11.98
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    998.00 =    5781.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    998.00 TO NODE    998.00 IS CODE =  81
----------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
======================================================================
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.400
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8421
  SUBAREA AREA(ACRES) =     4.90   SUBAREA RUNOFF(CFS) =     4.12
  TOTAL AREA(ACRES) =       91.2   TOTAL RUNOFF(CFS) =     184.32
  TC(MIN.) =  11.98

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
======================================================================

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    760.00 TO NODE    761.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   302.00
  UPSTREAM ELEVATION(FEET) =    522.00
  DOWNSTREAM ELEVATION(FEET) =    517.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.855
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.56
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
```

```
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.13
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      5.13

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    761.00 TO NODE    614.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   260.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.44
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.13
  PIPE TRAVEL TIME(MIN.) =   0.98    Tc(MIN.) =   3.83
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    614.00 =     562.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    614.00 TO NODE    614.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.83
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =      1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.13

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    780.00 TO NODE    781.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    516.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.973
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.75
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.23
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =      6.23

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    781.00 TO NODE    614.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.61
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.23
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   3.33
  LONGEST FLOWPATH FROM NODE    780.00 TO NODE    614.00 =     391.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    614.00 TO NODE    614.00 IS CODE =   1
```

```
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.33
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =      1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       6.23

****************************************************************************
  FLOW PROCESS FROM NODE    770.00 TO NODE    771.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   344.00
  UPSTREAM ELEVATION(FEET) =    519.00
  DOWNSTREAM ELEVATION(FEET) =    512.00
  ELEVATION DIFFERENCE(FEET) =      7.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.740
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.35
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       6.60
  TOTAL AREA(ACRES) =       1.80   TOTAL RUNOFF(CFS) =       6.60

****************************************************************************
  FLOW PROCESS FROM NODE    771.00 TO NODE    614.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.64
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        6.60
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   3.03
  LONGEST FLOWPATH FROM NODE    770.00 TO NODE    614.00 =     424.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    614.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.03
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =      1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       6.60

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1          5.13      3.83        4.216          1.40
     2          6.23      3.33        4.216          1.70
     3          6.60      3.03        4.216          1.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1         16.32      3.03        4.216
     2         17.31      3.33        4.216
     3         17.97      3.83        4.216

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       17.97   Tc(MIN.) =    3.83
  TOTAL AREA(ACRES) =         4.9
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    614.00 =     562.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.02
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       17.97
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =   4.25
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    615.00 =     712.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.25
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =      4.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      17.97

****************************************************************************
  FLOW PROCESS FROM NODE    810.00 TO NODE    811.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   287.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    508.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.964
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.94
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       4.03
  TOTAL AREA(ACRES) =       1.10   TOTAL RUNOFF(CFS) =       4.03

****************************************************************************
  FLOW PROCESS FROM NODE    811.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.20
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.03
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   3.29
  LONGEST FLOWPATH FROM NODE    810.00 TO NODE    615.00 =     369.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.29
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.03

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    790.00 TO NODE    791.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   230.00
  UPSTREAM ELEVATION(FEET) =    514.00
  DOWNSTREAM ELEVATION(FEET) =    510.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.826
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.39
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      3.30
  TOTAL AREA(ACRES) =      0.90   TOTAL RUNOFF(CFS) =      3.30

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    791.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.00
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.30
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   3.10
  LONGEST FLOWPATH FROM NODE    790.00 TO NODE    615.00 =     295.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.10
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.30

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       17.97     4.25        4.216          4.90
     2        4.03     3.29        4.216          1.10
     3        3.30     3.10        4.216          0.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       25.07     3.10       4.216
     2       25.31     3.29       4.216
     3       25.31     4.25       4.216

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      25.31   Tc(MIN.) =    4.25
  TOTAL AREA(ACRES) =        6.9
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    615.00 =     712.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    615.00 TO NODE    616.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   210.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.51
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      25.31
  PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =   4.78
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    616.00 =     922.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    616.00 TO NODE    616.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.78
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     6.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     25.31

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    830.00 TO NODE    831.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   317.00
  UPSTREAM ELEVATION(FEET) =    510.00
  DOWNSTREAM ELEVATION(FEET) =    504.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.779
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    68.93
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.13
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      5.13

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    831.00 TO NODE    616.00 IS CODE =  31
----------------------------------------------------------------------
```

```
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.44
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =        5.13
PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   3.10
LONGEST FLOWPATH FROM NODE    830.00 TO NODE    616.00 =     402.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    616.00 TO NODE    616.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.10
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =      1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =       5.13

****************************************************************************
FLOW PROCESS FROM NODE    820.00 TO NODE    821.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   298.00
UPSTREAM ELEVATION(FEET) =    512.00
DOWNSTREAM ELEVATION(FEET) =    506.00
ELEVATION DIFFERENCE(FEET) =      6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.746
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    70.13
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =       5.13
TOTAL AREA(ACRES) =       1.40   TOTAL RUNOFF(CFS) =       5.13

****************************************************************************
FLOW PROCESS FROM NODE    821.00 TO NODE    616.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.44
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =        5.13
PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   2.99
LONGEST FLOWPATH FROM NODE    820.00 TO NODE    616.00 =     363.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    616.00 TO NODE    616.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =   2.99
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =      1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =       5.13

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       25.31     4.78       4.216         6.90
    2        5.13     3.10       4.216         1.40
    3        5.13     2.99       4.216         1.40

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       35.40     2.99       4.216
    2       35.58     3.10       4.216
    3       35.58     4.78       4.216

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =       35.58   Tc(MIN.) =    4.78
TOTAL AREA(ACRES) =        9.7
LONGEST FLOWPATH FROM NODE    760.00 TO NODE    616.00 =     922.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    616.00 TO NODE    616.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   121.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  33.0 INCH PIPE IS  26.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.99
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       35.58
PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   5.07
LONGEST FLOWPATH FROM NODE    760.00 TO NODE    616.50 =    1043.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    616.50 TO NODE    616.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   5.07
RAINFALL INTENSITY(INCH/HR) =   4.18
TOTAL STREAM AREA(ACRES) =      9.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =      35.58

****************************************************************************
FLOW PROCESS FROM NODE    437.00 TO NODE    438.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    524.00
DOWNSTREAM ELEVATION(FEET) =    523.22
ELEVATION DIFFERENCE(FEET) =      0.78
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =       0.37
TOTAL AREA(ACRES) =       0.10   TOTAL RUNOFF(CFS) =       0.37

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    438.00 TO NODE    439.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1360.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.64
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.67
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.50
  STREET FLOW TRAVEL TIME(MIN.) =  14.53   Tc(MIN.) =  16.58
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.945
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.40      SUBAREA RUNOFF(CFS) =    2.37
  TOTAL AREA(ACRES) =        1.5        PEAK FLOW RATE(CFS) =       2.54

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.64
  FLOW VELOCITY(FEET/SEC.) =  1.72   DEPTH*VELOCITY(FT*FT/SEC.) =   0.62
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    439.00 =    1399.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    439.00 TO NODE    616.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.73
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.54
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =  16.74
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    616.50 =    1435.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.50 TO NODE    616.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.74
  RAINFALL INTENSITY(INCH/HR) =   1.93
  TOTAL STREAM AREA(ACRES) =     1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.54

****************************************************************************
  FLOW PROCESS FROM NODE    440.00 TO NODE    441.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    518.00
  DOWNSTREAM ELEVATION(FEET) =    517.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
  FLOW PROCESS FROM NODE    441.00 TO NODE    442.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   886.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.13
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.65
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.57
  STREET FLOW TRAVEL TIME(MIN.) =   8.95   Tc(MIN.) =  11.01
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.534
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.49      SUBAREA RUNOFF(CFS) =    3.29
  TOTAL AREA(ACRES) =        1.6        PEAK FLOW RATE(CFS) =       3.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.33
  FLOW VELOCITY(FEET/SEC.) =  1.86   DEPTH*VELOCITY(FT*FT/SEC.) =   0.73
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    442.00 =     925.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    442.00 TO NODE    616.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    16.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.07
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.53
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  11.07
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    616.50 =     941.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.50 TO NODE    616.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
```

```
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =  11.07
RAINFALL INTENSITY(INCH/HR) =   2.52
TOTAL STREAM AREA(ACRES) =     1.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.53

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       35.58     5.07       4.177         9.70
    2        2.54    16.74       1.933         1.50
    3        3.53    11.07       2.525         1.60

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       37.96     5.07       4.177
    2       26.71    11.07       2.525
    3       21.71    16.74       1.933

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      37.96   Tc(MIN.) =    5.07
TOTAL AREA(ACRES) =       12.8
LONGEST FLOWPATH FROM NODE    437.00 TO NODE    616.50 =    1435.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    616.50 TO NODE    617.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   168.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  36.0 INCH PIPE IS  24.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.27
ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       37.96
PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =   5.46
LONGEST FLOWPATH FROM NODE    437.00 TO NODE    617.00 =    1603.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    617.00 TO NODE    617.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   5.46
RAINFALL INTENSITY(INCH/HR) =   3.98
TOTAL STREAM AREA(ACRES) =    12.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =     37.96

****************************************************************************
FLOW PROCESS FROM NODE    840.00 TO NODE    841.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   355.00
UPSTREAM ELEVATION(FEET) =    508.00
DOWNSTREAM ELEVATION(FEET) =    502.00
ELEVATION DIFFERENCE(FEET) =      6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.843
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    66.90
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      6.97
TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      6.97

****************************************************************************
FLOW PROCESS FROM NODE    841.00 TO NODE    617.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       6.97
PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   3.06
LONGEST FLOWPATH FROM NODE    840.00 TO NODE    617.00 =     415.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    617.00 TO NODE    617.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.06
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =     1.90
PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.97

****************************************************************************
FLOW PROCESS FROM NODE    850.00 TO NODE    851.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   369.00
UPSTREAM ELEVATION(FEET) =    506.00
DOWNSTREAM ELEVATION(FEET) =    501.00
ELEVATION DIFFERENCE(FEET) =      5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.983
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    63.55
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      7.34
TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =      7.34

****************************************************************************
FLOW PROCESS FROM NODE    851.00 TO NODE    617.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.87
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       7.34
PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   3.26
LONGEST FLOWPATH FROM NODE    850.00 TO NODE    617.00 =     451.00 FEET.

****************************************************************************
```

```
FLOW PROCESS FROM NODE    617.00 TO NODE    617.00 IS CODE =   1
----------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
======================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =   3.26
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =      2.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.34

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       37.96     5.46       3.984        12.80
    2        6.97     3.06       4.216         1.90
    3        7.34     3.26       4.216         2.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       49.72     3.06       4.216
    2       50.18     3.26       4.216
    3       51.48     5.46       3.984

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      51.48   Tc(MIN.) =    5.46
TOTAL AREA(ACRES) =       16.7
LONGEST FLOWPATH FROM NODE    437.00 TO NODE    617.00 =    1603.00 FEET.

**********************************************************************
FLOW PROCESS FROM NODE    617.00 TO NODE    618.00 IS CODE =  31
----------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  39.0 INCH PIPE IS  29.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.77
ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      51.48
PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   5.61
LONGEST FLOWPATH FROM NODE    437.00 TO NODE    618.00 =    1673.00 FEET.

**********************************************************************
FLOW PROCESS FROM NODE    618.00 TO NODE    618.00 IS CODE =  10
----------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
======================================================================

**********************************************************************
FLOW PROCESS FROM NODE    443.00 TO NODE    444.00 IS CODE =  21
----------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    524.00
DOWNSTREAM ELEVATION(FEET) =    523.22
ELEVATION DIFFERENCE(FEET) =      0.78
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
  5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.37
TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.37

**********************************************************************
FLOW PROCESS FROM NODE    444.00 TO NODE    445.00 IS CODE =  62
----------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
======================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =  1965.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.01
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.34
  HALFSTREET FLOOD WIDTH(FEET) =   10.55
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.63
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.55
STREET FLOW TRAVEL TIME(MIN.) =  20.09   Tc(MIN.) =  22.14
  5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.614
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    2.10      SUBAREA RUNOFF(CFS) =    2.95
TOTAL AREA(ACRES) =        2.2        PEAK FLOW RATE(CFS) =       3.09

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.60
FLOW VELOCITY(FEET/SEC.) =  1.81   DEPTH*VELOCITY(FT*FT/SEC.) =   0.69
LONGEST FLOWPATH FROM NODE    443.00 TO NODE    445.00 =    2004.00 FEET.

**********************************************************************
FLOW PROCESS FROM NODE    445.00 TO NODE    618.50 IS CODE =  31
----------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    23.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   3.93
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       3.09
PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  22.24
LONGEST FLOWPATH FROM NODE    443.00 TO NODE    618.50 =    2027.00 FEET.

**********************************************************************
FLOW PROCESS FROM NODE    618.50 TO NODE    618.50 IS CODE =   1
----------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  22.24
RAINFALL INTENSITY(INCH/HR) =   1.61
TOTAL STREAM AREA(ACRES) =      2.20
PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.09

**********************************************************************
FLOW PROCESS FROM NODE    446.00 TO NODE    447.00 IS CODE =  21
----------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    526.00
  DOWNSTREAM ELEVATION(FEET) =    525.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
  FLOW PROCESS FROM NODE    447.00 TO NODE    448.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  2195.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.26
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   11.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.69
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.59
  STREET FLOW TRAVEL TIME(MIN.) =  21.70   Tc(MIN.) =  23.75
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.543
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.49      SUBAREA RUNOFF(CFS) =    3.34
  TOTAL AREA(ACRES) =        2.6        PEAK FLOW RATE(CFS) =       3.49

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.26
  FLOW VELOCITY(FEET/SEC.) =  1.86   DEPTH*VELOCITY(FT*FT/SEC.) =   0.73
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 2195.0 FT WITH ELEVATION-DROP =  11.0 FT, IS    9.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    448.00
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    448.00 =    2234.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    448.00 TO NODE    618.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.06
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.49
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =  23.93
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.50 =    2278.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.50 TO NODE    618.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.93
  RAINFALL INTENSITY(INCH/HR) =   1.54
  TOTAL STREAM AREA(ACRES) =     2.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.49

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.09    22.24        1.610         2.20
     2        3.49    23.93        1.535         2.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        6.33    22.24       1.610
     2        6.44    23.93       1.535

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.44   Tc(MIN.) =   23.93
  TOTAL AREA(ACRES) =        4.8
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.50 =    2278.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.50 TO NODE    618.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   227.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.63
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.44
  PIPE TRAVEL TIME(MIN.) =   0.82    Tc(MIN.) =  24.75
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.00 =    2505.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.00 TO NODE    618.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1        6.44    24.75       1.503        4.80
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.00 =    2505.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1       51.48     5.61       3.915      16.70
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    618.00 =    1673.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      52.94       5.61       3.915
     2      26.19      24.75       1.503
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      52.94   Tc(MIN.) =    5.61
  TOTAL AREA(ACRES) =       21.5

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
======================================================================

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    618.00 TO NODE    619.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   293.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  29.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.79
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      52.94
  PIPE TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =   6.23
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    619.00 =    2798.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    619.00 TO NODE    619.00 IS CODE =  10
----------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
======================================================================

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
======================================================================

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    449.00 TO NODE    450.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    502.00
  DOWNSTREAM ELEVATION(FEET) =    501.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.40

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    450.00 TO NODE    622.00 IS CODE =  62
----------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   365.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.44
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   11.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.61
  STREET FLOW TRAVEL TIME(MIN.) =   3.55   Tc(MIN.) =   5.60
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.919
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.19      SUBAREA RUNOFF(CFS) =    4.06
  TOTAL AREA(ACRES) =        1.3        PEAK FLOW RATE(CFS) =       4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.57
  FLOW VELOCITY(FEET/SEC.) =  1.98   DEPTH*VELOCITY(FT*FT/SEC.) =   0.83
  LONGEST FLOWPATH FROM NODE    449.00 TO NODE    622.00 =     404.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    622.00 TO NODE    619.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    74.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.30
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.43
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   5.89
  LONGEST FLOWPATH FROM NODE    449.00 TO NODE    619.00 =     478.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    619.00 TO NODE    619.00 IS CODE =  11
----------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
======================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1        4.43     5.89       3.795       1.30
  LONGEST FLOWPATH FROM NODE    449.00 TO NODE    619.00 =     478.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1       52.94     6.23       3.657      21.50
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    619.00 =    2798.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      54.41       5.89       3.795
     2      57.21       6.23       3.657

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      57.21   Tc(MIN.) =    6.23
  TOTAL AREA(ACRES) =       22.8

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
======================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    619.00 TO NODE    623.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    96.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  29.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.05
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      57.21
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   6.43
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    623.00 =    2894.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    623.00 TO NODE    623.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.43
  RAINFALL INTENSITY(INCH/HR) =   3.58
  TOTAL STREAM AREA(ACRES) =     22.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     57.21

****************************************************************************
  FLOW PROCESS FROM NODE    860.00 TO NODE    861.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   265.00
  UPSTREAM ELEVATION(FEET) =    504.00
  DOWNSTREAM ELEVATION(FEET) =    501.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.111
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.32
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      4.03
  TOTAL AREA(ACRES) =      1.10   TOTAL RUNOFF(CFS) =      4.03

****************************************************************************
  FLOW PROCESS FROM NODE    861.00 TO NODE    623.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    23.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.20
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.03
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   3.20
  LONGEST FLOWPATH FROM NODE    860.00 TO NODE    623.00 =     288.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    623.00 TO NODE    623.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.20
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =      1.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.03

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        57.21     6.43       3.583        22.80
     2         4.03     3.20       4.216         1.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        32.51     3.20       4.216
     2        60.64     6.43       3.583

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      60.64   Tc(MIN.) =    6.43
  TOTAL AREA(ACRES) =       23.9
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    623.00 =    2894.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    623.00 TO NODE    624.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   187.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.12
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      60.64
  PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =   6.82
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    624.00 =    3081.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    624.00 TO NODE    624.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.82
  RAINFALL INTENSITY(INCH/HR) =   3.45
  TOTAL STREAM AREA(ACRES) =     23.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     60.64

****************************************************************************
  FLOW PROCESS FROM NODE    870.00 TO NODE    871.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   245.00
  UPSTREAM ELEVATION(FEET) =    504.00
  DOWNSTREAM ELEVATION(FEET) =    501.50
  ELEVATION DIFFERENCE(FEET) =      2.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.191
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    60.20
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
```

```
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       3.30
  TOTAL AREA(ACRES) =       0.90   TOTAL RUNOFF(CFS) =       3.30

****************************************************************************
  FLOW PROCESS FROM NODE    871.00 TO NODE    624.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.00
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.30
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   3.29
  LONGEST FLOWPATH FROM NODE    870.00 TO NODE    624.00 =     269.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    624.00 TO NODE    624.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.29
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.30

****************************************************************************
  FLOW PROCESS FROM NODE   1050.00 TO NODE   1051.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   320.00
  UPSTREAM ELEVATION(FEET) =    502.00
  DOWNSTREAM ELEVATION(FEET) =    500.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.508
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    52.50
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       5.13
  TOTAL AREA(ACRES) =       1.40   TOTAL RUNOFF(CFS) =       5.13

****************************************************************************
  FLOW PROCESS FROM NODE   1051.00 TO NODE    624.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.44
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.13
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   3.58
  LONGEST FLOWPATH FROM NODE   1050.00 TO NODE    624.00 =     340.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    624.00 TO NODE    624.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.58
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.13

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       60.64     6.82        3.452        23.90
     2        3.30     3.29        4.216         0.90
     3        5.13     3.58        4.216         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       57.67     3.29       4.216
     2       58.09     3.58       4.216
     3       67.54     6.82       3.452

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      67.54   Tc(MIN.) =    6.82
  TOTAL AREA(ACRES) =      26.2
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    624.00 =    3081.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    624.00 TO NODE    625.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.21
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      67.54
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   7.02
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    625.50 =    3181.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.50 TO NODE    625.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.02
  RAINFALL INTENSITY(INCH/HR) =   3.39
  TOTAL STREAM AREA(ACRES) =    26.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     67.54

****************************************************************************
  FLOW PROCESS FROM NODE    928.00 TO NODE    929.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   255.00
  UPSTREAM ELEVATION(FEET) =    504.00
```

```
DOWNSTREAM ELEVATION(FEET) =    501.00
ELEVATION DIFFERENCE(FEET) =      3.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.082
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    61.76
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      6.23
TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =      6.23

****************************************************************************
FLOW PROCESS FROM NODE    929.00 TO NODE    625.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.61
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       6.23
PIPE TRAVEL TIME(MIN.) =   0.90    Tc(MIN.) =   3.99
LONGEST FLOWPATH FROM NODE    928.00 TO NODE    625.50 =     505.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    625.50 TO NODE    625.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.99
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =     1.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.23

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       67.54     7.02        3.387        26.20
    2        6.23     3.99        4.216         1.70

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       60.51     3.99       4.216
    2       72.55     7.02       3.387

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      72.55   Tc(MIN.) =    7.02
TOTAL AREA(ACRES) =      27.9
LONGEST FLOWPATH FROM NODE    446.00 TO NODE    625.50 =    3181.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    625.50 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   8.50
ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      72.55
PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   7.15
LONGEST FLOWPATH FROM NODE    446.00 TO NODE    625.00 =    3246.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
>>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    908.00 TO NODE    909.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   419.00
UPSTREAM ELEVATION(FEET) =    522.00
DOWNSTREAM ELEVATION(FEET) =    518.00
ELEVATION DIFFERENCE(FEET) =      4.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.232
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    59.09
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =     10.64
TOTAL AREA(ACRES) =      2.90   TOTAL RUNOFF(CFS) =     10.64

****************************************************************************
FLOW PROCESS FROM NODE    909.00 TO NODE    941.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   124.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.17
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      10.64
PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =   3.63
LONGEST FLOWPATH FROM NODE    908.00 TO NODE    941.00 =     543.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    941.00 TO NODE    941.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   3.63
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =     2.90
PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.64

****************************************************************************
FLOW PROCESS FROM NODE    910.00 TO NODE    911.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
```

```
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   260.00
  UPSTREAM ELEVATION(FEET) =    526.00
  DOWNSTREAM ELEVATION(FEET) =    524.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.363
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    55.38
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.60
  TOTAL AREA(ACRES) =      1.80   TOTAL RUNOFF(CFS) =      6.60

****************************************************************************
  FLOW PROCESS FROM NODE    911.00 TO NODE    941.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.64
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.60
  PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =   3.74
  LONGEST FLOWPATH FROM NODE    910.00 TO NODE    941.00 =     365.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    941.00 TO NODE    941.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.74
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.60

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       10.64     3.63        4.216          2.90
     2        6.60     3.74        4.216          1.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       17.05     3.63       4.216
     2       17.24     3.74       4.216

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      17.24   Tc(MIN.) =    3.74
  TOTAL AREA(ACRES) =        4.7
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    941.00 =     543.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    941.00 TO NODE    942.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   155.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.97
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.24
  PIPE TRAVEL TIME(MIN.) =   0.43    Tc(MIN.) =   4.17
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    942.00 =     698.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    942.00 TO NODE    942.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.17
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     4.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.24

****************************************************************************
  FLOW PROCESS FROM NODE    910.50 TO NODE    911.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   250.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.337
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    56.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      3.30
  TOTAL AREA(ACRES) =      0.90   TOTAL RUNOFF(CFS) =      3.30

****************************************************************************
  FLOW PROCESS FROM NODE    911.50 TO NODE    942.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.00
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.30
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   3.67
  LONGEST FLOWPATH FROM NODE    910.50 TO NODE    942.00 =     330.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    942.00 TO NODE    942.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.67
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.30
```

```
** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       17.24     4.17       4.216          4.70
    2        3.30     3.67       4.216          0.90

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       20.54     3.67       4.216
    2       20.54     4.17       4.216

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      20.54   Tc(MIN.) =    4.17
TOTAL AREA(ACRES) =         5.6
LONGEST FLOWPATH FROM NODE    908.00 TO NODE    942.00 =     698.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    942.00 TO NODE    943.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.11
ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      20.54
PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   4.39
LONGEST FLOWPATH FROM NODE    908.00 TO NODE    943.00 =     778.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    943.00 TO NODE    943.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   4.39
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =      5.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.54

****************************************************************************
FLOW PROCESS FROM NODE    914.00 TO NODE    915.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   451.00
UPSTREAM ELEVATION(FEET) =    520.00
DOWNSTREAM ELEVATION(FEET) =    516.00
ELEVATION DIFFERENCE(FEET) =      4.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.274
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    57.74
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =     11.37
TOTAL AREA(ACRES) =      3.10   TOTAL RUNOFF(CFS) =     11.37

****************************************************************************
FLOW PROCESS FROM NODE    915.00 TO NODE    943.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.42
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      11.37
PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   3.46
LONGEST FLOWPATH FROM NODE    914.00 TO NODE    943.00 =     513.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    943.00 TO NODE    943.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.46
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =      3.10
PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.37

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       20.54     4.39       4.216          5.60
    2       11.37     3.46       4.216          3.10

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       31.91     3.46       4.216
    2       31.91     4.39       4.216

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      31.91   Tc(MIN.) =    4.39
TOTAL AREA(ACRES) =         8.7
LONGEST FLOWPATH FROM NODE    908.00 TO NODE    943.00 =     778.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    943.00 TO NODE    944.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.92
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      31.91
PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   4.48
LONGEST FLOWPATH FROM NODE    908.00 TO NODE    944.00 =     814.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    944.00 TO NODE    944.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
>>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
```

```
==========================================================================

**************************************************************************
 FLOW PROCESS FROM NODE    932.00 TO NODE    933.00 IS CODE =  21
--------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   516.00
 UPSTREAM ELEVATION(FEET) =    528.00
 DOWNSTREAM ELEVATION(FEET) =    522.00
 ELEVATION DIFFERENCE(FEET) =      6.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.091
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH =    61.63
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      15.77
 TOTAL AREA(ACRES) =      4.30   TOTAL RUNOFF(CFS) =     15.77

**************************************************************************
 FLOW PROCESS FROM NODE    933.00 TO NODE    935.00 IS CODE =  31
--------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
 REPRESENTATIVE SLOPE =  0.0050
 FLOW LENGTH(FEET) =   195.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.87
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      15.77
 PIPE TRAVEL TIME(MIN.) =   0.55    Tc(MIN.) =   3.64
 LONGEST FLOWPATH FROM NODE    932.00 TO NODE    935.00 =     711.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE    935.00 TO NODE    935.00 IS CODE =   1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   3.64
 RAINFALL INTENSITY(INCH/HR) =   4.22
 TOTAL STREAM AREA(ACRES) =     4.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.77

**************************************************************************
 FLOW PROCESS FROM NODE    934.00 TO NODE    935.00 IS CODE =  21
--------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   690.00
 UPSTREAM ELEVATION(FEET) =    526.00
 DOWNSTREAM ELEVATION(FEET) =    520.00
 ELEVATION DIFFERENCE(FEET) =      6.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.286
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH =    57.39
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      17.24
 TOTAL AREA(ACRES) =      4.70   TOTAL RUNOFF(CFS) =     17.24

**************************************************************************
 FLOW PROCESS FROM NODE    935.00 TO NODE    935.00 IS CODE =   1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   3.29
 RAINFALL INTENSITY(INCH/HR) =   4.22
 TOTAL STREAM AREA(ACRES) =     4.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.24

 ** CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1        15.77     3.64       4.216         4.30
    2        17.24     3.29       4.216         4.70

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1        31.46     3.29       4.216
    2        33.01     3.64       4.216

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      33.01   Tc(MIN.) =    3.64
 TOTAL AREA(ACRES) =        9.0
 LONGEST FLOWPATH FROM NODE    932.00 TO NODE    935.00 =     711.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE    935.00 TO NODE    944.00 IS CODE =  31
--------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
 REPRESENTATIVE SLOPE =  0.0050
 FLOW LENGTH(FEET) =   630.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  24.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.95
 ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      33.01
 PIPE TRAVEL TIME(MIN.) =   1.51    Tc(MIN.) =   5.15
 LONGEST FLOWPATH FROM NODE    932.00 TO NODE    944.00 =    1341.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE    944.00 TO NODE    944.00 IS CODE =  11
--------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
==========================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1        33.01     5.15       4.133         9.00
 LONGEST FLOWPATH FROM NODE    932.00 TO NODE    944.00 =    1341.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1        31.91     4.48       4.216         8.70
 LONGEST FLOWPATH FROM NODE    908.00 TO NODE    944.00 =     814.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
```

```
     1      60.57       4.48        4.216
     2      64.29       5.15        4.133

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      64.29   Tc(MIN.) =    5.15
  TOTAL AREA(ACRES) =       17.7

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    944.00 TO NODE    945.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  32.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.18
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      64.29
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   5.42
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    945.00 =    1471.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    945.00 TO NODE    945.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.42
  RAINFALL INTENSITY(INCH/HR) =   4.00
  TOTAL STREAM AREA(ACRES) =    17.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     64.29

****************************************************************************
  FLOW PROCESS FROM NODE    916.00 TO NODE    917.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   593.00
  UPSTREAM ELEVATION(FEET) =    518.00
  DOWNSTREAM ELEVATION(FEET) =    514.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.452
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    53.49
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      15.04
  TOTAL AREA(ACRES) =      4.10   TOTAL RUNOFF(CFS) =     15.04

****************************************************************************
  FLOW PROCESS FROM NODE    917.00 TO NODE    945.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    61.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.65
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.04
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   3.63
  LONGEST FLOWPATH FROM NODE    916.00 TO NODE    945.00 =     654.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    945.00 TO NODE    945.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.63
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     4.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.04

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       64.29     5.42        4.002         17.70
     2       15.04     3.63        4.216          4.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       58.13     3.63        4.216
     2       78.57     5.42        4.002

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      78.57   Tc(MIN.) =    5.42
  TOTAL AREA(ACRES) =       21.8
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    945.00 =    1471.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    945.00 TO NODE    946.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   473.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  34.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.58
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      78.57
  PIPE TRAVEL TIME(MIN.) =   0.92    Tc(MIN.) =   6.34
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    946.00 =    1944.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    946.00 TO NODE    946.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.34
  RAINFALL INTENSITY(INCH/HR) =   3.62
  TOTAL STREAM AREA(ACRES) =    21.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     78.57

****************************************************************************
  FLOW PROCESS FROM NODE    918.00 TO NODE    919.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
```

```
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   522.00
UPSTREAM ELEVATION(FEET) =    515.00
DOWNSTREAM ELEVATION(FEET) =    512.00
ELEVATION DIFFERENCE(FEET) =      3.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.573
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    51.49
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =     12.84
TOTAL AREA(ACRES) =      3.50   TOTAL RUNOFF(CFS) =     12.84

****************************************************************************
FLOW PROCESS FROM NODE    919.00 TO NODE    946.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.54
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      12.84
PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   3.81
LONGEST FLOWPATH FROM NODE    918.00 TO NODE    946.00 =     602.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    946.00 TO NODE    946.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.81
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =     3.50
PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.84

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       78.57     6.34        3.618        21.80
    2       12.84     3.81        4.216         3.50

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       80.26     3.81       4.216
    2       89.59     6.34       3.618

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      89.59   Tc(MIN.) =    6.34
TOTAL AREA(ACRES) =      25.3
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    946.00 =    1944.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    946.00 TO NODE    947.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    52.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  48.0 INCH PIPE IS  35.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   8.92
ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      89.59
PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   6.44
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    947.00 =    1996.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    947.00 TO NODE    947.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   6.44
RAINFALL INTENSITY(INCH/HR) =   3.58
TOTAL STREAM AREA(ACRES) =    25.30
PEAK FLOW RATE(CFS) AT CONFLUENCE =     89.59

****************************************************************************
FLOW PROCESS FROM NODE    912.00 TO NODE    913.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   381.00
UPSTREAM ELEVATION(FEET) =    520.00
DOWNSTREAM ELEVATION(FEET) =    514.00
ELEVATION DIFFERENCE(FEET) =      6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.885
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    65.75
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      9.90
TOTAL AREA(ACRES) =      2.70   TOTAL RUNOFF(CFS) =      9.90

****************************************************************************
FLOW PROCESS FROM NODE    913.00 TO NODE    947.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.14
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       9.90
PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   3.23
LONGEST FLOWPATH FROM NODE    912.00 TO NODE    947.00 =     486.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    947.00 TO NODE    947.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.23
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =     2.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.90
```

```
** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       89.59     6.44       3.582         25.30
    2        9.90     3.23       4.216          2.70

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       86.03     3.23       4.216
    2       98.00     6.44       3.582

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      98.00   Tc(MIN.) =    6.44
TOTAL AREA(ACRES) =       28.0
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    947.00 =    1996.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    947.00 TO NODE    948.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   212.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  48.0 INCH PIPE IS  38.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   8.98
ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      98.00
PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =   6.83
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    948.00 =    2208.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    948.00 TO NODE    948.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   6.83
RAINFALL INTENSITY(INCH/HR) =   3.45
TOTAL STREAM AREA(ACRES) =    28.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =     98.00

****************************************************************************
FLOW PROCESS FROM NODE    920.00 TO NODE    921.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   295.00
UPSTREAM ELEVATION(FEET) =    516.00
DOWNSTREAM ELEVATION(FEET) =    512.00
ELEVATION DIFFERENCE(FEET) =      4.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.982
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    63.56
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      5.13
TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      5.13

****************************************************************************
FLOW PROCESS FROM NODE    921.00 TO NODE    948.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.44
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       5.13
PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =   3.38
LONGEST FLOWPATH FROM NODE    920.00 TO NODE    948.00 =     400.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    948.00 TO NODE    948.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.38
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =     1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.13

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       98.00     6.83       3.448         28.00
    2        5.13     3.38       4.216          1.40

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       85.29     3.38       4.216
    2      102.20     6.83       3.448

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     102.20   Tc(MIN.) =    6.83
TOTAL AREA(ACRES) =       29.4
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    948.00 =    2208.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    948.00 TO NODE    949.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    31.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.25
ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     102.20
PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   6.88
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    949.00 =    2239.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    949.00 TO NODE    949.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   6.88
RAINFALL INTENSITY(INCH/HR) =   3.43
TOTAL STREAM AREA(ACRES) =    29.40
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    102.20

****************************************************************************
  FLOW PROCESS FROM NODE    922.00 TO NODE    923.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   469.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    509.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.491
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    52.79
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      12.84
  TOTAL AREA(ACRES) =      3.50   TOTAL RUNOFF(CFS) =     12.84

****************************************************************************
  FLOW PROCESS FROM NODE    923.00 TO NODE    949.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    88.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.54
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       12.84
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   3.76
  LONGEST FLOWPATH FROM NODE    922.00 TO NODE    949.00 =     557.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    949.00 TO NODE    949.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.76
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     3.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.84

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       102.20     6.88        3.430        29.40
     2        12.84     3.76        4.216         3.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        95.99     3.76       4.216
     2       112.64     6.88       3.430

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     112.64   Tc(MIN.) =    6.88
  TOTAL AREA(ACRES) =      32.9
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    949.00 =    2239.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    949.00 TO NODE    950.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  40.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.35
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     112.64
  PIPE TRAVEL TIME(MIN.) =   0.43    Tc(MIN.) =   7.31
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    950.00 =    2479.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    950.00 TO NODE    950.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.31
  RAINFALL INTENSITY(INCH/HR) =   3.30
  TOTAL STREAM AREA(ACRES) =    32.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    112.64

****************************************************************************
  FLOW PROCESS FROM NODE    924.00 TO NODE    925.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   336.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    508.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.073
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.90
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       7.34
  TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =      7.34

****************************************************************************
  FLOW PROCESS FROM NODE    925.00 TO NODE    950.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.87
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.34
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   3.43
  LONGEST FLOWPATH FROM NODE    924.00 TO NODE    950.00 =     441.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    950.00 TO NODE    950.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
```

```
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.43
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =     2.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.34

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1      112.64     7.31        3.299        32.90
    2        7.34     3.43        4.216         2.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       95.48     3.43       4.216
    2      118.38     7.31       3.299

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     118.38   Tc(MIN.) =    7.31
TOTAL AREA(ACRES) =       34.9
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    950.00 =    2479.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    950.00 TO NODE    951.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    56.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  54.0 INCH PIPE IS  39.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.60
ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     118.38
PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   7.41
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    951.00 =    2535.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    951.00 TO NODE    951.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   7.41
RAINFALL INTENSITY(INCH/HR) =   3.27
TOTAL STREAM AREA(ACRES) =    34.90
PEAK FLOW RATE(CFS) AT CONFLUENCE =    118.38

****************************************************************************
FLOW PROCESS FROM NODE    926.00 TO NODE    927.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   516.00
UPSTREAM ELEVATION(FEET) =    508.00
DOWNSTREAM ELEVATION(FEET) =    505.00
ELEVATION DIFFERENCE(FEET) =      3.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.564
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    51.63
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
```

```
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      12.84
TOTAL AREA(ACRES) =       3.50   TOTAL RUNOFF(CFS) =     12.84

****************************************************************************
FLOW PROCESS FROM NODE    927.00 TO NODE    951.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   103.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.54
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      12.84
PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   3.87
LONGEST FLOWPATH FROM NODE    926.00 TO NODE    951.00 =     619.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    951.00 TO NODE    951.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.87
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =     3.50
PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.84

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1      118.38     7.41        3.271        34.90
    2       12.84     3.87        4.216         3.50

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1      104.69     3.87       4.216
    2      128.34     7.41       3.271

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     128.34   Tc(MIN.) =    7.41
TOTAL AREA(ACRES) =       38.4
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    951.00 =    2535.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    951.00 TO NODE    952.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   310.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  54.0 INCH PIPE IS  41.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.69
ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     128.34
PIPE TRAVEL TIME(MIN.) =   0.53    Tc(MIN.) =   7.94
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    952.00 =    2845.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    952.00 TO NODE    952.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.94
  RAINFALL INTENSITY(INCH/HR) =   3.13
  TOTAL STREAM AREA(ACRES) =    38.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    128.34

****************************************************************************
  FLOW PROCESS FROM NODE    930.00 TO NODE    931.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   700.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    502.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.578
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.43
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.216
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      16.14
  TOTAL AREA(ACRES) =      4.40   TOTAL RUNOFF(CFS) =     16.14

****************************************************************************
  FLOW PROCESS FROM NODE    931.00 TO NODE    952.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.90
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       16.14
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =   4.00
  LONGEST FLOWPATH FROM NODE    930.00 TO NODE    952.00 =     850.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    952.00 TO NODE    952.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.00
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =     4.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.14

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      128.34     7.94       3.128         38.40
     2       16.14     4.00       4.216          4.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      111.36     4.00       4.216
     2      140.32     7.94       3.128

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     140.32   Tc(MIN.) =    7.94
  TOTAL AREA(ACRES) =       42.8
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    952.00 =    2845.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    952.00 TO NODE    953.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    42.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  42.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.99
  ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     140.32
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   8.01
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    953.00 =    2887.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    953.00 TO NODE    953.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      140.32     8.01       3.110         42.80
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    953.00 =    2887.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       72.55     7.15       3.348         27.90
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    953.00 =    3246.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      197.71     7.15       3.348
     2      207.71     8.01       3.110

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     207.71   Tc(MIN.) =    8.01
  TOTAL AREA(ACRES) =       70.7

****************************************************************************
  FLOW PROCESS FROM NODE    953.00 TO NODE    999.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    486.00  DOWNSTREAM(FEET) =    484.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   165.00   CHANNEL SLOPE =  0.0121
  CHANNEL FLOW THRU SUBAREA(CFS) =     207.71
  FLOW VELOCITY(FEET/SEC) =   6.53 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.42   Tc(MIN.) =   8.43
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    999.00 =    3411.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    999.00 TO NODE    999.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.009
  *USER SPECIFIED(SUBAREA):
```

```
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8522
  SUBAREA AREA(ACRES) =     2.50   SUBAREA RUNOFF(CFS) =     2.63
  TOTAL AREA(ACRES) =        73.2   TOTAL RUNOFF(CFS) =     207.71
  TC(MIN.) =   8.43
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE    999.00 TO NODE   1013.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  66.0 INCH PIPE IS  48.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.02
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     207.71
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   8.62
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1013.00 =    3531.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1010.00 TO NODE   1010.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  34.20   RAIN INTENSITY(INCH/HOUR) =  1.22
  TOTAL AREA(ACRES) =   625.90   TOTAL RUNOFF(CFS) =    514.50

****************************************************************************
  FLOW PROCESS FROM NODE   1010.00 TO NODE   1011.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    528.00  DOWNSTREAM(FEET) =    524.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   180.00   CHANNEL SLOPE =  0.0222
  CHANNEL FLOW THRU SUBAREA(CFS) =     514.50
  FLOW VELOCITY(FEET/SEC) =  11.78 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.25   Tc(MIN.) =  34.45
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1011.00 =    3711.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1011.00 TO NODE   1011.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.214
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6733
  SUBAREA AREA(ACRES) =     1.20   SUBAREA RUNOFF(CFS) =     0.51
  TOTAL AREA(ACRES) =       627.1   TOTAL RUNOFF(CFS) =     514.50
  TC(MIN.) =  34.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE   1011.00 TO NODE   1012.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   167.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  90.0 INCH PIPE IS  71.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.65
  ESTIMATED PIPE DIAMETER(INCH) =  90.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     514.50
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  34.66
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1012.00 =    3878.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1012.00 TO NODE   1013.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    518.00  DOWNSTREAM(FEET) =    486.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3050.00   CHANNEL SLOPE =  0.0105
  CHANNEL FLOW THRU SUBAREA(CFS) =     514.50
  FLOW VELOCITY(FEET/SEC) =   8.09 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   6.28   Tc(MIN.) =  40.94
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1013.00 =    6928.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1013.00 TO NODE   1013.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.086
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6677
  SUBAREA AREA(ACRES) =    11.20   SUBAREA RUNOFF(CFS) =     4.26
  TOTAL AREA(ACRES) =       638.3   TOTAL RUNOFF(CFS) =     514.50
  TC(MIN.) =  40.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =        0.0  TC(MIN.) =       5.00
  PEAK FLOW RATE(CFS)    =       1.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
          (c) Copyright 1982-2006 Advanced Engineering Software (aes)
              Ver. 2.0 Release Date: 06/01/2005  License ID 1499

                          Analysis prepared by:

                       Kimley-Horn & Associates, Inc
                           401 B Street Suite 600
                            San Diego, CA 92101
                                619-234-9411

 ************************* DESCRIPTION OF STUDY *************************
* otay business park proposed condition                                 *
* 10-year storm; P = 1.9"                                               *
* 2010-04-12 AG                                                         *
 ************************************************************************

  FILE NAME: 10.DAT
  TIME/DATE OF STUDY: 17:02 04/12/2010
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) =  10.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   1.900
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150
  2   39.0     34.0    0.020/0.020/ ---    0.50    1.50 0.0313 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    657.00
  DOWNSTREAM ELEVATION(FEET) =    640.00
  ELEVATION DIFFERENCE(FEET) =     17.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.431
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.19
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.19

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    640.00  DOWNSTREAM(FEET) =    540.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3300.00   CHANNEL SLOPE =  0.0303
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.19
  FLOW VELOCITY(FEET/SEC) =   2.61 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  21.06   Tc(MIN.) =  25.49
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    3350.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.751
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  101.30   SUBAREA RUNOFF(CFS) =   62.06
  TOTAL AREA(ACRES) =      101.4   TOTAL RUNOFF(CFS) =      62.13
  TC(MIN.) =  25.49

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  31.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.15
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      62.13
  PIPE TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =  26.01
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    203.00 =    3600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  26.01
  RAINFALL INTENSITY(INCH/HR) =   1.73
  TOTAL STREAM AREA(ACRES) =   101.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      62.13

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    601.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    638.00
  DOWNSTREAM ELEVATION(FEET) =    632.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.431
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.19
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.19
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     601.00 TO NODE     602.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.00  DOWNSTREAM(FEET) =    531.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3766.00   CHANNEL SLOPE =  0.0268
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =        0.19
  FLOW VELOCITY(FEET/SEC) =   2.46 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.55   Tc(MIN.) =  29.98
  LONGEST FLOWPATH FROM NODE     600.00 TO NODE     602.00 =    3816.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     602.00 TO NODE     602.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.577
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  102.19   SUBAREA RUNOFF(CFS) =   56.39
  TOTAL AREA(ACRES) =      102.3   TOTAL RUNOFF(CFS) =      56.45
  Tc(MIN.) =  29.98

****************************************************************************
  FLOW PROCESS FROM NODE     602.00 TO NODE     203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   440.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  31.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.82
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      56.45
  PIPE TRAVEL TIME(MIN.) =   0.94    Tc(MIN.) =  30.92
  LONGEST FLOWPATH FROM NODE     600.00 TO NODE     203.00 =    4256.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     203.00 TO NODE     203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  30.92
  RAINFALL INTENSITY(INCH/HR) =   1.55
  TOTAL STREAM AREA(ACRES) =   102.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     56.45

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        62.13    26.01        1.728       101.41
     2        56.45    30.92        1.546       102.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       109.61    26.01       1.728
     2       112.02    30.92       1.546

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     112.02   Tc(MIN.) =   30.92
  TOTAL AREA(ACRES) =      203.7
  LONGEST FLOWPATH FROM NODE     600.00 TO NODE     203.00 =    4256.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     203.00 TO NODE     204.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =  1200.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  40.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.34
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     112.02
  PIPE TRAVEL TIME(MIN.) =   2.14    Tc(MIN.) =  33.06
  LONGEST FLOWPATH FROM NODE     600.00 TO NODE     204.00 =    5456.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     204.00 TO NODE     204.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  33.06
  RAINFALL INTENSITY(INCH/HR) =   1.48
  TOTAL STREAM AREA(ACRES) =   203.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    112.02

****************************************************************************
  FLOW PROCESS FROM NODE     400.00 TO NODE     401.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     3.00
  UPSTREAM ELEVATION(FEET) =    555.00
  DOWNSTREAM ELEVATION(FEET) =    552.00
  ELEVATION DIFFERENCE(FEET) =       3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.085
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.0, IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.19
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.19

****************************************************************************
  FLOW PROCESS FROM NODE     401.00 TO NODE     402.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    552.00  DOWNSTREAM(FEET) =    519.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1517.00   CHANNEL SLOPE =  0.0218
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =        0.19
  FLOW VELOCITY(FEET/SEC) =   2.21 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  11.43   Tc(MIN.) =  12.51
  LONGEST FLOWPATH FROM NODE     400.00 TO NODE     402.00 =    1520.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     402.00 TO NODE     402.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.770
 *USER SPECIFIED(SUBAREA):
 DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =  97
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
 SUBAREA AREA(ACRES) =   21.69   SUBAREA RUNOFF(CFS) =   21.03
 TOTAL AREA(ACRES) =       21.8   TOTAL RUNOFF(CFS) =      21.14
 TC(MIN.) =  12.51

****************************************************************************
 FLOW PROCESS FROM NODE    402.00 TO NODE    204.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.12
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      21.14
 PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =  12.65
 LONGEST FLOWPATH FROM NODE    400.00 TO NODE    204.00 =    1570.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    204.00 TO NODE    204.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  12.65
 RAINFALL INTENSITY(INCH/HR) =   2.75
 TOTAL STREAM AREA(ACRES) =    21.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.14

 ** CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       112.02    33.06       1.480        203.71
    2        21.14    12.65       2.751         21.80

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1        81.42    12.65       2.751
    2       123.40    33.06       1.480

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     123.40   Tc(MIN.) =   33.06
 TOTAL AREA(ACRES) =       225.5
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    204.00 =    5456.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    204.00 TO NODE    204.50 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 FLOW LENGTH(FEET) =  1370.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  54.0 INCH PIPE IS  40.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.66
 ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     123.40
 PIPE TRAVEL TIME(MIN.) =   2.36    Tc(MIN.) =  35.43
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    204.50 =    6826.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    204.50 TO NODE    204.50 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  35.43
 RAINFALL INTENSITY(INCH/HR) =   1.42
 TOTAL STREAM AREA(ACRES) =   225.51
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    123.40

****************************************************************************
 FLOW PROCESS FROM NODE   1030.00 TO NODE   1031.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    20.00
 UPSTREAM ELEVATION(FEET) =    524.00
 DOWNSTREAM ELEVATION(FEET) =    523.60
 ELEVATION DIFFERENCE(FEET) =      0.40
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.470
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.44
 TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.44

****************************************************************************
 FLOW PROCESS FROM NODE   1031.00 TO NODE   1032.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 STREET LENGTH(FEET) =  1300.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 39.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.82
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.33
   HALFSTREET FLOOD WIDTH(FEET) =   10.11
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.59
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.52
 STREET FLOW TRAVEL TIME(MIN.) =  13.60   Tc(MIN.) =  15.07
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.457
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
 SUBAREA AREA(ACRES) =    1.20      SUBAREA RUNOFF(CFS) =    2.57
 TOTAL AREA(ACRES) =        1.3        PEAK FLOW RATE(CFS) =       2.78

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.08
 FLOW VELOCITY(FEET/SEC.) =  1.76   DEPTH*VELOCITY(FT*FT/SEC.) =   0.65
 LONGEST FLOWPATH FROM NODE   1030.00 TO NODE   1032.00 =    1320.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   1032.00 TO NODE    204.50 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.82
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        2.78
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =  15.29
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    204.50 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    204.50 TO NODE    204.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.29
  RAINFALL INTENSITY(INCH/HR) =   2.43
  TOTAL STREAM AREA(ACRES) =      1.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       2.78

****************************************************************************
  FLOW PROCESS FROM NODE    280.00 TO NODE    281.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    20.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.60
  ELEVATION DIFFERENCE(FEET) =       0.40
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.470
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.44
  TOTAL AREA(ACRES) =       0.10   TOTAL RUNOFF(CFS) =       0.44

****************************************************************************
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1300.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.08
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    7.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.42
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.41
  STREET FLOW TRAVEL TIME(MIN.) =  15.21   Tc(MIN.) =  16.67
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.302
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.60      SUBAREA RUNOFF(CFS) =    1.20
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       1.40

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.01
  FLOW VELOCITY(FEET/SEC.) =  1.51   DEPTH*VELOCITY(FT*FT/SEC.) =   0.46
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =    1320.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    204.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.16
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        1.40
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =  16.94
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    204.50 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    204.50 TO NODE    204.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.94
  RAINFALL INTENSITY(INCH/HR) =   2.28
  TOTAL STREAM AREA(ACRES) =      0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       1.40

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       123.40    35.43       1.416        225.51
     2         2.78    15.29       2.435          1.30
     3         1.40    16.94       2.279          0.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        75.80    15.29       2.435
     2        80.67    16.94       2.279
     3       125.88    35.43       1.416

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     125.88   Tc(MIN.) =   35.43
  TOTAL AREA(ACRES) =      227.5
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    204.50 =    6826.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    204.50 TO NODE    205.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    22.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  41.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.68
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =     125.88
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =  35.46
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    205.00 =    6848.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    121.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    586.00
  DOWNSTREAM ELEVATION(FEET) =    583.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.254
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.849
  SUBAREA RUNOFF(CFS) =      0.19
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.19

****************************************************************************
  FLOW PROCESS FROM NODE    121.00 TO NODE    122.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    583.00  DOWNSTREAM(FEET) =    551.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   600.00   CHANNEL SLOPE =  0.0533
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.19
  FLOW VELOCITY(FEET/SEC) =   3.46 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.89   Tc(MIN.) =   8.14
  LONGEST FLOWPATH FROM NODE    120.00 TO NODE    122.00 =     650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.656
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    5.80   SUBAREA RUNOFF(CFS) =    7.42
  TOTAL AREA(ACRES) =       5.9   TOTAL RUNOFF(CFS) =      7.56
  TC(MIN.) =   8.14

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.14
  RAINFALL INTENSITY(INCH/HR) =   3.66
  TOTAL STREAM AREA(ACRES) =     5.91
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.56

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   5.00   RAIN INTENSITY(INCH/HOUR) =  5.01
  TOTAL AREA(ACRES) =    59.90   TOTAL RUNOFF(CFS) =     52.30

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.00
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =    59.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     52.30

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        7.56     8.14        3.656         5.91
     2       52.30     5.00        5.006        59.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       56.94     5.00       5.006
     2       45.75     8.14       3.656

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      56.94   Tc(MIN.) =    5.00
  TOTAL AREA(ACRES) =       65.8
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    122.00 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    123.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  29.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.04
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      56.94
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   5.34
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    123.00 =    1535.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    123.00 TO NODE    117.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    550.00  DOWNSTREAM(FEET) =    520.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1210.00   CHANNEL SLOPE =  0.0248
  CHANNEL FLOW THRU SUBAREA(CFS) =      56.94
  FLOW VELOCITY(FEET/SEC) =   6.33 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.19   Tc(MIN.) =   8.53
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    117.00 =    2745.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.547
 *USER SPECIFIED(SUBAREA):
 DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =  97
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.2189
 SUBAREA AREA(ACRES) =   14.40   SUBAREA RUNOFF(CFS) =   17.88
 TOTAL AREA(ACRES) =       80.2   TOTAL RUNOFF(CFS) =      62.28
 TC(MIN.) =   8.53

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.53
 RAINFALL INTENSITY(INCH/HR) =   3.55
 TOTAL STREAM AREA(ACRES) =    80.21
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     62.28

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   7
----------------------------------------------------------------------------
 >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN) =   5.00   RAIN INTENSITY(INCH/HOUR) =  5.01
 TOTAL AREA(ACRES) =   206.40   TOTAL RUNOFF(CFS) =    180.40

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.00
 RAINFALL INTENSITY(INCH/HR) =   5.01
 TOTAL STREAM AREA(ACRES) =   206.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    180.40

 ** CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       62.28     8.53        3.547        80.21
    2      180.40     5.00        5.006       206.40

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1      224.53     5.00       5.006
    2      190.11     8.53       3.547

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     224.53   Tc(MIN.) =    5.00
 TOTAL AREA(ACRES) =      286.6
 LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    117.00 =    2745.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    118.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  66.0 INCH PIPE IS  52.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  11.10
 ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     224.53
 PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   5.26
 LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    118.00 =    2915.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
 >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    325.00 TO NODE    326.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
 UPSTREAM ELEVATION(FEET) =    618.00
 DOWNSTREAM ELEVATION(FEET) =    617.22
 ELEVATION DIFFERENCE(FEET) =      0.78
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.48
 TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
 FLOW PROCESS FROM NODE    326.00 TO NODE    327.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 STREET LENGTH(FEET) =  1580.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 39.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.25
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.35
  HALFSTREET FLOOD WIDTH(FEET) =   11.06
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.68
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.58
 STREET FLOW TRAVEL TIME(MIN.) =  15.71   Tc(MIN.) =  17.77
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.210
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
 SUBAREA AREA(ACRES) =    1.69      SUBAREA RUNOFF(CFS) =    3.25
 TOTAL AREA(ACRES) =        1.8        PEAK FLOW RATE(CFS) =       3.46

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.18
 FLOW VELOCITY(FEET/SEC.) =  1.86   DEPTH*VELOCITY(FT*FT/SEC.) =   0.73
 LONGEST FLOWPATH FROM NODE    325.00 TO NODE    327.00 =    1619.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    327.00 TO NODE    310.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.05
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =        3.46
PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =  18.03
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    310.00 =    1684.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    310.00 TO NODE    310.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  18.03
RAINFALL INTENSITY(INCH/HR) =   2.19
TOTAL STREAM AREA(ACRES) =      1.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =       3.46

****************************************************************************
FLOW PROCESS FROM NODE    330.00 TO NODE    331.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    618.00
DOWNSTREAM ELEVATION(FEET) =    617.22
ELEVATION DIFFERENCE(FEET) =      0.78
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =       0.48
TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.48

****************************************************************************
FLOW PROCESS FROM NODE    331.00 TO NODE    332.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =  1580.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.25
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.35
  HALFSTREET FLOOD WIDTH(FEET) =   11.06
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.68
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.58
STREET FLOW TRAVEL TIME(MIN.) =  15.71   Tc(MIN.) =  17.77
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.210
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
```

```
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =     1.69      SUBAREA RUNOFF(CFS) =     3.25
TOTAL AREA(ACRES) =        1.8        PEAK FLOW RATE(CFS) =       3.46

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.18
FLOW VELOCITY(FEET/SEC.) =  1.86   DEPTH*VELOCITY(FT*FT/SEC.) =   0.73
LONGEST FLOWPATH FROM NODE    330.00 TO NODE    332.00 =    1619.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    332.00 TO NODE    310.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.05
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =        3.46
PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =  17.85
LONGEST FLOWPATH FROM NODE    330.00 TO NODE    310.00 =    1639.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    310.00 TO NODE    310.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  17.85
RAINFALL INTENSITY(INCH/HR) =   2.20
TOTAL STREAM AREA(ACRES) =      1.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =       3.46

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1        3.46    18.03        2.189         1.80
    2        3.46    17.85        2.203         1.80

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1        6.89    17.85       2.203
    2        6.90    18.03       2.189

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =       6.90   Tc(MIN.) =   18.03
TOTAL AREA(ACRES) =        3.6
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    310.00 =    1684.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    310.00 TO NODE    311.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   920.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.67
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       6.90
PIPE TRAVEL TIME(MIN.) =   3.29    Tc(MIN.) =  21.32
```

```
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    311.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.32
  RAINFALL INTENSITY(INCH/HR) =   1.96
  TOTAL STREAM AREA(ACRES) =     3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.90

****************************************************************************
  FLOW PROCESS FROM NODE    340.00 TO NODE    341.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    554.00
  DOWNSTREAM ELEVATION(FEET) =    553.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE    341.00 TO NODE    342.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   900.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.65
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.67
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.57
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.50
  STREET FLOW TRAVEL TIME(MIN.) =   9.55   Tc(MIN.) =  11.61
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.908
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.89      SUBAREA RUNOFF(CFS) =    2.25
  TOTAL AREA(ACRES) =        1.0        PEAK FLOW RATE(CFS) =       2.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.64
  FLOW VELOCITY(FEET/SEC.) =  1.72   DEPTH*VELOCITY(FT*FT/SEC.) =   0.62
  LONGEST FLOWPATH FROM NODE    340.00 TO NODE    342.00 =     939.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    342.00 TO NODE    311.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.73
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.53
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =  11.87
  LONGEST FLOWPATH FROM NODE    340.00 TO NODE    311.00 =     999.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.87
  RAINFALL INTENSITY(INCH/HR) =   2.87
  TOTAL STREAM AREA(ACRES) =     1.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.53

****************************************************************************
  FLOW PROCESS FROM NODE    350.00 TO NODE    351.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    554.00
  DOWNSTREAM ELEVATION(FEET) =    553.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE    351.00 TO NODE    352.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   900.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.80
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   10.11
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.52
  STREET FLOW TRAVEL TIME(MIN.) =   9.48   Tc(MIN.) =  11.53
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.921
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
```

```
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =     0.99      SUBAREA RUNOFF(CFS) =     2.52
TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       2.80

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.08
FLOW VELOCITY(FEET/SEC.) =  1.77   DEPTH*VELOCITY(FT*FT/SEC.) =   0.65
LONGEST FLOWPATH FROM NODE    350.00 TO NODE    352.00 =     939.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    352.00 TO NODE    311.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   3.83
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =          2.80
PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =  11.61
LONGEST FLOWPATH FROM NODE    350.00 TO NODE    311.00 =     959.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    311.00 TO NODE    311.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =  11.61
RAINFALL INTENSITY(INCH/HR) =   2.91
TOTAL STREAM AREA(ACRES) =     1.10
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.80

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1        6.90    21.32        1.965         3.60
    2        2.53    11.87        2.866         1.00
    3        2.80    11.61        2.907         1.10

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1        9.93    11.61       2.907
    2       10.01    11.87       2.866
    3       10.52    21.32       1.965

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      10.52   Tc(MIN.) =   21.32
TOTAL AREA(ACRES) =        5.7
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    311.00 =    2604.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.17
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      10.52
PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =  21.58
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    312.00 =    2684.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    312.00 TO NODE    312.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    360.00 TO NODE    361.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    560.00
DOWNSTREAM ELEVATION(FEET) =    559.20
ELEVATION DIFFERENCE(FEET) =      0.80
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.48
TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
FLOW PROCESS FROM NODE    361.00 TO NODE    362.00 IS CODE =  61
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =  1130.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.05
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.34
  HALFSTREET FLOOD WIDTH(FEET) =   10.62
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.64
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.56
STREET FLOW TRAVEL TIME(MIN.) =  11.45   Tc(MIN.) =  13.49
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.639
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    2.96
TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       3.21

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.82
FLOW VELOCITY(FEET/SEC.) =  1.83   DEPTH*VELOCITY(FT*FT/SEC.) =   0.70
LONGEST FLOWPATH FROM NODE    360.00 TO NODE    362.00 =    1169.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    362.00 TO NODE    363.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.98
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        3.21
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =  13.80
  LONGEST FLOWPATH FROM NODE    360.00 TO NODE    363.00 =    1244.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    363.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.80
  RAINFALL INTENSITY(INCH/HR) =   2.60
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.21

****************************************************************************
  FLOW PROCESS FROM NODE    370.00 TO NODE    371.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    34.00
  UPSTREAM ELEVATION(FEET) =    560.00
  DOWNSTREAM ELEVATION(FEET) =    559.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.815
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE    371.00 TO NODE    372.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1220.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.00
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.63
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.55
  STREET FLOW TRAVEL TIME(MIN.) =  12.50   Tc(MIN.) =  14.32
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.540
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    2.85
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       3.09

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.60
  FLOW VELOCITY(FEET/SEC.) =  1.81   DEPTH*VELOCITY(FT*FT/SEC.) =   0.69
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    372.00 =    1254.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    372.00 TO NODE    363.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.94
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        3.09
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =  14.42
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    363.00 =    1279.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    363.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.42
  RAINFALL INTENSITY(INCH/HR) =   2.53
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.09

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.21     13.80       2.600         1.40
     2        3.09     14.42       2.528         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        6.18     13.80       2.600
     2        6.22     14.42       2.528

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.22   Tc(MIN.) =   14.42
  TOTAL AREA(ACRES) =        2.8
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    363.00 =    1279.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    312.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.61
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        6.22
  PIPE TRAVEL TIME(MIN.) =   0.43    Tc(MIN.) =  14.86
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    312.00 =    1399.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     312.00 TO NODE     312.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY      AREA
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1          6.22     14.86        2.480         2.80
  LONGEST FLOWPATH FROM NODE     370.00 TO NODE     312.00 =     1399.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY      AREA
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1         10.52     21.58        1.949         5.70
  LONGEST FLOWPATH FROM NODE     325.00 TO NODE     312.00 =     2684.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
     1        13.46      14.86        2.480
     2        15.41      21.58        1.949

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       15.41   Tc(MIN.) =    21.58
  TOTAL AREA(ACRES) =         8.5

****************************************************************************
  FLOW PROCESS FROM NODE       0.00 TO NODE       0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     312.00 TO NODE     313.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    354.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  19.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.66
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       15.41
  PIPE TRAVEL TIME(MIN.) =   1.04    Tc(MIN.) =  22.62
  LONGEST FLOWPATH FROM NODE     325.00 TO NODE     313.00 =     3038.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     313.00 TO NODE     313.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  22.62
  RAINFALL INTENSITY(INCH/HR) =   1.89
  TOTAL STREAM AREA(ACRES) =      8.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      15.41

****************************************************************************
  FLOW PROCESS FROM NODE     500.00 TO NODE     501.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
  UPSTREAM ELEVATION(FEET) =     546.00
  DOWNSTREAM ELEVATION(FEET) =     540.00
  ELEVATION DIFFERENCE(FEET) =       6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     2.818
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =     67.65
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       8.27
  TOTAL AREA(ACRES) =       1.90   TOTAL RUNOFF(CFS) =       8.27

****************************************************************************
  FLOW PROCESS FROM NODE     501.00 TO NODE     313.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =     40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.99
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.27
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   2.95
  LONGEST FLOWPATH FROM NODE     500.00 TO NODE     313.00 =      380.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     313.00 TO NODE     313.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.95
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =      1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       8.27

  ** CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY      AREA
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1         15.41     22.62        1.891         8.50
     2          8.27      2.95        5.006         1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF      Tc       INTENSITY
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)
     1         10.29      2.95        5.006
     2         18.54     22.62        1.891

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       18.54   Tc(MIN.) =   22.62
  TOTAL AREA(ACRES) =        10.4
  LONGEST FLOWPATH FROM NODE     325.00 TO NODE     313.00 =     3038.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     313.00 TO NODE     314.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.04
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =      18.54
  PIPE TRAVEL TIME(MIN.) =   0.83    Tc(MIN.) =  23.45
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    314.00 =    3338.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    314.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.45
  RAINFALL INTENSITY(INCH/HR) =   1.85
  TOTAL STREAM AREA(ACRES) =    10.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.54

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    511.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   370.00
  UPSTREAM ELEVATION(FEET) =    540.00
  DOWNSTREAM ELEVATION(FEET) =    534.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.868
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.22
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.27
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      8.27

****************************************************************************
  FLOW PROCESS FROM NODE    511.00 TO NODE    314.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.99
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =          8.27
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   3.00
  LONGEST FLOWPATH FROM NODE    510.00 TO NODE    314.00 =     410.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    314.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.00
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       18.54    23.45        1.848        10.40
     2        8.27     3.00        5.006         1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       15.12     3.00        5.006
     2       21.59    23.45        1.848

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      21.59   Tc(MIN.) =   23.45
  TOTAL AREA(ACRES) =       12.3
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    314.00 =    3338.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    315.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  19.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.34
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      21.59
  PIPE TRAVEL TIME(MIN.) =   0.79    Tc(MIN.) =  24.24
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    315.00 =    3638.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    315.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  24.24
  RAINFALL INTENSITY(INCH/HR) =   1.81
  TOTAL STREAM AREA(ACRES) =    12.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.59

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    521.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   365.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.859
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.44
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.27
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      8.27

****************************************************************************
  FLOW PROCESS FROM NODE    521.00 TO NODE    315.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
```

```
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.99
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        8.27
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   2.99
  LONGEST FLOWPATH FROM NODE    520.00 TO NODE    315.00 =     405.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    315.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.99
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       21.59    24.24        1.809         12.30
     2        8.27     2.99        5.006          1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       16.07     2.99       5.006
     2       24.58    24.24       1.809

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.58   Tc(MIN.) =   24.24
  TOTAL AREA(ACRES) =       14.2
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    315.00 =    3638.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    316.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.49
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.58
  PIPE TRAVEL TIME(MIN.) =   0.62    Tc(MIN.) =  24.85
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    316.00 =    3878.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    316.00 TO NODE    316.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  24.85
  RAINFALL INTENSITY(INCH/HR) =   1.78
  TOTAL STREAM AREA(ACRES) =    14.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.58

****************************************************************************
  FLOW PROCESS FROM NODE    390.00 TO NODE    391.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    544.00
  DOWNSTREAM ELEVATION(FEET) =    543.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE    391.00 TO NODE    392.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1200.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.00
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.55
  STREET FLOW TRAVEL TIME(MIN.) =  12.32   Tc(MIN.) =  14.35
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.536
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    2.85
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       3.09

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.60
  FLOW VELOCITY(FEET/SEC.) =  1.81   DEPTH*VELOCITY(FT*FT/SEC.) =   0.69
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    392.00 =    1239.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    316.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.93
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.09
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =  14.63
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    316.00 =    1304.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    316.00 TO NODE    316.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 14.63
RAINFALL INTENSITY(INCH/HR) = 2.51
TOTAL STREAM AREA(ACRES) = 1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.09

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       24.58    24.85       1.780        14.20
    2        3.09    14.63       2.505         1.40

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       20.55    14.63       2.505
    2       26.77    24.85       1.780

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 26.77  Tc(MIN.) = 24.85
TOTAL AREA(ACRES) = 15.6
LONGEST FLOWPATH FROM NODE  325.00 TO NODE  316.00 = 3878.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE  316.00 TO NODE  317.00 IS CODE = 31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE = 0.0050
FLOW LENGTH(FEET) = 45.00  MANNING'S N = 0.013
DEPTH OF FLOW IN 30.0 INCH PIPE IS 23.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.55
ESTIMATED PIPE DIAMETER(INCH) = 30.00  NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 26.77
PIPE TRAVEL TIME(MIN.) = 0.11  Tc(MIN.) = 24.97
LONGEST FLOWPATH FROM NODE  325.00 TO NODE  317.00 = 3923.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE  317.00 TO NODE  317.00 IS CODE = 10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==============================================================================

****************************************************************************
FLOW PROCESS FROM NODE  530.00 TO NODE  531.00 IS CODE = 21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) = 97
INITIAL SUBAREA FLOW-LENGTH(FEET) = 350.00
UPSTREAM ELEVATION(FEET) = 528.00
DOWNSTREAM ELEVATION(FEET) = 522.00
ELEVATION DIFFERENCE(FEET) = 6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 2.835
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH = 67.14
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.006
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 7.84
TOTAL AREA(ACRES) = 1.80  TOTAL RUNOFF(CFS) = 7.84

****************************************************************************
FLOW PROCESS FROM NODE  531.00 TO NODE  532.00 IS CODE = 31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE = 0.0050
FLOW LENGTH(FEET) = 20.00  MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 13.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.94
ESTIMATED PIPE DIAMETER(INCH) = 21.00  NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 7.84
PIPE TRAVEL TIME(MIN.) = 0.07  Tc(MIN.) = 2.90
LONGEST FLOWPATH FROM NODE  530.00 TO NODE  532.00 = 370.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE  532.00 TO NODE  532.00 IS CODE = 1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 2.90
RAINFALL INTENSITY(INCH/HR) = 5.01
TOTAL STREAM AREA(ACRES) = 1.80
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.84

****************************************************************************
FLOW PROCESS FROM NODE  380.00 TO NODE  381.00 IS CODE = 21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) = 97
INITIAL SUBAREA FLOW-LENGTH(FEET) = 34.00
UPSTREAM ELEVATION(FEET) = 542.00
DOWNSTREAM ELEVATION(FEET) = 541.20
ELEVATION DIFFERENCE(FEET) = 0.80
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 1.815
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.006
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 0.48
TOTAL AREA(ACRES) = 0.11  TOTAL RUNOFF(CFS) = 0.48

****************************************************************************
FLOW PROCESS FROM NODE  381.00 TO NODE  532.00 IS CODE = 62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION # 2 USED)<<<<<
==============================================================================
REPRESENTATIVE SLOPE = 0.0050
STREET LENGTH(FEET) = 1200.00  CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 34.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.01
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) = 0.34
  HALFSTREET FLOOD WIDTH(FEET) = 10.55
  AVERAGE FLOW VELOCITY(FEET/SEC.) = 1.64
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.55
STREET FLOW TRAVEL TIME(MIN.) = 12.21  Tc(MIN.) = 14.03
```

```
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.574
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    1.29     SUBAREA RUNOFF(CFS) =    2.89
TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       3.13

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.67
FLOW VELOCITY(FEET/SEC.) =  1.82   DEPTH*VELOCITY(FT*FT/SEC.) =   0.69
LONGEST FLOWPATH FROM NODE    380.00 TO NODE    532.00 =    1234.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    532.00 TO NODE    532.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  14.03
RAINFALL INTENSITY(INCH/HR) =   2.57
TOTAL STREAM AREA(ACRES) =      1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.13

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1        7.84     2.90        5.006         1.80
    2        3.13    14.03        2.574         1.40

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1        8.49     2.90        5.006
    2        7.16    14.03        2.574

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =       8.49   Tc(MIN.) =    2.90
TOTAL AREA(ACRES) =        3.2
LONGEST FLOWPATH FROM NODE    380.00 TO NODE    532.00 =    1234.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    532.00 TO NODE    517.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.02
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =        8.49
PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   2.94
LONGEST FLOWPATH FROM NODE    380.00 TO NODE    517.00 =    1246.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    317.00 TO NODE    317.00 IS CODE =  11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1        8.49     2.94        5.006         3.20
```

```
LONGEST FLOWPATH FROM NODE    380.00 TO NODE    317.00 =    1246.00 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       26.77    24.97        1.774        15.60
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    317.00 =    3923.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       11.64     2.94        5.006
    2       29.78    24.97        1.774

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      29.78   Tc(MIN.) =   24.97
TOTAL AREA(ACRES) =       18.8

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
>>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    317.00 TO NODE    318.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.84
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      29.78
PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =  25.16
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    318.00 =    4003.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    318.00 TO NODE    318.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    240.00 TO NODE    241.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    540.00
DOWNSTREAM ELEVATION(FEET) =    539.20
ELEVATION DIFFERENCE(FEET) =      0.80
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.48
TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
FLOW PROCESS FROM NODE    241.00 TO NODE    242.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =  1200.00   CURB HEIGHT(INCHES) =  6.0
```

```
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.00
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.34
  HALFSTREET FLOOD WIDTH(FEET) =   10.55
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.62
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.55
STREET FLOW TRAVEL TIME(MIN.) =  12.32   Tc(MIN.) =  14.35
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.536
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    2.85
TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       3.09

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.60
FLOW VELOCITY(FEET/SEC.) =  1.81   DEPTH*VELOCITY(FT*FT/SEC.) =   0.69
LONGEST FLOWPATH FROM NODE    240.00 TO NODE    242.00 =    1239.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    242.00 TO NODE    243.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   3.93
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =        3.09
PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =  14.56
LONGEST FLOWPATH FROM NODE    240.00 TO NODE    243.00 =    1289.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    243.00 TO NODE    243.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  14.56
RAINFALL INTENSITY(INCH/HR) =   2.51
TOTAL STREAM AREA(ACRES) =      1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =       3.09

****************************************************************************
FLOW PROCESS FROM NODE    250.00 TO NODE    251.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    547.50
DOWNSTREAM ELEVATION(FEET) =    547.20
ELEVATION DIFFERENCE(FEET) =       0.30
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.822
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =       0.48
TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.48

****************************************************************************
FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =  2039.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.69
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.36
  HALFSTREET FLOOD WIDTH(FEET) =   11.94
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.74
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.64
STREET FLOW TRAVEL TIME(MIN.) =  19.50   Tc(MIN.) =  22.32
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.907
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    2.40      SUBAREA RUNOFF(CFS) =    3.98
TOTAL AREA(ACRES) =        2.5        PEAK FLOW RATE(CFS) =       4.16

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.21
FLOW VELOCITY(FEET/SEC.) =  1.95   DEPTH*VELOCITY(FT*FT/SEC.) =   0.80
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L = 2039.0 FT WITH ELEVATION-DROP =  10.2 FT, IS   10.5 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    252.00
LONGEST FLOWPATH FROM NODE    250.00 TO NODE    252.00 =    2078.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    252.00 TO NODE    243.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    54.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.24
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =        4.16
PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =  22.53
LONGEST FLOWPATH FROM NODE    250.00 TO NODE    243.00 =    2132.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    243.00 TO NODE    243.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  22.53
RAINFALL INTENSITY(INCH/HR) =   1.90
TOTAL STREAM AREA(ACRES) =      2.51
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.16

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.09    14.56        2.512         1.40
      2        4.16    22.53        1.896         2.51

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        5.78    14.56        2.512
      2        6.50    22.53        1.896

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.50   Tc(MIN.) =   22.53
  TOTAL AREA(ACRES) =        3.9
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    243.00 =    2132.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    243.00 TO NODE    318.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   112.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.63
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.50
  PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =  22.94
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    318.00 =    2244.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    318.00 TO NODE    318.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
      1        6.50    22.94       1.874       3.91
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    318.00 =    2244.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
      1       29.78    25.16       1.765      18.80
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    318.00 =    4003.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      33.64      22.94        1.874
      2      35.90      25.16        1.765

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      35.90   Tc(MIN.) =   25.16
  TOTAL AREA(ACRES) =       22.7

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    318.00 TO NODE    319.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  26.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.00
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      35.90
  PIPE TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =  25.81
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.00 =    4273.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.00 TO NODE    319.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.81
  RAINFALL INTENSITY(INCH/HR) =   1.74
  TOTAL STREAM AREA(ACRES) =    22.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     35.90

****************************************************************************
  FLOW PROCESS FROM NODE    540.00 TO NODE    541.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   345.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.826
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.39
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.40
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =      7.40

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    319.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.88
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.40
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   2.96
  LONGEST FLOWPATH FROM NODE    540.00 TO NODE    319.00 =     385.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.00 TO NODE    319.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```

```
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   2.96
RAINFALL INTENSITY(INCH/HR) =   5.01
TOTAL STREAM AREA(ACRES) =      1.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.40

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       35.90    25.81       1.737        22.71
    2        7.40     2.96       5.006         1.70

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       11.53     2.96       5.006
    2       38.47    25.81       1.737

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      38.47   Tc(MIN.) =   25.81
TOTAL AREA(ACRES) =       24.4
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.00 =    4273.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    319.00 TO NODE    319.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   220.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.28
ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      38.47
PIPE TRAVEL TIME(MIN.) =   0.50    Tc(MIN.) =  26.31
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.50 =    4493.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    319.50 TO NODE    319.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  26.31
RAINFALL INTENSITY(INCH/HR) =   1.72
TOTAL STREAM AREA(ACRES) =    24.41
PEAK FLOW RATE(CFS) AT CONFLUENCE =     38.47

****************************************************************************
FLOW PROCESS FROM NODE    550.00 TO NODE    551.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
UPSTREAM ELEVATION(FEET) =    518.00
DOWNSTREAM ELEVATION(FEET) =    512.00
ELEVATION DIFFERENCE(FEET) =      6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.818
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    67.65
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =       6.97
TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =      6.97

****************************************************************************
FLOW PROCESS FROM NODE    551.00 TO NODE    319.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       6.97
PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   2.96
LONGEST FLOWPATH FROM NODE    550.00 TO NODE    319.50 =     380.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    319.50 TO NODE    319.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   2.96
RAINFALL INTENSITY(INCH/HR) =   5.01
TOTAL STREAM AREA(ACRES) =      1.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.97

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       38.47    26.31       1.715        24.41
    2        6.97     2.96       5.006         1.60

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       20.15     2.96       5.006
    2       40.86    26.31       1.715

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      40.86   Tc(MIN.) =   26.31
TOTAL AREA(ACRES) =       26.0
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.50 =    4493.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    319.50 TO NODE    320.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   280.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.35
ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      40.86
PIPE TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =  26.94
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    320.00 =    4773.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
```

```
==============================================================================

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
------------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
==============================================================================

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    280.00 TO NODE    281.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  62
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   700.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.33
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.48
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.45
  STREET FLOW TRAVEL TIME(MIN.) =   7.90   Tc(MIN.) =   9.95
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.212
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.59      SUBAREA RUNOFF(CFS) =    1.65
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       1.96

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.40
  FLOW VELOCITY(FEET/SEC.) =  1.63   DEPTH*VELOCITY(FT*FT/SEC.) =   0.55
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =     739.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    282.00 TO NODE    282.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.95
  RAINFALL INTENSITY(INCH/HR) =   3.21
  TOTAL STREAM AREA(ACRES) =      0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       1.96

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    560.00 TO NODE    561.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   330.00
  UPSTREAM ELEVATION(FEET) =    514.00
  DOWNSTREAM ELEVATION(FEET) =    508.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.801
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    68.18
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.97
  TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =      6.97

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    561.00 TO NODE    282.00 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.97
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   2.89
  LONGEST FLOWPATH FROM NODE    560.00 TO NODE    282.00 =     355.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    282.00 TO NODE    282.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.89
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =      1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       6.97

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        1.96     9.95        3.212          0.70
     2        6.97     2.89        5.006          1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        7.54     2.89        5.006
     2        6.43     9.95        3.212

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       7.54   Tc(MIN.) =    2.89
```

```
  TOTAL AREA(ACRES) =         2.3
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =     739.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    320.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.90
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        7.54
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   2.94
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    320.00 =     754.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        7.54     2.94       5.006        2.30
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    320.00 =     754.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       40.86    26.94       1.689       26.01
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    320.00 =    4773.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      12.00       2.94       5.006
     2      43.40      26.94       1.689

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      43.40   Tc(MIN.) =   26.94
  TOTAL AREA(ACRES) =       28.3

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    321.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.40
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       43.40
  PIPE TRAVEL TIME(MIN.) =   0.68    Tc(MIN.) =  27.62
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    321.00 =    5073.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  27.62
  RAINFALL INTENSITY(INCH/HR) =   1.66
  TOTAL STREAM AREA(ACRES) =    28.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     43.40

****************************************************************************
  FLOW PROCESS FROM NODE    290.00 TO NODE    291.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    507.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE    291.00 TO NODE    292.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   420.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.77
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =    9.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.59
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.52
  STREET FLOW TRAVEL TIME(MIN.) =   4.39   Tc(MIN.) =   6.42
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.259
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.69      SUBAREA RUNOFF(CFS) =    2.56
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       2.96

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.38
  FLOW VELOCITY(FEET/SEC.) =  1.80   DEPTH*VELOCITY(FT*FT/SEC.) =   0.67
  LONGEST FLOWPATH FROM NODE    290.00 TO NODE    292.00 =     459.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    292.00 TO NODE    321.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
```

```
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   3.89
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       2.96
PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   6.53
LONGEST FLOWPATH FROM NODE    290.00 TO NODE    321.00 =     484.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   6.53
RAINFALL INTENSITY(INCH/HR) =   4.21
TOTAL STREAM AREA(ACRES) =     0.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.96

****************************************************************************
FLOW PROCESS FROM NODE    410.00 TO NODE    411.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    508.00
DOWNSTREAM ELEVATION(FEET) =    507.20
ELEVATION DIFFERENCE(FEET) =      0.80
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.48
TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
FLOW PROCESS FROM NODE    411.00 TO NODE    412.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =   400.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.59
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.32
  HALFSTREET FLOOD WIDTH(FEET) =    9.52
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.56
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.49
STREET FLOW TRAVEL TIME(MIN.) =   4.28   Tc(MIN.) =   6.32
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.304
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =     0.59      SUBAREA RUNOFF(CFS) =     2.21
TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       2.62

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.79
FLOW VELOCITY(FEET/SEC.) =  1.74   DEPTH*VELOCITY(FT*FT/SEC.) =   0.63
LONGEST FLOWPATH FROM NODE    410.00 TO NODE    412.00 =     439.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    412.00 TO NODE    321.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   3.77
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       2.62
PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   6.51
LONGEST FLOWPATH FROM NODE    410.00 TO NODE    321.00 =     483.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =   6.51
RAINFALL INTENSITY(INCH/HR) =   4.22
TOTAL STREAM AREA(ACRES) =     0.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.62

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       43.40    27.62       1.662        28.31
    2        2.96     6.53       4.213         0.80
    3        2.62     6.51       4.221         0.70

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       15.81     6.51       4.221
    2       15.84     6.53       4.213
    3       45.60    27.62       1.662

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      45.60   Tc(MIN.) =   27.62
TOTAL AREA(ACRES) =       29.8
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    321.00 =    5073.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    321.00 TO NODE    322.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   350.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  36.0 INCH PIPE IS  29.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.41
ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      45.60
PIPE TRAVEL TIME(MIN.) =   0.79    Tc(MIN.) =  28.41
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    322.00 =    5423.00 FEET.

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  28.41
  RAINFALL INTENSITY(INCH/HR) =   1.63
  TOTAL STREAM AREA(ACRES) =    29.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     45.60

****************************************************************************
  FLOW PROCESS FROM NODE   1002.00 TO NODE   1003.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   360.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    499.00
  ELEVATION DIFFERENCE(FEET) =      7.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.764
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    69.44
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.27
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      8.27

****************************************************************************
  FLOW PROCESS FROM NODE   1003.00 TO NODE    322.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.99
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      8.27
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   2.81
  LONGEST FLOWPATH FROM NODE   1002.00 TO NODE    322.00 =     375.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    322.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.81
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.27

****************************************************************************
  FLOW PROCESS FROM NODE   1000.00 TO NODE   1001.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   360.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    504.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.600
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.11
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.19
  TOTAL AREA(ACRES) =      2.80   TOTAL RUNOFF(CFS) =     12.19

****************************************************************************
  FLOW PROCESS FROM NODE   1001.00 TO NODE    322.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.49
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     12.19
  PIPE TRAVEL TIME(MIN.) =   0.88    Tc(MIN.) =   4.48
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE    322.00 =     650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    322.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.48
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     2.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.19

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       45.60    28.41        1.633        29.81
     2        8.27     2.81        5.006         1.90
     3       12.19     4.48        5.006         2.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       30.81     2.81        5.006
     2       35.34     4.48        5.006
     3       52.28    28.41        1.633

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      52.28   Tc(MIN.) =   28.41
  TOTAL AREA(ACRES) =       34.5
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    322.00 =    5423.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    323.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    58.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  29.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.78
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       52.28
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =  28.53
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    323.00 =    5481.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    323.00 TO NODE    323.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    641.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   350.00
  UPSTREAM ELEVATION(FEET) =    540.00
  DOWNSTREAM ELEVATION(FEET) =    534.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.835
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.14
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       7.40
  TOTAL AREA(ACRES) =       1.70   TOTAL RUNOFF(CFS) =       7.40

****************************************************************************
  FLOW PROCESS FROM NODE    641.00 TO NODE    514.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.88
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.40
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   3.19
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    514.00 =     455.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    514.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.19
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.40

****************************************************************************
  FLOW PROCESS FROM NODE    650.00 TO NODE    651.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   195.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    530.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.736
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.51
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       5.66
  TOTAL AREA(ACRES) =       1.30   TOTAL RUNOFF(CFS) =       5.66

****************************************************************************
  FLOW PROCESS FROM NODE    651.00 TO NODE    514.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.53
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.66
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =   3.10
  LONGEST FLOWPATH FROM NODE    650.00 TO NODE    514.00 =     295.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    514.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.10
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.66

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        7.40     3.19        5.006          1.70
     2        5.66     3.10        5.006          1.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       12.86     3.10       5.006
     2       13.07     3.19       5.006

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      13.07   Tc(MIN.) =    3.19
  TOTAL AREA(ACRES) =        3.0
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    514.00 =     455.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   202.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.56
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.07
  PIPE TRAVEL TIME(MIN.) =   0.61    Tc(MIN.) =   3.80
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.00 =     657.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.80
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     3.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.07

****************************************************************************
  FLOW PROCESS FROM NODE    660.00 TO NODE    661.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   297.00
  UPSTREAM ELEVATION(FEET) =    532.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.987
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.47
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       6.53
  TOTAL AREA(ACRES) =      1.50   TOTAL RUNOFF(CFS) =      6.53

****************************************************************************
  FLOW PROCESS FROM NODE    661.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.64
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.53
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   3.29
  LONGEST FLOWPATH FROM NODE    660.00 TO NODE    515.00 =     382.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.29
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.53

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       13.07     3.80        5.006         3.00
     2        6.53     3.29        5.006         1.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       19.60     3.29        5.006
     2       19.60     3.80        5.006

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      19.60   Tc(MIN.) =    3.80
  TOTAL AREA(ACRES) =        4.5
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.00 =     657.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    90.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.09
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      19.60
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   4.05
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.50 =     747.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.50 TO NODE    515.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.05
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     4.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.60

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    631.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   364.00
  UPSTREAM ELEVATION(FEET) =    536.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.702
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    71.98
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       8.27
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      8.27

****************************************************************************
  FLOW PROCESS FROM NODE    631.00 TO NODE    515.50 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.99
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        8.27
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   2.95
  LONGEST FLOWPATH FROM NODE    630.00 TO NODE    515.50 =     439.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.50 TO NODE    515.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.95
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       19.60     4.05        5.006         4.50
     2        8.27     2.95        5.006         1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       27.87     2.95        5.006
     2       27.87     4.05        5.006

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      27.87   Tc(MIN.) =    4.05
  TOTAL AREA(ACRES) =        6.4
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.50 =     747.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.50 TO NODE    516.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  24.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.57
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       27.87
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =   4.35
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    516.00 =     867.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    516.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.35
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     6.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     27.87

****************************************************************************
  FLOW PROCESS FROM NODE    670.00 TO NODE    671.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   298.00
  UPSTREAM ELEVATION(FEET) =    528.00
  DOWNSTREAM ELEVATION(FEET) =    524.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.989
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.42
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       6.53
  TOTAL AREA(ACRES) =       1.50   TOTAL RUNOFF(CFS) =       6.53

****************************************************************************
  FLOW PROCESS FROM NODE    671.00 TO NODE    516.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.64
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        6.53
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   3.28
  LONGEST FLOWPATH FROM NODE    670.00 TO NODE    516.00 =     378.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    516.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.28
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.53

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       27.87     4.35        5.006         6.40
     2        6.53     3.28        5.006         1.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       34.41     3.28        5.006
     2       34.41     4.35        5.006

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      34.41   Tc(MIN.) =    4.35
  TOTAL AREA(ACRES) =        7.9
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    516.00 =     867.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    517.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   190.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.98
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      34.41
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =   4.80
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    517.00 =    1057.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    517.00 TO NODE    517.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.80
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =      7.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     34.41

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    621.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   363.00
  UPSTREAM ELEVATION(FEET) =    530.00
  DOWNSTREAM ELEVATION(FEET) =    522.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.700
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    72.04
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.27
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      8.27

****************************************************************************
  FLOW PROCESS FROM NODE    621.00 TO NODE    517.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    77.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.99
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.27
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   2.96
  LONGEST FLOWPATH FROM NODE    620.00 TO NODE    517.00 =     440.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    517.00 TO NODE    517.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.96
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =      1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       34.41     4.80       5.006         7.90
      2        8.27     2.96       5.006         1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       42.68     2.96       5.006
      2       42.68     4.80       5.006

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      42.68   Tc(MIN.) =    4.80
  TOTAL AREA(ACRES) =         9.8
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    517.00 =    1057.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    517.00 TO NODE    518.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   145.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.39
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      42.68
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   5.13
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    518.00 =    1202.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.13
  RAINFALL INTENSITY(INCH/HR) =   4.92
  TOTAL STREAM AREA(ACRES) =      9.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     42.68

****************************************************************************
  FLOW PROCESS FROM NODE    413.00 TO NODE    414.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    542.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =     24.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.200
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.^, IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
```

```
  TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.48

****************************************************************************
  FLOW PROCESS FROM NODE    414.00 TO NODE    415.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1600.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.03
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   12.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.80
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.68
  STREET FLOW TRAVEL TIME(MIN.) =  14.82   Tc(MIN.) =  16.02
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.362
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.29      SUBAREA RUNOFF(CFS) =    4.71
  TOTAL AREA(ACRES) =        2.4        PEAK FLOW RATE(CFS) =       4.93

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.23
  FLOW VELOCITY(FEET/SEC.) =  2.02   DEPTH*VELOCITY(FT*FT/SEC.) =   0.87
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1600.0 FT WITH ELEVATION-DROP =   8.0 FT, IS   10.0 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    415.00
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    415.00 =    1639.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    415.00 TO NODE    518.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.41
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.93
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =  16.16
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    518.00 =    1675.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.16
  RAINFALL INTENSITY(INCH/HR) =   2.35
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       4.93

****************************************************************************
  FLOW PROCESS FROM NODE    416.00 TO NODE    417.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    533.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.48
  TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.48

****************************************************************************
  FLOW PROCESS FROM NODE    417.00 TO NODE    418.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   975.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.33
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.50
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.45
  STREET FLOW TRAVEL TIME(MIN.) =  10.86   Tc(MIN.) =  12.91
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.715
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.69      SUBAREA RUNOFF(CFS) =    1.63
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       1.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.25
  FLOW VELOCITY(FEET/SEC.) =  1.62   DEPTH*VELOCITY(FT*FT/SEC.) =   0.54
  LONGEST FLOWPATH FROM NODE    416.00 TO NODE    418.00 =    1014.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    418.00 TO NODE    518.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    17.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.45
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.89
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =  12.99
  LONGEST FLOWPATH FROM NODE    416.00 TO NODE    518.00 =    1031.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =   1
```

```
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.99
  RAINFALL INTENSITY(INCH/HR) =   2.70
  TOTAL STREAM AREA(ACRES) =     0.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.89

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       42.68     5.13        4.923         9.80
      2        4.93    16.16        2.349         2.40
      3        1.89    12.99        2.704         0.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       44.99     5.13       4.923
      2       29.30    12.99       2.704
      3       26.94    16.16       2.349

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      44.99   Tc(MIN.) =    5.13
  TOTAL AREA(ACRES) =       13.0
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    518.00 =    1675.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    518.00 TO NODE    519.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  28.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.41
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      44.99
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   5.22
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    519.00 =    1715.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    519.00 TO NODE    519.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.22
  RAINFALL INTENSITY(INCH/HR) =   4.87
  TOTAL STREAM AREA(ACRES) =    13.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     44.99

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    680.00 TO NODE    681.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   390.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.900
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    65.38
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.71
  TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =      8.71

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    681.00 TO NODE    519.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.04
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      8.71
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   3.10
  LONGEST FLOWPATH FROM NODE    680.00 TO NODE    519.00 =     452.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    519.00 TO NODE    519.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.10
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.71

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    610.00 TO NODE    611.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   316.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.777
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    68.99
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.97
  TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =      6.97

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    611.00 TO NODE    519.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =        6.97
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   3.04
  LONGEST FLOWPATH FROM NODE    610.00 TO NODE    519.00 =     391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    519.00 TO NODE    519.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.04
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.97

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       44.99     5.22       4.868         13.00
      2        8.71     3.10       5.006          2.00
      3        6.97     3.04       5.006          1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       59.27     3.04       5.006
      2       59.44     3.10       5.006
      3       60.24     5.22       4.868

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      60.24   Tc(MIN.) =    5.22
  TOTAL AREA(ACRES) =       16.6
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    519.00 =    1715.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    519.00 TO NODE    525.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.12
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       60.24
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   5.34
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    525.00 =    1775.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.00 TO NODE    525.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    900.00 TO NODE    900.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    531.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.611
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.44
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.44

****************************************************************************
  FLOW PROCESS FROM NODE    900.50 TO NODE    901.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   270.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 15.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.010
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.010

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.10
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   15.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =     0.55
  STREET FLOW TRAVEL TIME(MIN.) =   2.68   Tc(MIN.) =   4.29
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.60      SUBAREA RUNOFF(CFS) =   11.32
  TOTAL AREA(ACRES) =        2.7        PEAK FLOW RATE(CFS) =      11.76

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  15.00
  FLOW VELOCITY(FEET/SEC.) =  2.18   DEPTH*VELOCITY(FT*FT/SEC.) =   0.85
  LONGEST FLOWPATH FROM NODE    900.00 TO NODE    901.00 =     320.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    901.00 TO NODE    936.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   293.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.45
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.76
  PIPE TRAVEL TIME(MIN.) =   0.90    Tc(MIN.) =   5.18
  LONGEST FLOWPATH FROM NODE    900.00 TO NODE    936.00 =     613.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    936.00 TO NODE    936.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.18
  RAINFALL INTENSITY(INCH/HR) =   4.89
  TOTAL STREAM AREA(ACRES) =      2.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      11.76

****************************************************************************
  FLOW PROCESS FROM NODE    451.00 TO NODE    452.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    544.00
  DOWNSTREAM ELEVATION(FEET) =    543.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.44
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.44

****************************************************************************
  FLOW PROCESS FROM NODE    452.00 TO NODE    453.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1410.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.96
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.37
    HALFSTREET FLOOD WIDTH(FEET) =   12.38
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.79
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.67
  STREET FLOW TRAVEL TIME(MIN.) =  13.11   Tc(MIN.) =  15.16
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.447
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.20      SUBAREA RUNOFF(CFS) =    4.68
  TOTAL AREA(ACRES) =        2.3        PEAK FLOW RATE(CFS) =       4.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.16
  FLOW VELOCITY(FEET/SEC.) =  2.03   DEPTH*VELOCITY(FT*FT/SEC.) =   0.87
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1410.0 FT WITH ELEVATION-DROP =   7.1 FT, IS    9.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    453.00
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    453.00 =    1449.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    453.00 TO NODE    936.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.40
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        4.90
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  15.24
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    936.00 =    1468.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    936.00 TO NODE    936.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.24
  RAINFALL INTENSITY(INCH/HR) =   2.44
  TOTAL STREAM AREA(ACRES) =      2.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.90

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       11.76     5.18        4.891         2.70
      2        4.90    15.24        2.440         2.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       13.42     5.18        4.891
      2       10.76    15.24        2.440

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      13.42   Tc(MIN.) =    5.18
  TOTAL AREA(ACRES) =        5.0
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    936.00 =    1468.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    936.00 TO NODE    936.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    454.00 TO NODE    455.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    533.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.48
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE    455.00 TO NODE    456.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==========================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =   705.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.65
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.32
  HALFSTREET FLOOD WIDTH(FEET) =    9.67
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.56
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.50
STREET FLOW TRAVEL TIME(MIN.) =   7.51   Tc(MIN.) =   9.57
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.294
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    0.79      SUBAREA RUNOFF(CFS) =    2.26
TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       2.58

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.72
FLOW VELOCITY(FEET/SEC.) =  1.73   DEPTH*VELOCITY(FT*FT/SEC.) =   0.62
LONGEST FLOWPATH FROM NODE    454.00 TO NODE    456.00 =     744.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    456.00 TO NODE    456.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   9.57
RAINFALL INTENSITY(INCH/HR) =   3.29
TOTAL STREAM AREA(ACRES) =     0.90
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.58

****************************************************************************
FLOW PROCESS FROM NODE    902.00 TO NODE    902.50 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
UPSTREAM ELEVATION(FEET) =    532.00
DOWNSTREAM ELEVATION(FEET) =    530.00
ELEVATION DIFFERENCE(FEET) =      2.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.844
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.44
TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.44

****************************************************************************
FLOW PROCESS FROM NODE    902.50 TO NODE    903.00 IS CODE =  61
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STANDARD CURB SECTION USED)<<<<<
==========================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =   400.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 15.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.010
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.010

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.76
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.30
  HALFSTREET FLOOD WIDTH(FEET) =   15.00
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.39
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.41
STREET FLOW TRAVEL TIME(MIN.) =   4.81   Tc(MIN.) =   6.65
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.164
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    1.79      SUBAREA RUNOFF(CFS) =    6.48
TOTAL AREA(ACRES) =        1.9        PEAK FLOW RATE(CFS) =       6.85

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  15.00
FLOW VELOCITY(FEET/SEC.) =  1.76   DEPTH*VELOCITY(FT*FT/SEC.) =   0.59
LONGEST FLOWPATH FROM NODE    902.00 TO NODE    903.00 =     450.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    903.00 TO NODE    456.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =        6.85
PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   6.72
LONGEST FLOWPATH FROM NODE    902.00 TO NODE    456.00 =     469.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    456.00 TO NODE    456.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   6.72
RAINFALL INTENSITY(INCH/HR) =   4.14
TOTAL STREAM AREA(ACRES) =     1.89
PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.85

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1        2.58     9.57        3.294         0.90
    2        6.85     6.72        4.136         1.89

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1        8.66     6.72       4.136
```

```
     2        8.03      9.57        3.294

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       8.66   Tc(MIN.) =    6.72
  TOTAL AREA(ACRES) =         2.8
  LONGEST FLOWPATH FROM NODE    454.00 TO NODE    456.00 =     744.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    456.00 TO NODE    936.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.03
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        8.66
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   6.92
  LONGEST FLOWPATH FROM NODE    454.00 TO NODE    936.00 =     804.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    936.00 TO NODE    936.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        8.66     6.92       4.059        2.79
  LONGEST FLOWPATH FROM NODE    454.00 TO NODE    936.00 =     804.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       13.42     5.18       4.891        5.00
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    936.00 =    1468.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      19.91       5.18       4.891
     2      19.80       6.92       4.059

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      19.91   Tc(MIN.) =    5.18
  TOTAL AREA(ACRES) =         7.8

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    936.00 TO NODE    937.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    51.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.10
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       19.91
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   5.32
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    937.00 =    1519.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    937.00 TO NODE    937.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.32
  RAINFALL INTENSITY(INCH/HR) =   4.81
  TOTAL STREAM AREA(ACRES) =     7.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.91

****************************************************************************
  FLOW PROCESS FROM NODE    904.00 TO NODE    905.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   420.00
  UPSTREAM ELEVATION(FEET) =    532.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.233
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    59.05
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      9.58
  TOTAL AREA(ACRES) =      2.20   TOTAL RUNOFF(CFS) =      9.58

****************************************************************************
  FLOW PROCESS FROM NODE    905.00 TO NODE    937.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.12
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        9.58
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =   3.40
  LONGEST FLOWPATH FROM NODE    904.00 TO NODE    937.00 =     470.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    937.00 TO NODE    937.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.40
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     2.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.58

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       19.91     5.32       4.808          7.79
     2        9.58     3.40       5.006          2.20

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
```

```
** PEAK FLOW RATE TABLE **
STREAM     RUNOFF     Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       22.29     3.40       5.006
    2       29.11     5.32       4.808

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      29.11   Tc(MIN.) =    5.32
TOTAL AREA(ACRES) =       10.0
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    937.00 =    1519.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    937.00 TO NODE    940.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   185.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.82
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      29.11
PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =   5.77
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    940.00 =    1704.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    940.00 TO NODE    940.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
>>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    460.00 TO NODE    461.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    538.00
DOWNSTREAM ELEVATION(FEET) =    537.22
ELEVATION DIFFERENCE(FEET) =      0.78
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.48
TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
FLOW PROCESS FROM NODE    461.00 TO NODE    462.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =   713.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.48
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.31
  HALFSTREET FLOOD WIDTH(FEET) =    9.23
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.53
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.48
STREET FLOW TRAVEL TIME(MIN.) =   7.77   Tc(MIN.) =   9.82
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.239
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    0.69      SUBAREA RUNOFF(CFS) =    1.94
TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       2.25

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.06
FLOW VELOCITY(FEET/SEC.) =  1.68   DEPTH*VELOCITY(FT*FT/SEC.) =   0.58
LONGEST FLOWPATH FROM NODE    460.00 TO NODE    462.00 =     752.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    462.00 TO NODE    462.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   9.82
RAINFALL INTENSITY(INCH/HR) =   3.24
TOTAL STREAM AREA(ACRES) =     0.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.25

****************************************************************************
FLOW PROCESS FROM NODE    906.00 TO NODE    907.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   450.00
UPSTREAM ELEVATION(FEET) =    532.00
DOWNSTREAM ELEVATION(FEET) =    528.00
ELEVATION DIFFERENCE(FEET) =      4.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.273
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    57.78
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      9.15
TOTAL AREA(ACRES) =      2.10   TOTAL RUNOFF(CFS) =      9.15

****************************************************************************
FLOW PROCESS FROM NODE    907.00 TO NODE    462.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.09
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      9.15
PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   3.39
LONGEST FLOWPATH FROM NODE    906.00 TO NODE    462.00 =     485.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    462.00 TO NODE    462.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.39
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     2.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.15

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1        2.25     9.82        3.239          0.80
     2        9.15     3.39        5.006          2.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
     1        9.92     3.39        5.006
     2        8.17     9.82        3.239

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.92   Tc(MIN.) =    3.39
  TOTAL AREA(ACRES) =         2.9
  LONGEST FLOWPATH FROM NODE    460.00 TO NODE    462.00 =     752.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    462.00 TO NODE    938.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.14
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        9.92
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   3.45
  LONGEST FLOWPATH FROM NODE    460.00 TO NODE    938.00 =     770.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    938.00 TO NODE    938.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.45
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     2.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.92

****************************************************************************
  FLOW PROCESS FROM NODE    457.00 TO NODE    458.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    538.00
  DOWNSTREAM ELEVATION(FEET) =    537.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE    458.00 TO NODE    459.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   740.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.62
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.50
  STREET FLOW TRAVEL TIME(MIN.) =   7.92   Tc(MIN.) =   9.97
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.208
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.79      SUBAREA RUNOFF(CFS) =    2.20
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       2.51

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.57
  FLOW VELOCITY(FEET/SEC.) =  1.72   DEPTH*VELOCITY(FT*FT/SEC.) =   0.62
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    459.00 =     779.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    459.00 TO NODE    938.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.73
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        2.51
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =  10.26
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    938.00 =     844.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    938.00 TO NODE    938.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.26
  RAINFALL INTENSITY(INCH/HR) =   3.15
  TOTAL STREAM AREA(ACRES) =     0.90
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.51

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        9.92     3.45        5.006         2.90
     2        2.51    10.26        3.149         0.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       10.77     3.45        5.006
     2        8.75    10.26        3.149

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.77   Tc(MIN.) =    3.45
  TOTAL AREA(ACRES) =       3.8
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    938.00 =     844.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    938.00 TO NODE    940.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    88.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  17.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.17
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.77
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   3.73
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    940.00 =     932.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    940.00 TO NODE    940.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1       10.77     3.73       5.006        3.80
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    940.00 =     932.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1       29.11     5.77       4.562        9.99
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    940.00 =    1704.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      29.57       3.73       5.006
     2      38.93       5.77       4.562

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      38.93   Tc(MIN.) =    5.77
  TOTAL AREA(ACRES) =       13.8

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    940.00 TO NODE    691.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   615.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.30
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      38.93
  PIPE TRAVEL TIME(MIN.) =   1.40    Tc(MIN.) =   7.18
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    691.50 =    2319.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    691.50 TO NODE    691.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.18
  RAINFALL INTENSITY(INCH/HR) =   3.96
  TOTAL STREAM AREA(ACRES) =    13.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     38.93

****************************************************************************
  FLOW PROCESS FROM NODE    690.00 TO NODE    691.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   451.00
  UPSTREAM ELEVATION(FEET) =    528.00
  DOWNSTREAM ELEVATION(FEET) =    524.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.274
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.74
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.19
  TOTAL AREA(ACRES) =      2.80   TOTAL RUNOFF(CFS) =     12.19

****************************************************************************
  FLOW PROCESS FROM NODE    691.00 TO NODE    691.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    61.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.49
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.19
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   3.46
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    691.50 =     512.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    691.50 TO NODE    691.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```

```
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.46
RAINFALL INTENSITY(INCH/HR) =   5.01
TOTAL STREAM AREA(ACRES) =      2.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.19

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       38.93     7.18        3.964        13.79
    2       12.19     3.46        5.006         2.80

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       30.95     3.46        5.006
    2       48.58     7.18        3.964

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      48.58   Tc(MIN.) =    7.18
TOTAL AREA(ACRES) =       16.6
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    691.50 =    2319.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    691.50 TO NODE    525.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.71
ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      48.58
PIPE TRAVEL TIME(MIN.) =   0.52    Tc(MIN.) =   7.70
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.50 =    2559.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    525.50 TO NODE    525.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   7.70
RAINFALL INTENSITY(INCH/HR) =   3.79
TOTAL STREAM AREA(ACRES) =    16.59
PEAK FLOW RATE(CFS) AT CONFLUENCE =     48.58

****************************************************************************
FLOW PROCESS FROM NODE    419.00 TO NODE    420.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    524.00
DOWNSTREAM ELEVATION(FEET) =    523.22
ELEVATION DIFFERENCE(FEET) =      0.78
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.48
TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
FLOW PROCESS FROM NODE    420.00 TO NODE    421.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =   800.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.90
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.33
  HALFSTREET FLOOD WIDTH(FEET) =   10.33
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.60
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.53
STREET FLOW TRAVEL TIME(MIN.) =   8.32   Tc(MIN.) =  10.37
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.127
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    2.72
TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       3.02

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.52
FLOW VELOCITY(FEET/SEC.) =  1.79   DEPTH*VELOCITY(FT*FT/SEC.) =   0.67
LONGEST FLOWPATH FROM NODE    419.00 TO NODE    421.00 =     839.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    421.00 TO NODE    525.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   3.91
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       3.02
PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =  10.43
LONGEST FLOWPATH FROM NODE    419.00 TO NODE    525.50 =     854.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    525.50 TO NODE    525.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  10.43
RAINFALL INTENSITY(INCH/HR) =   3.11
TOTAL STREAM AREA(ACRES) =     1.11
PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.02

****************************************************************************
FLOW PROCESS FROM NODE    422.00 TO NODE    423.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
```

```
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    519.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE    423.00 TO NODE    424.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   320.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.70
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.57
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.51
  STREET FLOW TRAVEL TIME(MIN.) =   3.39   Tc(MIN.) =   5.44
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.739
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.59      SUBAREA RUNOFF(CFS) =    2.43
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       2.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.23
  FLOW VELOCITY(FEET/SEC.) =  1.79   DEPTH*VELOCITY(FT*FT/SEC.) =   0.66
  LONGEST FLOWPATH FROM NODE    422.00 TO NODE    424.00 =     359.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    424.00 TO NODE    525.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.87
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.89
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   5.72
  LONGEST FLOWPATH FROM NODE    422.00 TO NODE    525.50 =     424.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.50 TO NODE    525.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
```

```
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.72
  RAINFALL INTENSITY(INCH/HR) =   4.59
  TOTAL STREAM AREA(ACRES) =     0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.89

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       48.58     7.70        3.790        16.59
      2        3.02    10.43        3.115         1.11
      3        2.89     5.72        4.588         0.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       44.67     5.72       4.588
      2       53.19     7.70       3.790
      3       44.91    10.43       3.115

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      53.19   Tc(MIN.) =    7.70
  TOTAL AREA(ACRES) =       18.4
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.50 =    2559.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.50 TO NODE    525.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   185.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  29.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.80
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      53.19
  PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =   8.09
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.00 =    2744.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.00 TO NODE    525.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       53.19     8.09        3.669        18.40
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.00 =    2744.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       60.24     5.34        4.796        16.60
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    525.00 =    1775.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       95.36     5.34       4.796
      2       99.28     8.09       3.669

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      99.28   Tc(MIN.) =    8.09
  TOTAL AREA(ACRES) =       35.0
```

```
****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    525.00 TO NODE    526.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   310.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  36.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.21
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      99.28
  PIPE TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =   8.65
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    526.00 =    3054.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    526.00 TO NODE    526.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.65
  RAINFALL INTENSITY(INCH/HR) =   3.51
  TOTAL STREAM AREA(ACRES) =    35.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     99.28

****************************************************************************
  FLOW PROCESS FROM NODE    710.00 TO NODE    711.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   468.00
  UPSTREAM ELEVATION(FEET) =    518.00
  DOWNSTREAM ELEVATION(FEET) =    510.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.836
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.09
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     10.45
  TOTAL AREA(ACRES) =      2.40   TOTAL RUNOFF(CFS) =     10.45

****************************************************************************
  FLOW PROCESS FROM NODE    711.00 TO NODE    526.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    77.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.17
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.45
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   3.08
  LONGEST FLOWPATH FROM NODE    710.00 TO NODE    526.00 =     545.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    526.00 TO NODE    526.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.08
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.45

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       99.28     8.65        3.514         35.00
     2       10.45     3.08        5.006          2.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       45.83     3.08        5.006
     2      106.62     8.65        3.514

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     106.62   Tc(MIN.) =    8.65
  TOTAL AREA(ACRES) =       37.4
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    526.00 =    3054.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    526.00 TO NODE    527.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  38.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.30
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     106.62
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   8.77
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    527.00 =    3117.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    527.00 TO NODE    527.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.77
  RAINFALL INTENSITY(INCH/HR) =   3.48
  TOTAL STREAM AREA(ACRES) =    37.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    106.62

****************************************************************************
  FLOW PROCESS FROM NODE    590.00 TO NODE    591.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   347.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    514.00
```

```
  ELEVATION DIFFERENCE(FEET) =       6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     2.830
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.29
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       8.71
  TOTAL AREA(ACRES) =       2.00   TOTAL RUNOFF(CFS) =       8.71

****************************************************************************
  FLOW PROCESS FROM NODE    591.00 TO NODE    527.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.04
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.71
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   3.11
  LONGEST FLOWPATH FROM NODE    590.00 TO NODE    527.00 =     432.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    527.00 TO NODE    527.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.11
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.71

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1      106.62     8.77        3.485        37.40
      2        8.71     3.11        5.006         2.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       82.93     3.11       5.006
      2      112.68     8.77       3.485

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     112.68   Tc(MIN.) =    8.77
  TOTAL AREA(ACRES) =       39.4
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    527.00 =    3117.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    527.00 TO NODE    528.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   147.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  40.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.35
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     112.68
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   9.03
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    528.00 =    3264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    528.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.03
  RAINFALL INTENSITY(INCH/HR) =   3.42
  TOTAL STREAM AREA(ACRES) =    39.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    112.68

****************************************************************************
  FLOW PROCESS FROM NODE    720.00 TO NODE    721.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   304.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    506.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.756
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    69.74
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       6.10
  TOTAL AREA(ACRES) =       1.40   TOTAL RUNOFF(CFS) =       6.10

****************************************************************************
  FLOW PROCESS FROM NODE    721.00 TO NODE    528.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.59
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.10
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   2.97
  LONGEST FLOWPATH FROM NODE    720.00 TO NODE    528.00 =     364.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    528.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.97
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.10

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1      112.68     9.03        3.419        39.40
      2        6.10     2.97        5.006         1.40
```

```
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
      1       83.06     2.97        5.006
      2      116.85     9.03        3.419

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     116.85   Tc(MIN.) =    9.03
  TOTAL AREA(ACRES) =       40.8
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    528.00 =    3264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    529.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  38.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.59
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     116.85
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   9.16
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    529.00 =    3339.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    529.00 TO NODE    529.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.16
  RAINFALL INTENSITY(INCH/HR) =   3.39
  TOTAL STREAM AREA(ACRES) =    40.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    116.85

****************************************************************************
  FLOW PROCESS FROM NODE    580.00 TO NODE    581.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   335.00
  UPSTREAM ELEVATION(FEET) =    516.00
  DOWNSTREAM ELEVATION(FEET) =    510.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.809
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.91
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.97
  TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =      6.97

****************************************************************************
  FLOW PROCESS FROM NODE    581.00 TO NODE    529.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.97
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   3.10
  LONGEST FLOWPATH FROM NODE    580.00 TO NODE    529.00 =     417.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    529.00 TO NODE    529.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.10
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.97

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
      1      116.85     9.16        3.388        40.80
      2        6.97     3.10        5.006         1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
      1       86.04     3.10        5.006
      2      121.56     9.16        3.388

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     121.56   Tc(MIN.) =    9.16
  TOTAL AREA(ACRES) =       42.4
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    529.00 =    3339.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    529.00 TO NODE    534.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   186.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  39.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.64
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     121.56
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   9.48
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    534.00 =    3525.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.48
  RAINFALL INTENSITY(INCH/HR) =   3.31
  TOTAL STREAM AREA(ACRES) =    42.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    121.56

****************************************************************************
  FLOW PROCESS FROM NODE    425.00 TO NODE    426.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE    426.00 TO NODE    427.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1375.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.26
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   11.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.69
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.59
  STREET FLOW TRAVEL TIME(MIN.) =  13.59   Tc(MIN.) =  15.64
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.399
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.59      SUBAREA RUNOFF(CFS) =    3.32
  TOTAL AREA(ACRES) =        1.7        PEAK FLOW RATE(CFS) =       3.55

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.33
  FLOW VELOCITY(FEET/SEC.) =  1.87   DEPTH*VELOCITY(FT*FT/SEC.) =   0.74
  LONGEST FLOWPATH FROM NODE    425.00 TO NODE    427.00 =    1414.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    427.00 TO NODE    534.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.08
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.55
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =  15.78
  LONGEST FLOWPATH FROM NODE    425.00 TO NODE    534.00 =    1449.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.78
  RAINFALL INTENSITY(INCH/HR) =   2.39
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.55

****************************************************************************
  FLOW PROCESS FROM NODE    428.00 TO NODE    429.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    516.00
  DOWNSTREAM ELEVATION(FEET) =    515.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE    429.00 TO NODE    430.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   742.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.16
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.27
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.44
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.42
  STREET FLOW TRAVEL TIME(MIN.) =   8.59   Tc(MIN.) =  10.64
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.075
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.49      SUBAREA RUNOFF(CFS) =    1.31
  TOTAL AREA(ACRES) =        0.6        PEAK FLOW RATE(CFS) =       1.61

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.59
  FLOW VELOCITY(FEET/SEC.) =  1.55   DEPTH*VELOCITY(FT*FT/SEC.) =   0.49
  LONGEST FLOWPATH FROM NODE    428.00 TO NODE    430.00 =     781.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    430.00 TO NODE    534.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    17.00   MANNING'S N =  0.013
```

```
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.29
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        1.61
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =  10.73
  LONGEST FLOWPATH FROM NODE    428.00 TO NODE    534.00 =     798.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.73
  RAINFALL INTENSITY(INCH/HR) =   3.06
  TOTAL STREAM AREA(ACRES) =     0.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.61

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       121.56     9.48        3.313        42.40
     2         3.55    15.78        2.385         1.70
     3         1.61    10.73        3.059         0.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       125.11     9.48        3.313
     2       116.26    10.73        3.059
     3        92.31    15.78        2.385

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     125.11   Tc(MIN.) =    9.48
  TOTAL AREA(ACRES) =       44.7
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    534.00 =    3525.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    535.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    32.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  40.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.67
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     125.11
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   9.54
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    535.00 =    3557.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    535.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.54
  RAINFALL INTENSITY(INCH/HR) =   3.30
  TOTAL STREAM AREA(ACRES) =    44.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    125.11

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    730.00 TO NODE    731.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   354.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    502.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.841
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.95
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.27
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      8.27

****************************************************************************
  FLOW PROCESS FROM NODE    731.00 TO NODE    535.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    61.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.99
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      8.27
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   3.04
  LONGEST FLOWPATH FROM NODE    730.00 TO NODE    535.00 =     415.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    535.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.04
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.27

****************************************************************************
  FLOW PROCESS FROM NODE    570.00 TO NODE    571.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   220.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    506.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.605
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    77.27
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.97
  TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =      6.97

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    571.00 TO NODE    535.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.97
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   2.87
  LONGEST FLOWPATH FROM NODE    570.00 TO NODE    535.00 =     295.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    535.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.87
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =      1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.97

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       125.11     9.54       3.301         44.70
     2         8.27     3.04       5.006          1.90
     3         6.97     2.87       5.006          1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        97.27     2.87       5.006
     2        97.74     3.04       5.006
     3       135.16     9.54       3.301

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     135.16   Tc(MIN.) =    9.54
  TOTAL AREA(ACRES) =       48.2
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    535.00 =    3557.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    536.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  44.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.71
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     135.16
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   9.72
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    536.00 =    3662.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    536.00 TO NODE    512.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  44.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.71
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     135.16
  PIPE TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =  10.23
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    512.00 =    3962.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    512.00 TO NODE    512.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    740.00 TO NODE    741.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   375.00
  UPSTREAM ELEVATION(FEET) =    507.00
  DOWNSTREAM ELEVATION(FEET) =    505.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.634
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.67
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.27
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      8.27

****************************************************************************
  FLOW PROCESS FROM NODE    741.00 TO NODE    751.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   280.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.99
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.27
  PIPE TRAVEL TIME(MIN.) =   0.93    Tc(MIN.) =   4.57
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    751.50 =     655.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    741.50 TO NODE    751.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.57
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =      1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.27

****************************************************************************
  FLOW PROCESS FROM NODE    750.00 TO NODE    751.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
```

```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
  UPSTREAM ELEVATION(FEET) =    507.00
  DOWNSTREAM ELEVATION(FEET) =    504.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.277
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.65
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.40
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =      7.40

****************************************************************************
  FLOW PROCESS FROM NODE    751.00 TO NODE    751.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.88
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      7.40
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   3.32
  LONGEST FLOWPATH FROM NODE    750.00 TO NODE    751.50 =     352.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    751.50 TO NODE    751.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.32
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.40

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        8.27     4.57        5.006          1.90
     2        7.40     3.32        5.006          1.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       13.41     3.32        5.006
     2       15.68     4.57        5.006

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      15.68   Tc(MIN.) =    4.57
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    751.50 =     655.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    751.50 TO NODE    512.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.87
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.68
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =   4.60
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    512.00 =     667.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    512.00 TO NODE    512.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       15.68     4.60        5.006          3.60
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    512.00 =     667.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      135.16    10.23        3.154         48.20
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    512.00 =    3962.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       76.48     4.60        5.006
     2      145.04    10.23        3.154

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     145.04   Tc(MIN.) =   10.23
  TOTAL AREA(ACRES) =       51.8

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    512.00 TO NODE    513.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  43.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.03
  ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     145.04
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  10.30
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    513.00 =    4002.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    513.00 TO NODE    513.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      145.04    10.30        3.141         51.80
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    513.00 =    4002.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       52.28    28.53        1.628         34.51
```

```
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    513.00 =    5481.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)    (INCH/HOUR)
     1      163.91      10.30        3.141
     2      127.45      28.53        1.628

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     163.91   Tc(MIN.) =   10.30
  TOTAL AREA(ACRES) =       86.3

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    513.00 TO NODE    998.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    500.00  DOWNSTREAM(FEET) =    498.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   300.00   CHANNEL SLOPE =  0.0067
  CHANNEL FLOW THRU SUBAREA(CFS) =     163.91
  FLOW VELOCITY(FEET/SEC) =   4.50 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.11   Tc(MIN.) =  11.41
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    998.00 =    5781.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    998.00 TO NODE    998.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.940
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8421
  SUBAREA AREA(ACRES) =     4.90   SUBAREA RUNOFF(CFS) =     5.04
  TOTAL AREA(ACRES) =       91.2   TOTAL RUNOFF(CFS) =     225.84
  TC(MIN.) =  11.41

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    760.00 TO NODE    761.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   302.00
  UPSTREAM ELEVATION(FEET) =    522.00
  DOWNSTREAM ELEVATION(FEET) =    517.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.855
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.56
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.10
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      6.10

****************************************************************************
  FLOW PROCESS FROM NODE    761.00 TO NODE    614.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   260.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.59
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.10
  PIPE TRAVEL TIME(MIN.) =   0.94    Tc(MIN.) =   3.80
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    614.00 =     562.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    614.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.80
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =      1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.10

****************************************************************************
  FLOW PROCESS FROM NODE    780.00 TO NODE    781.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    516.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.973
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.75
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.40
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =      7.40

****************************************************************************
  FLOW PROCESS FROM NODE    781.00 TO NODE    614.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.88
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.40
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   3.31
  LONGEST FLOWPATH FROM NODE    780.00 TO NODE    614.00 =     391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    614.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
```

```
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.31
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.40

****************************************************************************
  FLOW PROCESS FROM NODE    770.00 TO NODE    771.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   344.00
  UPSTREAM ELEVATION(FEET) =    519.00
  DOWNSTREAM ELEVATION(FEET) =    512.00
  ELEVATION DIFFERENCE(FEET) =      7.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.740
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.35
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.84
  TOTAL AREA(ACRES) =      1.80   TOTAL RUNOFF(CFS) =      7.84

****************************************************************************
  FLOW PROCESS FROM NODE    771.00 TO NODE    614.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.94
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.84
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   3.01
  LONGEST FLOWPATH FROM NODE    770.00 TO NODE    614.00 =     424.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    614.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.01
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.84

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1         6.10     3.80       5.006         1.40
     2         7.40     3.31       5.006         1.70
     3         7.84     3.01       5.006         1.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        19.39     3.01       5.006
     2        20.56     3.31       5.006
     3        21.34     3.80       5.006

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      21.34   Tc(MIN.) =    3.80
  TOTAL AREA(ACRES) =        4.9
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    614.00 =     562.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  22.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.12
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      21.34
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =   4.21
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    615.00 =     712.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.21
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     4.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.34

****************************************************************************
  FLOW PROCESS FROM NODE    810.00 TO NODE    811.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   287.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    508.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.964
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.94
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      4.79
  TOTAL AREA(ACRES) =      1.10   TOTAL RUNOFF(CFS) =      4.79

****************************************************************************
  FLOW PROCESS FROM NODE    811.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.38
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.79
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   3.28
  LONGEST FLOWPATH FROM NODE    810.00 TO NODE    615.00 =     369.00 FEET.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.28
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.79

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    790.00 TO NODE    791.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   230.00
  UPSTREAM ELEVATION(FEET) =    514.00
  DOWNSTREAM ELEVATION(FEET) =    510.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.826
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.39
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      3.92
  TOTAL AREA(ACRES) =      0.90   TOTAL RUNOFF(CFS) =      3.92

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    791.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.18
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.92
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   3.09
  LONGEST FLOWPATH FROM NODE    790.00 TO NODE    615.00 =     295.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.09
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.92

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       21.34     4.21        5.006         4.90
     2        4.79     3.28        5.006         1.10
     3        3.92     3.09        5.006         0.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       29.77     3.09        5.006
     2       30.05     3.28        5.006
     3       30.05     4.21        5.006

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      30.05   Tc(MIN.) =    4.21
  TOTAL AREA(ACRES) =      6.9
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    615.00 =     712.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    615.00 TO NODE    616.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   210.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.85
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      30.05
  PIPE TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =   4.72
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    616.00 =     922.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    616.00 TO NODE    616.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.72
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     6.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     30.05

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    830.00 TO NODE    831.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   317.00
  UPSTREAM ELEVATION(FEET) =    510.00
  DOWNSTREAM ELEVATION(FEET) =    504.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.779
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    68.93
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.10
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      6.10

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    831.00 TO NODE    616.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
```

```
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.59
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        6.10
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   3.09
  LONGEST FLOWPATH FROM NODE    830.00 TO NODE    616.00 =     402.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.00 TO NODE    616.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.09
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =      1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.10

****************************************************************************
  FLOW PROCESS FROM NODE    820.00 TO NODE    821.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   298.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    506.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.746
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.13
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION'
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.10
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      6.10

****************************************************************************
  FLOW PROCESS FROM NODE    821.00 TO NODE    616.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.59
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        6.10
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   2.98
  LONGEST FLOWPATH FROM NODE    820.00 TO NODE    616.00 =     363.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.00 TO NODE    616.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.98
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =      1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.10

  ** CONFLUENCE DATA **
```

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	30.05	4.72	5.006	6.90
2	6.10	3.09	5.006	1.40
3	6.10	2.98	5.006	1.40

```
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
```

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	42.04	2.98	5.006
2	42.25	3.09	5.006
3	42.25	4.72	5.006

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      42.25   Tc(MIN.) =    4.72
  TOTAL AREA(ACRES) =       9.7
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    616.00 =     922.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.00 TO NODE    616.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   121.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.38
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      42.25
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   4.99
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    616.50 =    1043.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.50 TO NODE    616.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.99
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =      9.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     42.25

****************************************************************************
  FLOW PROCESS FROM NODE    437.00 TO NODE    438.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.44
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.44

****************************************************************************
  FLOW PROCESS FROM NODE    438.00 TO NODE    439.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
```

```
==========================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1360.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.99
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.47
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.64
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.55
  STREET FLOW TRAVEL TIME(MIN.) =  13.86   Tc(MIN.) =  15.91
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.373
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.40      SUBAREA RUNOFF(CFS) =    2.89
  TOTAL AREA(ACRES) =        1.5        PEAK FLOW RATE(CFS) =       3.10

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.60
  FLOW VELOCITY(FEET/SEC.) =  1.82   DEPTH*VELOCITY(FT*FT/SEC.) =   0.69
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    439.00 =    1399.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    439.00 TO NODE    616.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.94
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        3.10
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =  16.06
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    616.50 =    1435.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.50 TO NODE    616.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.06
  RAINFALL INTENSITY(INCH/HR) =   2.36
  TOTAL STREAM AREA(ACRES) =     1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.10

****************************************************************************
  FLOW PROCESS FROM NODE    440.00 TO NODE    441.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    518.00
  DOWNSTREAM ELEVATION(FEET) =    517.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE    441.00 TO NODE    442.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==========================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   986.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.57
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.72
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.62
  STREET FLOW TRAVEL TIME(MIN.) =   8.57   Tc(MIN.) =  10.62
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.080
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.49      SUBAREA RUNOFF(CFS) =    3.99
  TOTAL AREA(ACRES) =        1.6        PEAK FLOW RATE(CFS) =       4.29

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.43
  FLOW VELOCITY(FEET/SEC.) =  1.95   DEPTH*VELOCITY(FT*FT/SEC.) =   0.81
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    442.00 =     925.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    442.00 TO NODE    616.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    16.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.27
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        4.29
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =  10.68
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    616.50 =     941.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.50 TO NODE    616.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.68
  RAINFALL INTENSITY(INCH/HR) =   3.07
  TOTAL STREAM AREA(ACRES) =     1.60
```

```
PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.29

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       42.25     4.99        5.006         9.70
    2        3.10    16.06        2.358         1.50
    3        4.29    10.68        3.068         1.60

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       45.21     4.99        5.006
    2       32.24    10.68        3.068
    3       26.29    16.06        2.358

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      45.21   Tc(MIN.) =    4.99
TOTAL AREA(ACRES) =       12.8
LONGEST FLOWPATH FROM NODE    437.00 TO NODE    616.50 =    1435.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    616.50 TO NODE    617.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   168.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  36.0 INCH PIPE IS  29.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.41
ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      45.21
PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =   5.37
LONGEST FLOWPATH FROM NODE    437.00 TO NODE    617.00 =    1603.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    617.00 TO NODE    617.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   5.37
RAINFALL INTENSITY(INCH/HR) =   4.78
TOTAL STREAM AREA(ACRES) =    12.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =     45.21

****************************************************************************
FLOW PROCESS FROM NODE    840.00 TO NODE    841.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   355.00
UPSTREAM ELEVATION(FEET) =    508.00
DOWNSTREAM ELEVATION(FEET) =    502.00
ELEVATION DIFFERENCE(FEET) =      6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.843
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    66.90
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      8.27
TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      8.27

****************************************************************************
FLOW PROCESS FROM NODE    841.00 TO NODE    617.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.99
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       8.27
PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   3.04
LONGEST FLOWPATH FROM NODE    840.00 TO NODE    617.00 =     415.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    617.00 TO NODE    617.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.04
RAINFALL INTENSITY(INCH/HR) =   5.01
TOTAL STREAM AREA(ACRES) =     1.90
PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.27

****************************************************************************
FLOW PROCESS FROM NODE    850.00 TO NODE    851.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   369.00
UPSTREAM ELEVATION(FEET) =    506.00
DOWNSTREAM ELEVATION(FEET) =    501.00
ELEVATION DIFFERENCE(FEET) =      5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.983
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    63.55
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      8.71
TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =      8.71

****************************************************************************
FLOW PROCESS FROM NODE    851.00 TO NODE    617.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.04
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       8.71
PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   3.25
LONGEST FLOWPATH FROM NODE    850.00 TO NODE    617.00 =     451.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    617.00 TO NODE    617.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```

```
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.25
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.71

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        45.21     5.37       4.781        12.80
     2         8.27     3.04       5.006         1.90
     3         8.71     3.25       5.006         2.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        59.60     3.04       5.006
     2        60.16     3.25       5.006
     3        61.43     5.37       4.781

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      61.43   Tc(MIN.) =    5.37
  TOTAL AREA(ACRES) =       16.7
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    617.00 =    1603.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    617.00 TO NODE    618.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.14
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      61.43
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   5.51
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    618.00 =    1673.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.00 TO NODE    618.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    443.00 TO NODE    444.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.44
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.44

****************************************************************************
  FLOW PROCESS FROM NODE    444.00 TO NODE    445.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1965.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.43
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   11.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =     1.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.60
  STREET FLOW TRAVEL TIME(MIN.) =  19.21   Tc(MIN.) =  21.26
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.968
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     2.10     SUBAREA RUNOFF(CFS) =    3.60
  TOTAL AREA(ACRES) =        2.2       PEAK FLOW RATE(CFS) =       3.77

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.69
  FLOW VELOCITY(FEET/SEC.) =  1.89   DEPTH*VELOCITY(FT*FT/SEC.) =   0.76
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1965.0 FT WITH ELEVATION-DROP =   9.8 FT, IS    9.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    445.00
  LONGEST FLOWPATH FROM NODE    443.00 TO NODE    445.00 =    2004.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    445.00 TO NODE    618.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    23.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.14
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.77
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =  21.35
  LONGEST FLOWPATH FROM NODE    443.00 TO NODE    618.50 =    2027.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.50 TO NODE    618.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.35
  RAINFALL INTENSITY(INCH/HR) =   1.96
  TOTAL STREAM AREA(ACRES) =     2.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.77

****************************************************************************
  FLOW PROCESS FROM NODE    446.00 TO NODE    447.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
```

```
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    526.00
  DOWNSTREAM ELEVATION(FEET) =    525.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE    447.00 TO NODE    448.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  2195.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.75
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.37
    HALFSTREET FLOOD WIDTH(FEET) =   12.01
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.76
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.64
  STREET FLOW TRAVEL TIME(MIN.) =  20.79   Tc(MIN.) =  22.84
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.879
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.49      SUBAREA RUNOFF(CFS) =    4.07
  TOTAL AREA(ACRES) =        2.6        PEAK FLOW RATE(CFS) =       4.25

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.35
  FLOW VELOCITY(FEET/SEC.) =  1.95   DEPTH*VELOCITY(FT*FT/SEC.) =   0.81
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 2195.0 FT WITH ELEVATION-DROP =  11.0 FT, IS   10.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    448.00
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    448.00 =    2234.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    448.00 TO NODE    618.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.26
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.25
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =  23.01
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.50 =    2278.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.50 TO NODE    618.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.01
  RAINFALL INTENSITY(INCH/HR) =   1.87
  TOTAL STREAM AREA(ACRES) =     2.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.25

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.77    21.35        1.963         2.20
     2        4.25    23.01        1.870         2.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        7.71    21.35       1.963
     2        7.84    23.01       1.870

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       7.84   Tc(MIN.) =   23.01
  TOTAL AREA(ACRES) =        4.8
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.50 =    2278.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.50 TO NODE    618.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   227.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.94
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.84
  PIPE TRAVEL TIME(MIN.) =   0.77    Tc(MIN.) =  23.78
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.00 =    2505.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.00 TO NODE    618.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        7.84    23.78        1.831         4.80
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.00 =    2505.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       61.43     5.51        4.700        16.70
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    618.00 =    1673.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       63.25     5.51        4.700
     2       31.77    23.78        1.831

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =      63.25   Tc(MIN.) =    5.51
  TOTAL AREA(ACRES) =       21.5

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    618.00 TO NODE    619.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   293.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  31.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.17
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       63.25
  PIPE TRAVEL TIME(MIN.) =   0.60    Tc(MIN.) =   6.11
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    619.00 =    2798.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    619.00 TO NODE    619.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    449.00 TO NODE    450.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    502.00
  DOWNSTREAM ELEVATION(FEET) =    501.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.48
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.48

****************************************************************************
  FLOW PROCESS FROM NODE    450.00 TO NODE    622.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   365.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.94
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.37
    HALFSTREET FLOOD WIDTH(FEET) =   12.38
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.78
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.67
  STREET FLOW TRAVEL TIME(MIN.) =   3.42   Tc(MIN.) =   5.47
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.724
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.19      SUBAREA RUNOFF(CFS) =    4.89
  TOTAL AREA(ACRES) =        1.3        PEAK FLOW RATE(CFS) =       5.34

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.75
  FLOW VELOCITY(FEET/SEC.) =  2.06   DEPTH*VELOCITY(FT*FT/SEC.) =   0.91
  LONGEST FLOWPATH FROM NODE    449.00 TO NODE    622.00 =     404.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    622.00 TO NODE    619.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    74.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.48
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.34
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   5.75
  LONGEST FLOWPATH FROM NODE    449.00 TO NODE    619.00 =     478.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    619.00 TO NODE    619.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        5.34     5.75       4.577        1.30
  LONGEST FLOWPATH FROM NODE    449.00 TO NODE    619.00 =     478.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       63.25     6.11       4.398       21.50
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    619.00 =    2798.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      64.82       5.75       4.577
     2      68.39       6.11       4.398

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      68.39   Tc(MIN.) =    6.11
  TOTAL AREA(ACRES) =       22.8

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    619.00 TO NODE    623.00 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    96.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.22
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      68.39
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   6.31
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    623.00 =    2894.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    623.00 TO NODE    623.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.31
  RAINFALL INTENSITY(INCH/HR) =   4.31
  TOTAL STREAM AREA(ACRES) =    22.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     68.39

****************************************************************************
  FLOW PROCESS FROM NODE    860.00 TO NODE    861.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   265.00
  UPSTREAM ELEVATION(FEET) =    504.00
  DOWNSTREAM ELEVATION(FEET) =    501.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.111
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.32
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      4.79
  TOTAL AREA(ACRES) =      1.10   TOTAL RUNOFF(CFS) =      4.79

****************************************************************************
  FLOW PROCESS FROM NODE    861.00 TO NODE    623.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    23.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.38
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.79
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   3.20
  LONGEST FLOWPATH FROM NODE    860.00 TO NODE    623.00 =     288.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    623.00 TO NODE    623.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.20
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =      1.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.79

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       68.39     6.31        4.310        22.80
     2        4.79     3.20        5.006         1.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       39.48     3.20        5.006
     2       72.51     6.31        4.310

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      72.51   Tc(MIN.) =    6.31
  TOTAL AREA(ACRES) =       23.9
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    623.00 =    2894.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    623.00 TO NODE    624.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   187.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.50
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      72.51
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =   6.67
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    624.00 =    3081.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    624.00 TO NODE    624.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.67
  RAINFALL INTENSITY(INCH/HR) =   4.16
  TOTAL STREAM AREA(ACRES) =    23.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     72.51

****************************************************************************
  FLOW PROCESS FROM NODE    870.00 TO NODE    871.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   245.00
  UPSTREAM ELEVATION(FEET) =    504.00
  DOWNSTREAM ELEVATION(FEET) =    501.50
  ELEVATION DIFFERENCE(FEET) =      2.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.191
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    60.20
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      3.92
```

```
  TOTAL AREA(ACRES) =      0.90   TOTAL RUNOFF(CFS) =      3.92

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    871.00 TO NODE    624.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.18
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.92
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   3.29
  LONGEST FLOWPATH FROM NODE    870.00 TO NODE    624.00 =     269.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    624.00 TO NODE    624.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.29
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.92

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE   1050.00 TO NODE   1051.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   320.00
  UPSTREAM ELEVATION(FEET) =    502.00
  DOWNSTREAM ELEVATION(FEET) =    500.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.508
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    52.50
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.10
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      6.10

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE   1051.00 TO NODE    624.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.59
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.10
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   3.58
  LONGEST FLOWPATH FROM NODE   1050.00 TO NODE    624.00 =     340.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    624.00 TO NODE    624.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.58
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.10

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       72.51     6.67        4.156        23.90
     2        3.92     3.29        5.006         0.90
     3        6.10     3.58        5.006         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       69.71     3.29       5.006
     2       70.22     3.58       5.006
     3       80.83     6.67       4.156

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      80.83   Tc(MIN.) =    6.67
  TOTAL AREA(ACRES) =       26.2
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    624.00 =    3081.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    624.00 TO NODE    625.50 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  35.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.60
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      80.83
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   6.87
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    625.50 =    3181.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    625.50 TO NODE    625.50 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.87
  RAINFALL INTENSITY(INCH/HR) =   4.08
  TOTAL STREAM AREA(ACRES) =    26.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     80.83

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    928.00 TO NODE    929.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   255.00
  UPSTREAM ELEVATION(FEET) =    504.00
  DOWNSTREAM ELEVATION(FEET) =    501.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.082
```

```
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.76
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.40
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =      7.40

****************************************************************************
  FLOW PROCESS FROM NODE    929.00 TO NODE    625.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.88
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.40
  PIPE TRAVEL TIME(MIN.) =   0.85    Tc(MIN.) =   3.94
  LONGEST FLOWPATH FROM NODE    928.00 TO NODE    625.50 =     505.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.50 TO NODE    625.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.94
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =      1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.40

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       80.83     6.87       4.080         26.20
     2        7.40     3.94       5.006          1.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       73.28     3.94       5.006
     2       86.86     6.87       4.080

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      86.86   Tc(MIN.) =    6.87
  TOTAL AREA(ACRES) =       27.9
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    625.50 =    3181.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.50 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  34.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.88
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      86.86
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   6.99
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    625.00 =    3246.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    908.00 TO NODE    909.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   419.00
  UPSTREAM ELEVATION(FEET) =    522.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.232
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    59.09
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.63
  TOTAL AREA(ACRES) =      2.90   TOTAL RUNOFF(CFS) =     12.63

****************************************************************************
  FLOW PROCESS FROM NODE    909.00 TO NODE    941.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   124.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.53
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.63
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =   3.61
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    941.00 =     543.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    941.00 TO NODE    941.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.61
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =      2.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.63

****************************************************************************
  FLOW PROCESS FROM NODE    910.00 TO NODE    911.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   260.00
```

```
  UPSTREAM ELEVATION(FEET) =    526.00
  DOWNSTREAM ELEVATION(FEET) =    524.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.363
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    55.38
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.84
  TOTAL AREA(ACRES) =      1.80   TOTAL RUNOFF(CFS) =      7.84

****************************************************************************
  FLOW PROCESS FROM NODE    911.00 TO NODE    941.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.94
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.84
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =   3.72
  LONGEST FLOWPATH FROM NODE    910.00 TO NODE    941.00 =     365.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    941.00 TO NODE    941.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.72
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.84

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       12.63     3.61        5.006         2.90
     2        7.84     3.72        5.006         1.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       20.24     3.61       5.006
     2       20.47     3.72       5.006

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      20.47   Tc(MIN.) =    3.72
  TOTAL AREA(ACRES) =        4.7
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    941.00 =     543.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    941.00 TO NODE    942.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   155.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.11
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      20.47
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =   4.14
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    942.00 =     698.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    942.00 TO NODE    942.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.14
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     4.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.47

****************************************************************************
  FLOW PROCESS FROM NODE    910.50 TO NODE    911.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   250.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.337
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    56.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      3.92
  TOTAL AREA(ACRES) =      0.90   TOTAL RUNOFF(CFS) =      3.92

****************************************************************************
  FLOW PROCESS FROM NODE    911.50 TO NODE    942.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.16
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.92
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   3.66
  LONGEST FLOWPATH FROM NODE    910.50 TO NODE    942.00 =     330.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    942.00 TO NODE    942.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.66
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.92

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
```

```
     1       20.47     4.14        5.006          4.70
     2        3.92     3.66        5.006          0.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       24.39     3.66       5.006
     2       24.39     4.14       5.006

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.39   Tc(MIN.) =    4.14
  TOTAL AREA(ACRES) =         5.6
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    942.00 =     698.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    942.00 TO NODE    943.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.48
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.39
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   4.35
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    943.00 =     778.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    943.00 TO NODE    943.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.35
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     5.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.39

****************************************************************************
  FLOW PROCESS FROM NODE    914.00 TO NODE    915.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   451.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    516.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.274
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.74
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     13.50
  TOTAL AREA(ACRES) =      3.10   TOTAL RUNOFF(CFS) =     13.50

****************************************************************************
  FLOW PROCESS FROM NODE    915.00 TO NODE    943.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.59
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.50
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   3.46
  LONGEST FLOWPATH FROM NODE    914.00 TO NODE    943.00 =     513.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    943.00 TO NODE    943.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.46
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     3.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.50

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       24.39     4.35       5.006          5.60
     2       13.50     3.46       5.006          3.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       37.89     3.46       5.006
     2       37.89     4.35       5.006

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      37.89   Tc(MIN.) =    4.35
  TOTAL AREA(ACRES) =         8.7
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    943.00 =     778.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    943.00 TO NODE    944.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  24.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.26
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      37.89
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   4.43
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    944.00 =     814.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    944.00 TO NODE    944.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    932.00 TO NODE    933.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   516.00
  UPSTREAM ELEVATION(FEET) =    528.00
  DOWNSTREAM ELEVATION(FEET) =    522.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.091
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.63
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     18.73
  TOTAL AREA(ACRES) =      4.30   TOTAL RUNOFF(CFS) =     18.73

****************************************************************************
  FLOW PROCESS FROM NODE    933.00 TO NODE    935.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   195.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.05
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.73
  PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =   3.63
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    935.00 =     711.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    935.00 TO NODE    935.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.63
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     4.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.73

****************************************************************************
  FLOW PROCESS FROM NODE    934.00 TO NODE    935.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   690.00
  UPSTREAM ELEVATION(FEET) =    526.00
  DOWNSTREAM ELEVATION(FEET) =    520.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.286
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.39
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     20.47
  TOTAL AREA(ACRES) =      4.70   TOTAL RUNOFF(CFS) =     20.47

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    935.00 TO NODE    935.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.29
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     4.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.47

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       18.73     3.63        5.006         4.30
     2       20.47     3.29        5.006         4.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       37.43     3.29        5.006
     2       39.20     3.63        5.006

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      39.20   Tc(MIN.) =    3.63
  TOTAL AREA(ACRES) =      9.0
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    935.00 =     711.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    935.00 TO NODE    944.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   630.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.30
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      39.20
  PIPE TRAVEL TIME(MIN.) =   1.44    Tc(MIN.) =   5.07
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    944.00 =    1341.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    944.00 TO NODE    944.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       39.20     5.07        4.964         9.00
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    944.00 =    1341.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       37.89     4.43        5.006         8.70
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    944.00 =     814.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       72.16     4.43        5.006
     2       76.77     5.07        4.964
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      76.77   Tc(MIN.) =    5.07
  TOTAL AREA(ACRES) =       17.7

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    944.00 TO NODE    945.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  34.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.56
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      76.77
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   5.32
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    945.00 =    1471.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    945.00 TO NODE    945.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.32
  RAINFALL INTENSITY(INCH/HR) =   4.81
  TOTAL STREAM AREA(ACRES) =    17.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     76.77

****************************************************************************
  FLOW PROCESS FROM NODE    916.00 TO NODE    917.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   593.00
  UPSTREAM ELEVATION(FEET) =    518.00
  DOWNSTREAM ELEVATION(FEET) =    514.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.452
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =   53.49
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     17.86
  TOTAL AREA(ACRES) =      4.10   TOTAL RUNOFF(CFS) =     17.86

****************************************************************************
  FLOW PROCESS FROM NODE    917.00 TO NODE    945.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    61.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.01
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.86
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   3.62
  LONGEST FLOWPATH FROM NODE    916.00 TO NODE    945.00 =     654.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    945.00 TO NODE    945.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.62
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     4.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.86

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       76.77     5.32        4.811         17.70
      2       17.86     3.62        5.006          4.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       70.14     3.62       5.006
      2       93.93     5.32       4.811

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      93.93   Tc(MIN.) =    5.32
  TOTAL AREA(ACRES) =       21.8
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    945.00 =    1471.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    945.00 TO NODE    946.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   473.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  37.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.96
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      93.93
  PIPE TRAVEL TIME(MIN.) =   0.88    Tc(MIN.) =   6.20
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    946.00 =    1944.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    946.00 TO NODE    946.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.20
  RAINFALL INTENSITY(INCH/HR) =   4.36
  TOTAL STREAM AREA(ACRES) =    21.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     93.93

****************************************************************************
  FLOW PROCESS FROM NODE    918.00 TO NODE    919.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
```

```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   522.00
  UPSTREAM ELEVATION(FEET) =    515.00
  DOWNSTREAM ELEVATION(FEET) =    512.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.573
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.49
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     15.24
  TOTAL AREA(ACRES) =      3.50   TOTAL RUNOFF(CFS) =     15.24

****************************************************************************
  FLOW PROCESS FROM NODE    919.00 TO NODE    946.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  19.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.66
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.24
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   3.81
  LONGEST FLOWPATH FROM NODE    918.00 TO NODE    946.00 =     602.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    946.00 TO NODE    946.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.81
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     3.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.24

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       93.93     6.20        4.358        21.80
     2       15.24     3.81        5.006         3.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       97.02     3.81       5.006
     2      107.20     6.20       4.358

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     107.20   Tc(MIN.) =    6.20
  TOTAL AREA(ACRES) =       25.3
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    946.00 =    1944.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    946.00 TO NODE    947.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    52.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  38.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.31
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     107.20
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   6.29
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    947.00 =    1996.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    947.00 TO NODE    947.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.29
  RAINFALL INTENSITY(INCH/HR) =   4.32
  TOTAL STREAM AREA(ACRES) =    25.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    107.20

****************************************************************************
  FLOW PROCESS FROM NODE    912.00 TO NODE    913.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   381.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    514.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.885
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    65.75
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     11.76
  TOTAL AREA(ACRES) =      2.70   TOTAL RUNOFF(CFS) =     11.76

****************************************************************************
  FLOW PROCESS FROM NODE    913.00 TO NODE    947.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.45
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.76
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   3.21
  LONGEST FLOWPATH FROM NODE    912.00 TO NODE    947.00 =     486.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    947.00 TO NODE    947.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.21
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     2.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.76

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
```

```
     1      107.20     6.29        4.317         25.30
     2       11.76     3.21        5.006          2.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
     1      104.20     3.21        5.006
     2      117.34     6.29        4.317

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     117.34   Tc(MIN.) =    6.29
  TOTAL AREA(ACRES) =       28.0
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    947.00 =    1996.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    947.00 TO NODE    948.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   212.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  38.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.59
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     117.34
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =   6.66
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    948.00 =    2208.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    948.00 TO NODE    948.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.66
  RAINFALL INTENSITY(INCH/HR) =   4.16
  TOTAL STREAM AREA(ACRES) =    26.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    117.34

****************************************************************************
  FLOW PROCESS FROM NODE    920.00 TO NODE    921.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   295.00
  UPSTREAM ELEVATION(FEET) =    516.00
  DOWNSTREAM ELEVATION(FEET) =    512.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.982
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.56
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.10
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      6.10

****************************************************************************
  FLOW PROCESS FROM NODE    921.00 TO NODE    948.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.59
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      6.10
  PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =   3.36
  LONGEST FLOWPATH FROM NODE    920.00 TO NODE    948.00 =     400.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    948.00 TO NODE    948.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.36
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.10

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1      117.34     6.66        4.161         28.00
     2        6.10     3.36        5.006          1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
     1      103.64     3.36        5.006
     2      122.41     6.66        4.161

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     122.41   Tc(MIN.) =    6.66
  TOTAL AREA(ACRES) =       29.4
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    948.00 =    2208.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    948.00 TO NODE    949.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    31.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  40.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.65
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     122.41
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   6.71
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    949.00 =    2239.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    949.00 TO NODE    949.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.71
  RAINFALL INTENSITY(INCH/HR) =   4.14
  TOTAL STREAM AREA(ACRES) =    29.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    122.41

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    922.00 TO NODE    923.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   469.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    509.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.491
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    52.79
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     15.24
  TOTAL AREA(ACRES) =      3.50   TOTAL RUNOFF(CFS) =     15.24

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    923.00 TO NODE    949.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    88.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  19.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.66
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.24
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   3.75
  LONGEST FLOWPATH FROM NODE    922.00 TO NODE    949.00 =     557.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    949.00 TO NODE    949.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.75
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =      3.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.24

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      122.41     6.71        4.140        29.40
     2       15.24     3.75        5.006         3.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      116.47     3.75       5.006
     2      135.02     6.71       4.140

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     135.02   Tc(MIN.) =    6.71
  TOTAL AREA(ACRES) =       32.9
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    949.00 =    2239.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    949.00 TO NODE    950.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  44.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.71
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     135.02
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =   7.12
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    950.00 =    2479.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    950.00 TO NODE    950.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.12
  RAINFALL INTENSITY(INCH/HR) =   3.98
  TOTAL STREAM AREA(ACRES) =     32.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    135.02

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    924.00 TO NODE    925.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   336.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    508.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.073
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.90
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.71
  TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =      8.71

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    925.00 TO NODE    950.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.04
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.71
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =   3.42
  LONGEST FLOWPATH FROM NODE    924.00 TO NODE    950.00 =     441.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    950.00 TO NODE    950.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.42
```

```
RAINFALL INTENSITY(INCH/HR) =   5.01
TOTAL STREAM AREA(ACRES) =      2.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.71

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc       INTENSITY      AREA
NUMBER      (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
    1      135.02     7.12        3.984         32.90
    2        8.71     3.42        5.006          2.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc       INTENSITY
NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
    1      116.16     3.42        5.006
    2      141.95     7.12        3.984

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     141.95   Tc(MIN.) =    7.12
TOTAL AREA(ACRES) =       34.9
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    950.00 =    2479.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    950.00 TO NODE    951.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    56.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  57.0 INCH PIPE IS  42.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  10.01
ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     141.95
PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   7.22
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    951.00 =    2535.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    951.00 TO NODE    951.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   7.22
RAINFALL INTENSITY(INCH/HR) =   3.95
TOTAL STREAM AREA(ACRES) =    34.90
PEAK FLOW RATE(CFS) AT CONFLUENCE =    141.95

****************************************************************************
FLOW PROCESS FROM NODE    926.00 TO NODE    927.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   516.00
UPSTREAM ELEVATION(FEET) =    508.00
DOWNSTREAM ELEVATION(FEET) =    505.00
ELEVATION DIFFERENCE(FEET) =      3.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.564
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    51.63
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =     15.24
TOTAL AREA(ACRES) =      3.50   TOTAL RUNOFF(CFS) =     15.24

****************************************************************************
FLOW PROCESS FROM NODE    927.00 TO NODE    951.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   103.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  19.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.66
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      15.24
PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =   3.87
LONGEST FLOWPATH FROM NODE    926.00 TO NODE    951.00 =     619.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    951.00 TO NODE    951.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.87
RAINFALL INTENSITY(INCH/HR) =   5.01
TOTAL STREAM AREA(ACRES) =     3.50
PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.24

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc       INTENSITY      AREA
NUMBER      (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
    1      141.95     7.22        3.951         34.90
    2       15.24     3.87        5.006          3.50

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc       INTENSITY
NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
    1      127.26     3.87        5.006
    2      153.98     7.22        3.951

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     153.98   Tc(MIN.) =    7.22
TOTAL AREA(ACRES) =       38.4
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    951.00 =    2535.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    951.00 TO NODE    952.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   310.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  57.0 INCH PIPE IS  45.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  10.07
ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     153.98
PIPE TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =   7.73
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    952.00 =    2845.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    952.00 TO NODE    952.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.73
  RAINFALL INTENSITY(INCH/HR) =    3.78
  TOTAL STREAM AREA(ACRES) =    38.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    153.98

****************************************************************************
  FLOW PROCESS FROM NODE    930.00 TO NODE    931.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   700.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    502.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.578
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.43
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.006
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     19.16
  TOTAL AREA(ACRES) =      4.40   TOTAL RUNOFF(CFS) =     19.16

****************************************************************************
  FLOW PROCESS FROM NODE    931.00 TO NODE    952.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.07
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      19.16
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =   3.99
  LONGEST FLOWPATH FROM NODE    930.00 TO NODE    952.00 =     850.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    952.00 TO NODE    952.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.99
  RAINFALL INTENSITY(INCH/HR) =    5.01
  TOTAL STREAM AREA(ACRES) =     4.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.16

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1       153.98     7.73        3.779        38.40
     2        19.16     3.99        5.006         4.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
     1       135.41     3.99        5.006
     2       168.45     7.73        3.779

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     168.45   Tc(MIN.) =    7.73
  TOTAL AREA(ACRES) =       42.8
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    952.00 =    2845.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    952.00 TO NODE    953.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    42.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  46.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.39
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     168.45
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   7.80
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    953.00 =    2887.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    953.00 TO NODE    953.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1       168.45     7.80        3.758        42.80
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    953.00 =    2887.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1        86.86     6.99        4.034        27.90
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    953.00 =    3246.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
     1       237.80     6.99        4.034
     2       249.37     7.80        3.758

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     249.37   Tc(MIN.) =    7.80
  TOTAL AREA(ACRES) =       70.7

****************************************************************************
  FLOW PROCESS FROM NODE    953.00 TO NODE    999.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    486.00  DOWNSTREAM(FEET) =    484.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   165.00   CHANNEL SLOPE =  0.0121
  CHANNEL FLOW THRU SUBAREA(CFS) =     249.37
  FLOW VELOCITY(FEET/SEC) =   6.92 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.40   Tc(MIN.) =   8.20
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    999.00 =    3411.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    999.00 TO NODE    999.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.640
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8522
```

```
  SUBAREA AREA(ACRES) =     2.50   SUBAREA RUNOFF(CFS) =     3.18
  TOTAL AREA(ACRES) =        73.2   TOTAL RUNOFF(CFS) =     249.37
  TC(MIN.) =   8.20
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE    999.00 TO NODE   1013.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  69.0 INCH PIPE IS  54.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.42
  ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     249.37
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   8.37
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1013.00 =    3531.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1010.00 TO NODE   1010.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  34.20   RAIN INTENSITY(INCH/HOUR) =  1.45
  TOTAL AREA(ACRES) =   625.90   TOTAL RUNOFF(CFS) =    514.50

****************************************************************************
  FLOW PROCESS FROM NODE   1010.00 TO NODE   1011.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    528.00  DOWNSTREAM(FEET) =    524.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   180.00   CHANNEL SLOPE =  0.0222
  CHANNEL FLOW THRU SUBAREA(CFS) =     514.50
  FLOW VELOCITY(FEET/SEC) =  11.78 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.25   Tc(MIN.) =  34.45
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1011.00 =    3711.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1011.00 TO NODE   1011.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.441
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5671
  SUBAREA AREA(ACRES) =     1.20   SUBAREA RUNOFF(CFS) =     0.61
  TOTAL AREA(ACRES) =       627.1   TOTAL RUNOFF(CFS) =     514.50
  TC(MIN.) =  34.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE   1011.00 TO NODE   1012.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   167.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  90.0 INCH PIPE IS  71.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.65
  ESTIMATED PIPE DIAMETER(INCH) =  90.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     514.50
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  34.66
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1012.00 =    3878.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1012.00 TO NODE   1013.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    518.00  DOWNSTREAM(FEET) =    486.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3050.00   CHANNEL SLOPE =  0.0105
  CHANNEL FLOW THRU SUBAREA(CFS) =     514.50
  FLOW VELOCITY(FEET/SEC) =   8.09 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   6.28   Tc(MIN.) =  40.94
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1013.00 =    6928.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1013.00 TO NODE   1013.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.290
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5633
  SUBAREA AREA(ACRES) =    11.20   SUBAREA RUNOFF(CFS) =     5.06
  TOTAL AREA(ACRES) =       638.3   TOTAL RUNOFF(CFS) =     514.50
  TC(MIN.) =  40.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        0.0  TC(MIN.) =       5.00
  PEAK FLOW RATE(CFS)   =       1.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                          2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2006 Advanced Engineering Software (aes)
             Ver. 2.0 Release Date: 06/01/2005  License ID 1499

                          Analysis prepared by:

                     Kimley-Horn & Associates, Inc
                         401 B Street Suite 600
                          San Diego, CA 92101
                              619-234-9411

 ************************* DESCRIPTION OF STUDY *************************
* Otay Business Park Proposed Condition                                 *
* 50-year storm;                                                        *
* 2010-04-12 AG                                                         *
 ************************************************************************

  FILE NAME: 50.DAT
  TIME/DATE OF STUDY: 16:59 04/12/2010
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) =  50.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   2.800
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150
  2   39.0     34.0    0.020/0.020/ ---    0.50    1.50 0.0313 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    657.00
  DOWNSTREAM ELEVATION(FEET) =    640.00
  ELEVATION DIFFERENCE(FEET) =     17.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.431
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.0%, IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.28
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.28

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    640.00  DOWNSTREAM(FEET) =    540.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3300.00   CHANNEL SLOPE =  0.0303
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.28
  FLOW VELOCITY(FEET/SEC) =   2.61 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  21.06   Tc(MIN.) =  25.49
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    3350.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.580
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  101.30   SUBAREA RUNOFF(CFS) =   91.46
  TOTAL AREA(ACRES) =      101.4   TOTAL RUNOFF(CFS) =      91.56
  TC(MIN.) =  25.49

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  36.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.94
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      91.56
  PIPE TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =  25.96
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    203.00 =    3600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.96
  RAINFALL INTENSITY(INCH/HR) =   2.55
  TOTAL STREAM AREA(ACRES) =   101.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      91.56

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    601.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    638.00
  DOWNSTREAM ELEVATION(FEET) =    632.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.431
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.0%, IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.28
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.28
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     601.00 TO NODE     602.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.00  DOWNSTREAM(FEET) =    531.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3766.00   CHANNEL SLOPE =  0.0268
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =        0.28
  FLOW VELOCITY(FEET/SEC) =   2.46 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.55   Tc(MIN.) =  29.98
  LONGEST FLOWPATH FROM NODE     600.00 TO NODE     602.00 =    3816.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     602.00 TO NODE     602.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.324
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  102.19   SUBAREA RUNOFF(CFS) =   83.10
  TOTAL AREA(ACRES) =      102.3   TOTAL RUNOFF(CFS) =      83.19
  TC(MIN.) =  29.98

****************************************************************************
  FLOW PROCESS FROM NODE     602.00 TO NODE     203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   440.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  36.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.60
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        83.19
  PIPE TRAVEL TIME(MIN.) =   0.85    Tc(MIN.) =  30.84
  LONGEST FLOWPATH FROM NODE     600.00 TO NODE     203.00 =    4256.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     203.00 TO NODE     203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  30.84
  RAINFALL INTENSITY(INCH/HR) =   2.28
  TOTAL STREAM AREA(ACRES) =   102.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     83.19

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        91.56    25.96        2.550        101.41
     2        83.19    30.84        2.282        102.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       161.61    25.96       2.550
     2       165.14    30.84       2.282

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     165.14   Tc(MIN.) =   30.84
  TOTAL AREA(ACRES) =      203.7
  LONGEST FLOWPATH FROM NODE     600.00 TO NODE     203.00 =    4256.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     203.00 TO NODE     204.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =  1200.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  45.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.37
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     165.14
  PIPE TRAVEL TIME(MIN.) =   1.93    Tc(MIN.) =  32.76
  LONGEST FLOWPATH FROM NODE     600.00 TO NODE     204.00 =    5456.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     204.00 TO NODE     204.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  32.76
  RAINFALL INTENSITY(INCH/HR) =   2.19
  TOTAL STREAM AREA(ACRES) =   203.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     165.14

****************************************************************************
  FLOW PROCESS FROM NODE     400.00 TO NODE     401.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     3.00
  UPSTREAM ELEVATION(FEET) =    555.00
  DOWNSTREAM ELEVATION(FEET) =    552.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.085
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.28
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.28

****************************************************************************
  FLOW PROCESS FROM NODE     401.00 TO NODE     402.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    552.00  DOWNSTREAM(FEET) =    519.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1517.00   CHANNEL SLOPE =  0.0218
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =        0.28
  FLOW VELOCITY(FEET/SEC) =   2.21 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  11.43   Tc(MIN.) =  12.51
  LONGEST FLOWPATH FROM NODE     400.00 TO NODE     402.00 =    1520.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     402.00 TO NODE     402.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.082
 *USER SPECIFIED(SUBAREA):
 DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =  97
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
 SUBAREA AREA(ACRES) =   21.69   SUBAREA RUNOFF(CFS) =   30.99
 TOTAL AREA(ACRES) =       21.8   TOTAL RUNOFF(CFS) =      31.15
 TC(MIN.) =  12.51

****************************************************************************
 FLOW PROCESS FROM NODE    402.00 TO NODE    204.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.89
 ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      31.15
 PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =  12.63
 LONGEST FLOWPATH FROM NODE    400.00 TO NODE    204.00 =    1570.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    204.00 TO NODE    204.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  12.63
 RAINFALL INTENSITY(INCH/HR) =   4.06
 TOTAL STREAM AREA(ACRES) =    21.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     31.15

 ** CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      165.14    32.76       2.194       203.71
     2       31.15    12.63       4.057        21.80

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      120.46    12.63       4.057
     2      181.98    32.76       2.194

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     181.98   Tc(MIN.) =   32.76
 TOTAL AREA(ACRES) =      225.5
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    204.00 =    5456.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    204.00 TO NODE    204.50 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 FLOW LENGTH(FEET) =  1370.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  63.0 INCH PIPE IS  46.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  10.67
 ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     181.98
 PIPE TRAVEL TIME(MIN.) =   2.14    Tc(MIN.) =  34.90
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    204.50 =    6826.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    204.50 TO NODE    204.50 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  34.90
 RAINFALL INTENSITY(INCH/HR) =   2.11
 TOTAL STREAM AREA(ACRES) =   225.51
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    181.98

****************************************************************************
 FLOW PROCESS FROM NODE   1030.00 TO NODE   1031.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    20.00
 UPSTREAM ELEVATION(FEET) =    524.00
 DOWNSTREAM ELEVATION(FEET) =    523.60
 ELEVATION DIFFERENCE(FEET) =      0.40
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.470
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.64
 TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.64

****************************************************************************
 FLOW PROCESS FROM NODE   1031.00 TO NODE   1032.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 STREET LENGTH(FEET) =  1300.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 39.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.79
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.37
   HALFSTREET FLOOD WIDTH(FEET) =   12.08
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.77
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.65
 STREET FLOW TRAVEL TIME(MIN.) =  12.27   Tc(MIN.) =  13.74
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.844
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
 SUBAREA AREA(ACRES) =    1.20      SUBAREA RUNOFF(CFS) =    4.01
 TOTAL AREA(ACRES) =        1.3        PEAK FLOW RATE(CFS) =       4.35

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.50
 FLOW VELOCITY(FEET/SEC.) =  1.96   DEPTH*VELOCITY(FT*FT/SEC.) =   0.81
 LONGEST FLOWPATH FROM NODE   1030.00 TO NODE   1032.00 =    1320.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   1032.00 TO NODE    204.50 IS CODE =  31
----------------------------------------------------------------------------
```

```
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.28
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =        4.35
PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =  13.93
LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    204.50 =    1370.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    204.50 TO NODE    204.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  13.93
RAINFALL INTENSITY(INCH/HR) =   3.81
TOTAL STREAM AREA(ACRES) =     1.30
PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.35

****************************************************************************
FLOW PROCESS FROM NODE    280.00 TO NODE    281.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    20.00
UPSTREAM ELEVATION(FEET) =    524.00
DOWNSTREAM ELEVATION(FEET) =    523.60
ELEVATION DIFFERENCE(FEET) =      0.40
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.470
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =       0.64
TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.64

****************************************************************************
FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =  1300.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.63
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.32
  HALFSTREET FLOOD WIDTH(FEET) =    9.67
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.55
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.50
STREET FLOW TRAVEL TIME(MIN.) =  13.99   Tc(MIN.) =  15.46
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.563
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =     0.60      SUBAREA RUNOFF(CFS) =     1.86
TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =        2.17

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.91
FLOW VELOCITY(FEET/SEC.) =  1.66   DEPTH*VELOCITY(FT*FT/SEC.) =   0.57
LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =    1320.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    282.00 TO NODE    204.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   3.59
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =        2.17
PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =  15.69
LONGEST FLOWPATH FROM NODE    280.00 TO NODE    204.50 =    1370.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    204.50 TO NODE    204.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =  15.69
RAINFALL INTENSITY(INCH/HR) =   3.53
TOTAL STREAM AREA(ACRES) =     0.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.17

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1      181.98    34.90       2.107        225.51
    2        4.35    13.93       3.809          1.30
    3        2.17    15.69       3.528          0.70

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1      106.92    13.93       3.809
    2      114.85    15.69       3.528
    3      185.68    34.90       2.107

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      185.68   Tc(MIN.) =   34.90
TOTAL AREA(ACRES) =      227.5
LONGEST FLOWPATH FROM NODE    600.00 TO NODE    204.50 =    6826.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    204.50 TO NODE    205.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    22.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  63.0 INCH PIPE IS  47.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  10.70
ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =     185.68
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =  34.94
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    205.00 =    6848.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    121.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    586.00
  DOWNSTREAM ELEVATION(FEET) =    583.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.254
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.146
  SUBAREA RUNOFF(CFS) =      0.28
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.28

****************************************************************************
  FLOW PROCESS FROM NODE    121.00 TO NODE    122.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    583.00  DOWNSTREAM(FEET) =    551.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   600.00   CHANNEL SLOPE =  0.0533
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.28
  FLOW VELOCITY(FEET/SEC) =   3.46 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.89   Tc(MIN.) =   8.14
  LONGEST FLOWPATH FROM NODE    120.00 TO NODE    122.00 =     650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.387
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    5.80   SUBAREA RUNOFF(CFS) =   10.94
  TOTAL AREA(ACRES) =        5.9   TOTAL RUNOFF(CFS) =      11.14
  TC(MIN.) =   8.14

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.14
  RAINFALL INTENSITY(INCH/HR) =   5.39
  TOTAL STREAM AREA(ACRES) =     5.91
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.14

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   5.00   RAIN INTENSITY(INCH/HOUR) =  7.38
  TOTAL AREA(ACRES) =    59.90   TOTAL RUNOFF(CFS) =     52.30

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.00
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =    59.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     52.30

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        11.14     8.14       5.387          5.91
     2        52.30     5.00       7.377         59.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        59.14     5.00       7.377
     2        49.34     8.14       5.387

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      59.14   Tc(MIN.) =    5.00
  TOTAL AREA(ACRES) =       65.8
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    122.00 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    123.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  29.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.09
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      59.14
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   5.34
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    123.00 =    1535.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    123.00 TO NODE    117.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    550.00  DOWNSTREAM(FEET) =    520.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1210.00   CHANNEL SLOPE =  0.0248
  CHANNEL FLOW THRU SUBAREA(CFS) =      59.14
  FLOW VELOCITY(FEET/SEC) =   6.40 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.15   Tc(MIN.) =   8.49
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    117.00 =    2745.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.242
 *USER SPECIFIED(SUBAREA):
 DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =  97
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.1770
 SUBAREA AREA(ACRES) =   14.40   SUBAREA RUNOFF(CFS) =   26.42
 TOTAL AREA(ACRES) =       80.2   TOTAL RUNOFF(CFS) =      74.43
 TC(MIN.) =   8.49

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.49
 RAINFALL INTENSITY(INCH/HR) =   5.24
 TOTAL STREAM AREA(ACRES) =    80.21
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     74.43

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   7
----------------------------------------------------------------------------
 >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN) =   5.00   RAIN INTENSITY(INCH/HOUR) =  7.38
 TOTAL AREA(ACRES) =   206.40   TOTAL RUNOFF(CFS) =    180.40

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.00
 RAINFALL INTENSITY(INCH/HR) =   7.38
 TOTAL STREAM AREA(ACRES) =   206.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    180.40

 ** CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       74.43     8.49        5.242        80.21
    2      180.40     5.00        7.377       206.40

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1      233.29     5.00       7.377
    2      202.63     8.49       5.242

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     233.29   Tc(MIN.) =    5.00
 TOTAL AREA(ACRES) =      286.6
 LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    117.00 =    2745.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    118.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  69.0 INCH PIPE IS  51.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  11.35
 ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     233.29
 PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   5.25
 LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    118.00 =    2915.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
 >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    325.00 TO NODE    326.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
 UPSTREAM ELEVATION(FEET) =    618.00
 DOWNSTREAM ELEVATION(FEET) =    617.22
 ELEVATION DIFFERENCE(FEET) =      0.78
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      0.71
 TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
 FLOW PROCESS FROM NODE    326.00 TO NODE    327.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 STREET LENGTH(FEET) =  1580.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 39.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.44
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.39
   HALFSTREET FLOOD WIDTH(FEET) =   13.18
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.86
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.72
 STREET FLOW TRAVEL TIME(MIN.) =  14.19   Tc(MIN.) =  16.24
   50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.450
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
 SUBAREA AREA(ACRES) =    1.69      SUBAREA RUNOFF(CFS) =    5.07
 TOTAL AREA(ACRES) =        1.8        PEAK FLOW RATE(CFS) =       5.40

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.82
 FLOW VELOCITY(FEET/SEC.) =  2.06   DEPTH*VELOCITY(FT*FT/SEC.) =   0.91
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L = 1580.0 FT WITH ELEVATION-DROP =   7.9 FT, IS   10.8 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    327.00
 LONGEST FLOWPATH FROM NODE    325.00 TO NODE    327.00 =    1619.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    327.00 TO NODE    310.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.49
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.40
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =  16.49
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    310.00 =    1684.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.49
  RAINFALL INTENSITY(INCH/HR) =   3.42
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.40

****************************************************************************
  FLOW PROCESS FROM NODE    330.00 TO NODE    331.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    618.00
  DOWNSTREAM ELEVATION(FEET) =    617.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    331.00 TO NODE    332.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1580.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.44
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   13.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.86
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.72
  STREET FLOW TRAVEL TIME(MIN.) =  14.19   Tc(MIN.) =  16.24
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.450
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.69      SUBAREA RUNOFF(CFS) =    5.07
  TOTAL AREA(ACRES) =        1.8        PEAK FLOW RATE(CFS) =       5.40

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.82
  FLOW VELOCITY(FEET/SEC.) =  2.06   DEPTH*VELOCITY(FT*FT/SEC.) =   0.91
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1580.0 FT WITH ELEVATION-DROP =   7.9 FT, IS   10.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    332.00
  LONGEST FLOWPATH FROM NODE    330.00 TO NODE    332.00 =    1619.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    332.00 TO NODE    310.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.49
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.40
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  16.32
  LONGEST FLOWPATH FROM NODE    330.00 TO NODE    310.00 =    1639.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.32
  RAINFALL INTENSITY(INCH/HR) =   3.44
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.40

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        5.40    16.49        3.417         1.80
     2        5.40    16.32        3.440         1.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       10.75    16.32       3.440
     2       10.77    16.49       3.417

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.77   Tc(MIN.) =   16.49
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    310.00 =    1684.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    311.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   920.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  17.0 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.17
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       10.77
  PIPE TRAVEL TIME(MIN.) =   2.96    Tc(MIN.) =  19.45
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    311.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.45
  RAINFALL INTENSITY(INCH/HR) =   3.07
  TOTAL STREAM AREA(ACRES) =      3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.77

****************************************************************************
  FLOW PROCESS FROM NODE    340.00 TO NODE    341.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    554.00
  DOWNSTREAM ELEVATION(FEET) =    553.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    341.00 TO NODE    342.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   900.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.53
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.64
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.62
  STREET FLOW TRAVEL TIME(MIN.) =   8.74   Tc(MIN.) =  10.79
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.491
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.89      SUBAREA RUNOFF(CFS) =    3.48
  TOTAL AREA(ACRES) =        1.0        PEAK FLOW RATE(CFS) =       3.91

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.84
  FLOW VELOCITY(FEET/SEC.) =  1.92   DEPTH*VELOCITY(FT*FT/SEC.) =   0.77
```

```
  LONGEST FLOWPATH FROM NODE    340.00 TO NODE    342.00 =     939.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    342.00 TO NODE    311.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.17
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.91
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =  11.03
  LONGEST FLOWPATH FROM NODE    340.00 TO NODE    311.00 =     999.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.03
  RAINFALL INTENSITY(INCH/HR) =   4.43
  TOTAL STREAM AREA(ACRES) =      1.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.91

****************************************************************************
  FLOW PROCESS FROM NODE    350.00 TO NODE    351.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    554.00
  DOWNSTREAM ELEVATION(FEET) =    553.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    351.00 TO NODE    352.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   900.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.75
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.37
    HALFSTREET FLOOD WIDTH(FEET) =   12.01
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.76
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.65
```

```
  STREET FLOW TRAVEL TIME(MIN.) =   8.51   Tc(MIN.) =  10.57
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.553
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.99      SUBAREA RUNOFF(CFS) =    3.92
  TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       4.36

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.50
  FLOW VELOCITY(FEET/SEC.) =  1.96   DEPTH*VELOCITY(FT*FT/SEC.) =   0.82
  LONGEST FLOWPATH FROM NODE    350.00 TO NODE    352.00 =     939.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    311.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.29
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.36
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =  10.64
  LONGEST FLOWPATH FROM NODE    350.00 TO NODE    311.00 =     959.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.64
  RAINFALL INTENSITY(INCH/HR) =   4.53
  TOTAL STREAM AREA(ACRES) =     1.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.36

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       10.77    19.45       3.072         3.60
      2        3.91    11.03       4.427         1.00
      3        4.36    10.64       4.532         1.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       15.43    10.64       4.532
      2       15.64    11.03       4.427
      3       16.43    19.45       3.072

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      16.43   Tc(MIN.) =   19.45
  TOTAL AREA(ACRES) =        5.7
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    311.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.92
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.43
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =  19.67
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    312.00 =    2684.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    312.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    360.00 TO NODE    361.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    560.00
  DOWNSTREAM ELEVATION(FEET) =    559.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    361.00 TO NODE    362.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1130.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.15
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.81
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.69
  STREET FLOW TRAVEL TIME(MIN.) =  10.42   Tc(MIN.) =  12.46
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.094
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    4.59
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       4.99

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.31
  FLOW VELOCITY(FEET/SEC.) =  2.03   DEPTH*VELOCITY(FT*FT/SEC.) =   0.88
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1130.0 FT WITH ELEVATION-DROP =   5.7 FT, IS    8.3 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    362.00
```

```
  LONGEST FLOWPATH FROM NODE    360.00 TO NODE    362.00 =    1169.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    362.00 TO NODE    363.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.42
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        4.99
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =  12.74
  LONGEST FLOWPATH FROM NODE    360.00 TO NODE    363.00 =    1244.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    363.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.74
  RAINFALL INTENSITY(INCH/HR) =   4.04
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.99

****************************************************************************
  FLOW PROCESS FROM NODE    370.00 TO NODE    371.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    34.00
  UPSTREAM ELEVATION(FEET) =    560.00
  DOWNSTREAM ELEVATION(FEET) =    559.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.815
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    371.00 TO NODE    372.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1220.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.08
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.60
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.81
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.68
  STREET FLOW TRAVEL TIME(MIN.) =  11.26   Tc(MIN.) =  13.08
```

```
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.968
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     1.29      SUBAREA RUNOFF(CFS) =    4.45
  TOTAL AREA(ACRES) =         1.4        PEAK FLOW RATE(CFS) =        4.83

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.09
  FLOW VELOCITY(FEET/SEC.) =  2.02   DEPTH*VELOCITY(FT*FT/SEC.) =   0.86
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1220.0 FT WITH ELEVATION-DROP =   6.1 FT, IS    8.3 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    372.00
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    372.00 =    1254.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    372.00 TO NODE    363.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.39
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        4.83
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =  13.17
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    363.00 =    1279.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    363.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.17
  RAINFALL INTENSITY(INCH/HR) =   3.95
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.83

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.99    12.74        4.035         1.40
      2        4.83    13.17        3.949         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        9.66    12.74        4.035
      2        9.71    13.17        3.949

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.71   Tc(MIN.) =   13.17
  TOTAL AREA(ACRES) =        2.8
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    363.00 =    1279.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    312.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
```

```
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.13
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        9.71
  PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =  13.56
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    312.00 =    1399.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    312.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        9.71    13.56       3.876        2.80
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    312.00 =    1399.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       16.43    19.67       3.049        5.70
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    312.00 =    2684.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF      Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      21.04      13.56       3.876
     2      24.08      19.67       3.049

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.08   Tc(MIN.) =   19.67
  TOTAL AREA(ACRES) =        8.5

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    313.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   354.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.47
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.08
  PIPE TRAVEL TIME(MIN.) =   0.91    Tc(MIN.) =  20.59
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    313.00 =    3038.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  20.59
  RAINFALL INTENSITY(INCH/HR) =   2.96
  TOTAL STREAM AREA(ACRES) =     8.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.08

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    501.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
  UPSTREAM ELEVATION(FEET) =    546.00
  DOWNSTREAM ELEVATION(FEET) =    540.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.818
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.65
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.19
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     12.19

****************************************************************************
  FLOW PROCESS FROM NODE    501.00 TO NODE    313.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.49
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.19
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   2.94
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    313.00 =     380.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.94
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.19

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       24.08    20.59       2.961          8.50
     2       12.19     2.94       7.377          1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       15.63     2.94       7.377
     2       28.97    20.59       2.961

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      28.97   Tc(MIN.) =   20.59
  TOTAL AREA(ACRES) =       10.4
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    313.00 =    3038.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    313.00 TO NODE    314.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.81
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      28.97
  PIPE TRAVEL TIME(MIN.) =   0.73    Tc(MIN.) =  21.32
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    314.00 =    3336.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    314.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.32
  RAINFALL INTENSITY(INCH/HR) =   2.90
  TOTAL STREAM AREA(ACRES) =    10.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.97

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    511.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   370.00
  UPSTREAM ELEVATION(FEET) =    540.00
  DOWNSTREAM ELEVATION(FEET) =    534.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.868
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.22
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.19
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     12.19

****************************************************************************
  FLOW PROCESS FROM NODE    511.00 TO NODE    314.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.49
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.19
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   2.99
  LONGEST FLOWPATH FROM NODE    510.00 TO NODE    314.00 =     410.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    314.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.99
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.19

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       28.97    21.32       2.895         10.40
     2       12.19     2.99       7.377          1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       23.56     2.99       7.377
     2       33.76    21.32       2.895

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      33.76   Tc(MIN.) =   21.32
  TOTAL AREA(ACRES) =       12.3
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    314.00 =    3338.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    315.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.97
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      33.76
  PIPE TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =  22.04
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    315.00 =    3638.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    315.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  22.04
  RAINFALL INTENSITY(INCH/HR) =   2.83
  TOTAL STREAM AREA(ACRES) =    12.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     33.76

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    521.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   365.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.859
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.44
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.19
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     12.19
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    521.00 TO NODE    315.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.49
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.19
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   2.98
  LONGEST FLOWPATH FROM NODE    520.00 TO NODE    315.00 =     405.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    315.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.98
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.19

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       33.76    22.04        2.834         12.30
     2       12.19     2.98        7.377          1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       25.16     2.98       7.377
     2       38.44    22.04       2.834

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      38.44   Tc(MIN.) =   22.04
  TOTAL AREA(ACRES) =       14.2
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    315.00 =    3638.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    316.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.28
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      38.44
  PIPE TRAVEL TIME(MIN.) =   0.55    Tc(MIN.) =  22.59
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    316.00 =    3878.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    316.00 TO NODE    316.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  22.59
  RAINFALL INTENSITY(INCH/HR) =   2.79
  TOTAL STREAM AREA(ACRES) =    14.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     38.44

****************************************************************************
  FLOW PROCESS FROM NODE    390.00 TO NODE    391.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    544.00
  DOWNSTREAM ELEVATION(FEET) =    543.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    391.00 TO NODE    392.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1200.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.07
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.60
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.80
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.68
  STREET FLOW TRAVEL TIME(MIN.) =  11.10   Tc(MIN.) =  13.14
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.956
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    4.44
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       4.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.09
  FLOW VELOCITY(FEET/SEC.) =  2.01   DEPTH*VELOCITY(FT*FT/SEC.) =   0.86
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1200.0 FT WITH ELEVATION-DROP =   6.0 FT, IS    8.3 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    392.00
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    392.00 =    1239.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    316.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.38
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        4.82
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =  13.39
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    316.00 =    1304.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    316.00 TO NODE    316.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.39
  RAINFALL INTENSITY(INCH/HR) =   3.91
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.82

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       38.44    22.59        2.789        14.20
     2        4.82    13.39        3.909         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       32.25    13.39        3.909
     2       41.88    22.59        2.789

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      41.88   Tc(MIN.) =   22.59
  TOTAL AREA(ACRES) =       15.6
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    316.00 =    3878.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    316.00 TO NODE    317.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.37
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      41.88
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  22.69
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    317.00 =    3923.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    317.00 TO NODE    317.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    531.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   350.00
  UPSTREAM ELEVATION(FEET) =    528.00
  DOWNSTREAM ELEVATION(FEET) =    522.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.835
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.14
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     11.55
  TOTAL AREA(ACRES) =      1.80   TOTAL RUNOFF(CFS) =     11.55

****************************************************************************
  FLOW PROCESS FROM NODE    531.00 TO NODE    532.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.43
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.55
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   2.90
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    532.00 =     370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    532.00 TO NODE    532.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.90
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.55

****************************************************************************
  FLOW PROCESS FROM NODE    380.00 TO NODE    381.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    34.00
  UPSTREAM ELEVATION(FEET) =    542.00
  DOWNSTREAM ELEVATION(FEET) =    541.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.815
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    381.00 TO NODE    532.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1200.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.10
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.60
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.82
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.69
  STREET FLOW TRAVEL TIME(MIN.) =  11.00   Tc(MIN.) =  12.82
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.020
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    4.51
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       4.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.16
  FLOW VELOCITY(FEET/SEC.) =  2.03   DEPTH*VELOCITY(FT*FT/SEC.) =   0.87
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1200.0 FT WITH ELEVATION-DROP =   6.0 FT, IS    8.3 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    532.00
  LONGEST FLOWPATH FROM NODE    380.00 TO NODE    532.00 =    1234.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    532.00 TO NODE    532.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.82
  RAINFALL INTENSITY(INCH/HR) =   4.02
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.90

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       11.55     2.90        7.377         1.80
      2        4.90    12.82        4.020         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       12.66     2.90        7.377
      2       11.19    12.82        4.020

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      12.66   Tc(MIN.) =    2.90
  TOTAL AREA(ACRES) =        3.2
  LONGEST FLOWPATH FROM NODE    380.00 TO NODE    532.00 =    1234.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    532.00 TO NODE    517.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.53
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.66
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   2.93
  LONGEST FLOWPATH FROM NODE    380.00 TO NODE    517.00 =    1246.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    317.00 TO NODE    317.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       12.66     2.93        7.377         3.20
  LONGEST FLOWPATH FROM NODE    380.00 TO NODE    317.00 =    1246.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       41.88    22.69        2.781        15.60
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    317.00 =    3923.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       18.07     2.93        7.377
      2       46.65    22.69        2.781

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      46.65   Tc(MIN.) =   22.69
  TOTAL AREA(ACRES) =       18.8

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    317.00 TO NODE    318.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  26.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.65
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      46.65
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =  22.86
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    318.00 =    4003.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    318.00 TO NODE    318.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    240.00 TO NODE    241.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    540.00
  DOWNSTREAM ELEVATION(FEET) =    539.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
```

```
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.71
TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
FLOW PROCESS FROM NODE    241.00 TO NODE    242.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =  1200.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.07
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.38
  HALFSTREET FLOOD WIDTH(FEET) =   12.60
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.80
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.68
STREET FLOW TRAVEL TIME(MIN.) =  11.10   Tc(MIN.) =  13.14
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.956
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    4.44
TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       4.82

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.09
FLOW VELOCITY(FEET/SEC.) =  2.01   DEPTH*VELOCITY(FT*FT/SEC.) =   0.86
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L = 1200.0 FT WITH ELEVATION-DROP =   6.0 FT, IS    8.3 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    242.00
LONGEST FLOWPATH FROM NODE    240.00 TO NODE    242.00 =    1239.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    242.00 TO NODE    243.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.38
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       4.82
PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =  13.33
LONGEST FLOWPATH FROM NODE    240.00 TO NODE    243.00 =    1289.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    243.00 TO NODE    243.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  13.33
RAINFALL INTENSITY(INCH/HR) =   3.92
TOTAL STREAM AREA(ACRES) =     1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.82

****************************************************************************
FLOW PROCESS FROM NODE    250.00 TO NODE    251.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    547.50
DOWNSTREAM ELEVATION(FEET) =    547.20
ELEVATION DIFFERENCE(FEET) =      0.30
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.822
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.71
TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =  2039.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.12
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.41
  HALFSTREET FLOOD WIDTH(FEET) =   14.21
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.93
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.79
STREET FLOW TRAVEL TIME(MIN.) =  17.61   Tc(MIN.) =  20.43
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.976
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    2.40      SUBAREA RUNOFF(CFS) =    6.21
TOTAL AREA(ACRES) =        2.5        PEAK FLOW RATE(CFS) =       6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  16.99
FLOW VELOCITY(FEET/SEC.) =  2.16   DEPTH*VELOCITY(FT*FT/SEC.) =   1.01
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L = 2039.0 FT WITH ELEVATION-DROP =  10.2 FT, IS   15.4 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    252.00
LONGEST FLOWPATH FROM NODE    250.00 TO NODE    252.00 =    2078.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    252.00 TO NODE    243.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    54.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.63
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       6.50
```

```
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =  20.62
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    243.00 =    2132.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    243.00 TO NODE    243.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  20.62
  RAINFALL INTENSITY(INCH/HR) =   2.96
  TOTAL STREAM AREA(ACRES) =     2.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.50

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1         4.82    13.33        3.919         1.40
     2         6.50    20.62        2.958         2.51

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1         9.02    13.33       3.919
     2        10.14    20.62       2.958

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.14   Tc(MIN.) =   20.62
  TOTAL AREA(ACRES) =         3.9
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    243.00 =    2132.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    243.00 TO NODE    318.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   112.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.16
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.14
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =  20.98
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    318.00 =    2244.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    318.00 TO NODE    318.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        10.14    20.98       2.925         3.91
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    318.00 =    2244.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        46.65    22.86       2.767        18.80
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    318.00 =    4003.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1       52.95      20.98       2.925
     2       56.24      22.86       2.767

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      56.24   Tc(MIN.) =   22.86
  TOTAL AREA(ACRES) =        22.7

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    318.00 TO NODE    319.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  31.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.82
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      56.24
  PIPE TRAVEL TIME(MIN.) =   0.58    Tc(MIN.) =  23.44
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.00 =    4273.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.00 TO NODE    319.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.44
  RAINFALL INTENSITY(INCH/HR) =   2.72
  TOTAL STREAM AREA(ACRES) =    22.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     56.24

****************************************************************************
  FLOW PROCESS FROM NODE    540.00 TO NODE    541.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   345.00
  UPSTREAM ELEVATION(FEET) =     524.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.826
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.39
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      10.91
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =     10.91

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    319.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.18
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        10.91
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   2.95
  LONGEST FLOWPATH FROM NODE    540.00 TO NODE    319.00 =     385.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.00 TO NODE    319.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.95
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.91

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       56.24    23.44        2.723        22.71
     2       10.91     2.95        7.377         1.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       18.00     2.95        7.377
     2       60.27    23.44        2.723

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      60.27   Tc(MIN.) =   23.44
  TOTAL AREA(ACRES) =       24.4
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.00 =    4273.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.00 TO NODE    319.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   220.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.12
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       60.27
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =  23.89
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.50 =    4493.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.50 TO NODE    319.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.89
  RAINFALL INTENSITY(INCH/HR) =   2.69
  TOTAL STREAM AREA(ACRES) =    24.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     60.27

****************************************************************************
  FLOW PROCESS FROM NODE    550.00 TO NODE    551.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
  UPSTREAM ELEVATION(FEET) =    518.00
  DOWNSTREAM ELEVATION(FEET) =    512.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.818
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.65
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     10.27
  TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =     10.27

****************************************************************************
  FLOW PROCESS FROM NODE    551.00 TO NODE    319.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.16
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.27
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   2.95
  LONGEST FLOWPATH FROM NODE    550.00 TO NODE    319.50 =     380.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.50 TO NODE    319.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.95
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       60.27    23.89        2.690        24.41
     2       10.27     2.95        7.377         1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       32.25     2.95        7.377
     2       64.01    23.89        2.690

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      64.01   Tc(MIN.) =   23.89
  TOTAL AREA(ACRES) =       26.0
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.50 =    4493.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.50 TO NODE    320.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   280.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  31.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.18
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      64.01
  PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =  24.46
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    320.00 =    4773.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    280.00 TO NODE    281.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   700.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.03
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.65
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.56
  STREET FLOW TRAVEL TIME(MIN.) =   7.08   Tc(MIN.) =   9.14
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.001
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     0.59      SUBAREA RUNOFF(CFS) =    2.57
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       3.05

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.52
  FLOW VELOCITY(FEET/SEC.) =  1.81   DEPTH*VELOCITY(FT*FT/SEC.) =   0.68
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =     739.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    282.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.14
  RAINFALL INTENSITY(INCH/HR) =   5.00
  TOTAL STREAM AREA(ACRES) =     0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.05

****************************************************************************
  FLOW PROCESS FROM NODE    560.00 TO NODE    561.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   330.00
  UPSTREAM ELEVATION(FEET) =    514.00
  DOWNSTREAM ELEVATION(FEET) =    508.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.801
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    68.18
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     10.27
  TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =     10.27

****************************************************************************
  FLOW PROCESS FROM NODE    561.00 TO NODE    282.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.16
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.27
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   2.88
  LONGEST FLOWPATH FROM NODE    560.00 TO NODE    282.00 =     355.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    282.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.88
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
```

```
     1        3.05     9.14        5.001          0.70
     2       10.27     2.88        7.377          1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       11.23     2.88       7.377
     2       10.01     9.14       5.001

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.23   Tc(MIN.) =    2.88
  TOTAL AREA(ACRES) =        2.3
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =     739.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    320.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.40
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       11.23
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   2.93
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    320.00 =     754.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       11.23     2.93       7.377        2.30
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    320.00 =     754.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       64.01    24.46       2.649       26.01
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    320.00 =    4773.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       18.89     2.93       7.377
     2       68.05    24.46       2.649

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      68.05   Tc(MIN.) =   24.46
  TOTAL AREA(ACRES) =       28.3

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    321.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.22
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       68.05
  PIPE TRAVEL TIME(MIN.) =   0.61    Tc(MIN.) =  25.07
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    321.00 =    5073.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.07
  RAINFALL INTENSITY(INCH/HR) =   2.61
  TOTAL STREAM AREA(ACRES) =    28.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     68.05

****************************************************************************
  FLOW PROCESS FROM NODE    290.00 TO NODE    291.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    507.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    291.00 TO NODE    292.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   420.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.69
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.64
  STREET FLOW TRAVEL TIME(MIN.) =   4.02   Tc(MIN.) =   6.06
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.520
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.69      SUBAREA RUNOFF(CFS) =    3.91
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       4.54
```

```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.72
  FLOW VELOCITY(FEET/SEC.) =  1.99   DEPTH*VELOCITY(FT*FT/SEC.) =   0.84
  LONGEST FLOWPATH FROM NODE    290.00 TO NODE    292.00 =     459.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    292.00 TO NODE    321.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.33
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.54
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   6.15
  LONGEST FLOWPATH FROM NODE    290.00 TO NODE    321.00 =     484.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.15
  RAINFALL INTENSITY(INCH/HR) =   6.45
  TOTAL STREAM AREA(ACRES) =      0.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.54

****************************************************************************
  FLOW PROCESS FROM NODE    410.00 TO NODE    411.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    507.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    411.00 TO NODE    412.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   400.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.42
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   11.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.70
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.60
  STREET FLOW TRAVEL TIME(MIN.) =   3.93   Tc(MIN.) =   5.96
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.585
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.59      SUBAREA RUNOFF(CFS) =    3.38
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       4.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  13.99
  FLOW VELOCITY(FEET/SEC.) =  1.93   DEPTH*VELOCITY(FT*FT/SEC.) =   0.78
  LONGEST FLOWPATH FROM NODE    410.00 TO NODE    412.00 =     439.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    412.00 TO NODE    321.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.20
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.01
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   6.14
  LONGEST FLOWPATH FROM NODE    410.00 TO NODE    321.00 =     483.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.14
  RAINFALL INTENSITY(INCH/HR) =   6.46
  TOTAL STREAM AREA(ACRES) =      0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.01

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        68.05    25.07       2.608        28.31
     2         4.54     6.15       6.454         0.80
     3         4.01     6.14       6.463         0.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        25.20     6.14       6.463
     2        25.24     6.15       6.454
     3        71.50    25.07       2.608

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      71.50   Tc(MIN.) =   25.07
  TOTAL AREA(ACRES) =       29.8
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    321.00 =    5073.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    322.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   350.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.48
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      71.50
  PIPE TRAVEL TIME(MIN.) =   0.69    Tc(MIN.) =  25.76
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    322.00 =    5423.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.76
  RAINFALL INTENSITY(INCH/HR) =   2.56
  TOTAL STREAM AREA(ACRES) =    29.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     71.50

****************************************************************************
  FLOW PROCESS FROM NODE   1002.00 TO NODE   1003.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   360.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    499.00
  ELEVATION DIFFERENCE(FEET) =      7.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.764
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    69.44
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.19
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     12.19

****************************************************************************
  FLOW PROCESS FROM NODE   1003.00 TO NODE    322.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.49
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.19
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   2.81
  LONGEST FLOWPATH FROM NODE   1002.00 TO NODE    322.00 =     375.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    322.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.81
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.19

****************************************************************************
  FLOW PROCESS FROM NODE   1000.00 TO NODE   1001.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   360.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    504.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.600
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.11
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     17.97
  TOTAL AREA(ACRES) =      2.80   TOTAL RUNOFF(CFS) =     17.97

****************************************************************************
  FLOW PROCESS FROM NODE   1001.00 TO NODE    322.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.02
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.97
  PIPE TRAVEL TIME(MIN.) =   0.80    Tc(MIN.) =   4.40
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE    322.00 =     650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    322.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.40
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      2.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.97

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1        71.50    25.76        2.563         29.81
     2        12.19     2.81        7.377          1.90
     3        17.97     4.40        7.377          2.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
     1        48.50     2.81        7.377
     2        55.00     4.40        7.377
     3        81.98    25.76        2.563

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      81.98   Tc(MIN.) =   25.76
```

```
  TOTAL AREA(ACRES) =       34.5
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    322.00 =    5423.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    323.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    58.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  36.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.60
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      81.98
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =  25.87
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    323.00 =    5481.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    323.00 TO NODE    323.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    641.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   350.00
  UPSTREAM ELEVATION(FEET) =    540.00
  DOWNSTREAM ELEVATION(FEET) =    534.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.835
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.14
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      10.91
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =     10.91

****************************************************************************
  FLOW PROCESS FROM NODE    641.00 TO NODE    514.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.18
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.91
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   3.17
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    514.00 =     455.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    514.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.17
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.91

****************************************************************************
  FLOW PROCESS FROM NODE    650.00 TO NODE    651.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   195.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    530.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.736
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.51
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.34
  TOTAL AREA(ACRES) =      1.30   TOTAL RUNOFF(CFS) =      8.34

****************************************************************************
  FLOW PROCESS FROM NODE    651.00 TO NODE    514.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.00
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.34
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   3.07
  LONGEST FLOWPATH FROM NODE    650.00 TO NODE    514.00 =     295.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    514.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.07
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.34

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        10.91     3.17       7.377          1.70
     2         8.34     3.07       7.377          1.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        18.90     3.07       7.377
```

```
     2        19.25      3.17        7.377

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       19.25   Tc(MIN.) =    3.17
  TOTAL AREA(ACRES) =          3.0
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    514.00 =     455.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   202.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.08
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       19.25
  PIPE TRAVEL TIME(MIN.) =   0.55    Tc(MIN.) =   3.73
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.00 =     657.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.73
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      3.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.25

****************************************************************************
  FLOW PROCESS FROM NODE    660.00 TO NODE    661.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   297.00
  UPSTREAM ELEVATION(FEET) =    532.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.987
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.47
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      9.63
  TOTAL AREA(ACRES) =      1.50   TOTAL RUNOFF(CFS) =      9.63

****************************************************************************
  FLOW PROCESS FROM NODE    661.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.12
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.63
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   3.26
  LONGEST FLOWPATH FROM NODE    660.00 TO NODE    515.00 =     382.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.26
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.63

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       19.25     3.73        7.377         3.00
     2        9.63     3.26        7.377         1.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       28.88     3.26       7.377
     2       28.88     3.73       7.377

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      28.88   Tc(MIN.) =    3.73
  TOTAL AREA(ACRES) =         4.5
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.00 =     657.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    90.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.81
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      28.88
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   3.95
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.50 =     747.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.50 TO NODE    515.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.95
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      4.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.88

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    631.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   364.00
  UPSTREAM ELEVATION(FEET) =    536.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
```

```
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.702
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    71.98
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.19
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     12.19

****************************************************************************
  FLOW PROCESS FROM NODE    631.00 TO NODE    515.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.49
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.19
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   2.93
  LONGEST FLOWPATH FROM NODE    630.00 TO NODE    515.50 =     439.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.50 TO NODE    515.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.93
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.19

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       28.88     3.95        7.377          4.50
     2       12.19     2.93        7.377          1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       41.08     2.93       7.377
     2       41.08     3.95       7.377

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      41.08   Tc(MIN.) =    3.95
  TOTAL AREA(ACRES) =        6.4
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.50 =     747.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.50 TO NODE    516.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.35
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      41.08
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   4.22
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    516.00 =     867.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    516.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.22
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      6.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     41.08

****************************************************************************
  FLOW PROCESS FROM NODE    670.00 TO NODE    671.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   298.00
  UPSTREAM ELEVATION(FEET) =    528.00
  DOWNSTREAM ELEVATION(FEET) =    524.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.989
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.42
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      9.63
  TOTAL AREA(ACRES) =      1.50   TOTAL RUNOFF(CFS) =      9.63

****************************************************************************
  FLOW PROCESS FROM NODE    671.00 TO NODE    516.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.12
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.63
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   3.25
  LONGEST FLOWPATH FROM NODE    670.00 TO NODE    516.00 =     378.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    516.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.25
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.63

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       41.08     4.22        7.377          6.40
     2        9.63     3.25        7.377          1.50
```

```
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       50.70     3.25       7.377
      2       50.70     4.22       7.377

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      50.70   Tc(MIN.) =    4.22
  TOTAL AREA(ACRES) =         7.9
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    516.00 =     867.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    517.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   190.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  28.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.75
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      50.70
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =   4.63
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    517.00 =    1057.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    517.00 TO NODE    517.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.63
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     7.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     50.70

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    621.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   363.00
  UPSTREAM ELEVATION(FEET) =    530.00
  DOWNSTREAM ELEVATION(FEET) =    522.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.700
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    72.04
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.19
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     12.19

****************************************************************************
  FLOW PROCESS FROM NODE    621.00 TO NODE    517.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    77.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.49
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.19
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   2.93
  LONGEST FLOWPATH FROM NODE    620.00 TO NODE    517.00 =     440.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    517.00 TO NODE    517.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.93
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.19

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       50.70     4.63       7.377         7.90
      2       12.19     2.93       7.377         1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       62.90     2.93       7.377
      2       62.90     4.63       7.377

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      62.90   Tc(MIN.) =    4.63
  TOTAL AREA(ACRES) =         9.8
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    517.00 =    1057.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    517.00 TO NODE    518.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   145.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  31.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.16
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      62.90
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =   4.92
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    518.00 =    1202.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.92
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     9.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     62.90

****************************************************************************
  FLOW PROCESS FROM NODE    413.00 TO NODE    414.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    542.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =     24.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.200
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.0, IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

**********************************************************************
  FLOW PROCESS FROM NODE    414.00 TO NODE    415.00 IS CODE =  62
----------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1600.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.70
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.43
    HALFSTREET FLOOD WIDTH(FEET) =   14.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.00
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.85
  STREET FLOW TRAVEL TIME(MIN.) =  13.33   Tc(MIN.) =  14.53
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.707
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.29      SUBAREA RUNOFF(CFS) =    7.39
  TOTAL AREA(ACRES) =        2.4        PEAK FLOW RATE(CFS) =       7.74

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  18.16
  FLOW VELOCITY(FEET/SEC.) =  2.27   DEPTH*VELOCITY(FT*FT/SEC.) =   1.11
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1600.0 FT WITH ELEVATION-DROP =   8.0 FT, IS   14.7 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    415.00
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    415.00 =    1639.00 FEET.

**********************************************************************
  FLOW PROCESS FROM NODE    415.00 TO NODE    518.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.93
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        7.74
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =  14.66
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    518.00 =    1675.00 FEET.

**********************************************************************
```

```
  FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.66
  RAINFALL INTENSITY(INCH/HR) =   3.69
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.74

**********************************************************************
  FLOW PROCESS FROM NODE    416.00 TO NODE    417.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    533.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

**********************************************************************
  FLOW PROCESS FROM NODE    417.00 TO NODE    418.00 IS CODE =  62
----------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   975.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.03
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.63
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.55
  STREET FLOW TRAVEL TIME(MIN.) =   9.98   Tc(MIN.) =  12.04
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.186
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.69      SUBAREA RUNOFF(CFS) =    2.51
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       2.91

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.30
  FLOW VELOCITY(FEET/SEC.) =  1.79   DEPTH*VELOCITY(FT*FT/SEC.) =   0.66
  LONGEST FLOWPATH FROM NODE    416.00 TO NODE    418.00 =    1014.00 FEET.

**********************************************************************
  FLOW PROCESS FROM NODE    418.00 TO NODE    518.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    17.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.88
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.91
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  12.11
  LONGEST FLOWPATH FROM NODE    416.00 TO NODE    518.00 =    1031.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.11
  RAINFALL INTENSITY(INCH/HR) =   4.17
  TOTAL STREAM AREA(ACRES) =      0.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.91

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        62.90     4.92        7.377         9.80
     2         7.74    14.66        3.687         2.40
     3         2.91    12.11        4.170         0.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        66.68     4.92        7.377
     2        44.86    12.11        4.170
     3        41.75    14.66        3.687

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      66.68   Tc(MIN.) =    4.92
  TOTAL AREA(ACRES) =        13.0
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    518.00 =    1675.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    519.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.21
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      66.68
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   5.00
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    519.00 =    1715.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    519.00 TO NODE    519.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.00
  RAINFALL INTENSITY(INCH/HR) =   7.37
  TOTAL STREAM AREA(ACRES) =    13.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     66.68

****************************************************************************
  FLOW PROCESS FROM NODE    680.00 TO NODE    681.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   390.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.900
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    65.38
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.84
  TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =     12.84

****************************************************************************
  FLOW PROCESS FROM NODE    681.00 TO NODE    519.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.54
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.84
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   3.09
  LONGEST FLOWPATH FROM NODE    680.00 TO NODE    519.00 =     452.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    519.00 TO NODE    519.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.09
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.84

****************************************************************************
  FLOW PROCESS FROM NODE    610.00 TO NODE    611.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   316.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.777
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    68.99
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     10.27
```

```
  TOTAL AREA(ACRES) =       1.60   TOTAL RUNOFF(CFS) =      10.27

****************************************************************************
  FLOW PROCESS FROM NODE    611.00 TO NODE    519.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.16
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.27
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   3.02
  LONGEST FLOWPATH FROM NODE    610.00 TO NODE    519.00 =     391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    519.00 TO NODE    519.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.02
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        66.68     5.00       7.373        13.00
     2        12.84     3.09       7.377         2.00
     3        10.27     3.02       7.377         1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        89.47     3.02       7.377
     2        89.75     3.09       7.377
     3        89.77     5.00       7.373

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      89.77   Tc(MIN.) =    5.00
  TOTAL AREA(ACRES) =       16.6
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    519.00 =    1715.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    519.00 TO NODE    525.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  35.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.92
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      89.77
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   5.12
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    525.00 =    1775.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.00 TO NODE    525.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
```

```
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    900.00 TO NODE    900.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    531.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.611
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.64
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.64

****************************************************************************
  FLOW PROCESS FROM NODE    900.50 TO NODE    901.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   270.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 15.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.010
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.010

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.99
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   15.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.96
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.71
  STREET FLOW TRAVEL TIME(MIN.) =   2.29   Tc(MIN.) =   3.90
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.60      SUBAREA RUNOFF(CFS) =   16.69
  TOTAL AREA(ACRES) =        2.7        PEAK FLOW RATE(CFS) =      17.33

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.00
  FLOW VELOCITY(FEET/SEC.) =  2.54   DEPTH*VELOCITY(FT*FT/SEC.) =   1.11
  LONGEST FLOWPATH FROM NODE    900.00 TO NODE    901.00 =     320.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    901.00 TO NODE    936.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   293.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.98
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.33
  PIPE TRAVEL TIME(MIN.) =   0.82    Tc(MIN.) =   4.72
  LONGEST FLOWPATH FROM NODE    900.00 TO NODE    936.00 =     613.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    936.00 TO NODE    936.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.72
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     2.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.33

****************************************************************************
  FLOW PROCESS FROM NODE    451.00 TO NODE    452.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    544.00
  DOWNSTREAM ELEVATION(FEET) =    543.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.64
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.64

****************************************************************************
  FLOW PROCESS FROM NODE    452.00 TO NODE    453.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1410.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.56
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.42
    HALFSTREET FLOOD WIDTH(FEET) =   14.72
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.99
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.84
  STREET FLOW TRAVEL TIME(MIN.) =  11.79   Tc(MIN.) =  13.84
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.826
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.20      SUBAREA RUNOFF(CFS) =    7.32
  TOTAL AREA(ACRES) =        2.3        PEAK FLOW RATE(CFS) =       7.66

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  18.09
  FLOW VELOCITY(FEET/SEC.) =  2.26   DEPTH*VELOCITY(FT*FT/SEC.) =   1.10
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L = 1410.0 FT WITH ELEVATION-DROP =   7.1 FT, IS   14.1 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    453.00
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    453.00 =    1449.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    453.00 TO NODE    936.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.91
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.66
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =  13.90
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    936.00 =    1468.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    936.00 TO NODE    936.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.90
  RAINFALL INTENSITY(INCH/HR) =   3.81
  TOTAL STREAM AREA(ACRES) =     2.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.66

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       17.33     4.72        7.377          2.70
     2        7.66    13.90        3.814          2.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       19.93     4.72        7.377
     2       16.62    13.90        3.814

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      19.93   Tc(MIN.) =    4.72
  TOTAL AREA(ACRES) =        5.0
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    936.00 =    1468.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    936.00 TO NODE    936.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    454.00 TO NODE    455.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
```

```
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    533.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    455.00 TO NODE    456.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   705.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.51
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.57
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.62
  STREET FLOW TRAVEL TIME(MIN.) =   6.83   Tc(MIN.) =   8.88
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.092
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.79      SUBAREA RUNOFF(CFS) =    3.50
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       3.99

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  13.99
  FLOW VELOCITY(FEET/SEC.) =  1.92   DEPTH*VELOCITY(FT*FT/SEC.) =   0.78
  LONGEST FLOWPATH FROM NODE    454.00 TO NODE    456.00 =     744.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    456.00 TO NODE    456.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.88
  RAINFALL INTENSITY(INCH/HR) =   5.09
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.99

****************************************************************************
  FLOW PROCESS FROM NODE    902.00 TO NODE    902.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    532.00
  DOWNSTREAM ELEVATION(FEET) =    530.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.844
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.64
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.64

****************************************************************************
  FLOW PROCESS FROM NODE    902.50 TO NODE    903.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   400.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 15.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.010
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.010

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.89
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   15.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.54
  STREET FLOW TRAVEL TIME(MIN.) =   4.02   Tc(MIN.) =   5.86
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.658
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.79      SUBAREA RUNOFF(CFS) =   10.37
  TOTAL AREA(ACRES) =        1.9        PEAK FLOW RATE(CFS) =      10.95

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  15.00
  FLOW VELOCITY(FEET/SEC.) =  2.12   DEPTH*VELOCITY(FT*FT/SEC.) =   0.81
  LONGEST FLOWPATH FROM NODE    902.00 TO NODE    903.00 =     450.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    903.00 TO NODE    456.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.37
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.95
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   5.92
  LONGEST FLOWPATH FROM NODE    902.00 TO NODE    456.00 =     469.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    456.00 TO NODE    456.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.92
  RAINFALL INTENSITY(INCH/HR) =   6.62
  TOTAL STREAM AREA(ACRES) =     1.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.95
```

```
** CONFLUENCE DATA **
STREAM     RUNOFF      Tc       INTENSITY      AREA
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
    1        3.99     8.88        5.092         0.90
    2       10.95     5.92        6.615         1.89

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc       INTENSITY
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
    1       13.61     5.92       6.615
    2       12.41     8.88       5.092

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      13.61   Tc(MIN.) =    5.92
TOTAL AREA(ACRES) =        2.8
LONGEST FLOWPATH FROM NODE    454.00 TO NODE    456.00 =     744.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    456.00 TO NODE    936.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.59
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       13.61
PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   6.10
LONGEST FLOWPATH FROM NODE    454.00 TO NODE    936.00 =     804.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    936.00 TO NODE    936.00 IS CODE =  11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
STREAM     RUNOFF      Tc       INTENSITY      AREA
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
    1       13.61     6.10       6.489         2.79
LONGEST FLOWPATH FROM NODE    454.00 TO NODE    936.00 =     804.00 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
STREAM     RUNOFF      Tc       INTENSITY      AREA
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
    1       19.93     4.72       7.377         5.00
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    936.00 =    1468.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc       INTENSITY
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
    1       30.46     4.72       7.377
    2       31.14     6.10       6.489

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      31.14   Tc(MIN.) =    6.10
TOTAL AREA(ACRES) =        7.8

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
>>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    936.00 TO NODE    937.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    51.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.89
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       31.14
PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   6.22
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    937.00 =    1519.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    937.00 TO NODE    937.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   6.22
RAINFALL INTENSITY(INCH/HR) =   6.41
TOTAL STREAM AREA(ACRES) =      7.79
PEAK FLOW RATE(CFS) AT CONFLUENCE =     31.14

****************************************************************************
FLOW PROCESS FROM NODE    904.00 TO NODE    905.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   420.00
UPSTREAM ELEVATION(FEET) =    532.00
DOWNSTREAM ELEVATION(FEET) =    528.00
ELEVATION DIFFERENCE(FEET) =      4.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.233
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    59.05
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      14.12
TOTAL AREA(ACRES) =      2.20   TOTAL RUNOFF(CFS) =     14.12

****************************************************************************
FLOW PROCESS FROM NODE    905.00 TO NODE    937.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.62
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       14.12
PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   3.38
LONGEST FLOWPATH FROM NODE    904.00 TO NODE    937.00 =     470.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    937.00 TO NODE    937.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.38
```

```
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     2.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.12

  ** CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       31.14     6.22       6.406         7.79
     2       14.12     3.38       7.377         2.20

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       31.04     3.38       7.377
     2       43.40     6.22       6.406

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      43.40   Tc(MIN.) =    6.22
  TOTAL AREA(ACRES) =       10.0
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    937.00 =    1519.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    937.00 TO NODE    940.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   185.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.40
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      43.40
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =   6.64
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    940.00 =    1704.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    940.00 TO NODE    940.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    460.00 TO NODE    461.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    538.00
  DOWNSTREAM ELEVATION(FEET) =    537.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    461.00 TO NODE    462.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   713.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.26
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   11.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.58
  STREET FLOW TRAVEL TIME(MIN.) =   7.06   Tc(MIN.) =   9.12
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.008
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     0.69      SUBAREA RUNOFF(CFS) =    3.01
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       3.49

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.26
  FLOW VELOCITY(FEET/SEC.) =  1.86   DEPTH*VELOCITY(FT*FT/SEC.) =   0.73
  LONGEST FLOWPATH FROM NODE    460.00 TO NODE    462.00 =     752.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    462.00 TO NODE    462.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.12
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     0.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.49

****************************************************************************
  FLOW PROCESS FROM NODE    906.00 TO NODE    907.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   450.00
  UPSTREAM ELEVATION(FEET) =    532.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.273
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.78
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     13.48
  TOTAL AREA(ACRES) =      2.10   TOTAL RUNOFF(CFS) =     13.48

****************************************************************************
  FLOW PROCESS FROM NODE    907.00 TO NODE    462.00 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.59
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       13.48
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   3.38
  LONGEST FLOWPATH FROM NODE    906.00 TO NODE    462.00 =     485.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    462.00 TO NODE    462.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.38
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      2.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.48

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1         3.49     9.12        5.008        0.80
     2        13.48     3.38        7.377        2.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        14.77     3.38       7.377
     2        12.64     9.12       5.008

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      14.77   Tc(MIN.) =    3.38
  TOTAL AREA(ACRES) =        2.9
  LONGEST FLOWPATH FROM NODE    460.00 TO NODE    462.00 =     752.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    462.00 TO NODE    938.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.64
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       14.77
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   3.43
  LONGEST FLOWPATH FROM NODE    460.00 TO NODE    938.00 =     770.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    938.00 TO NODE    938.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.43
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      2.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.77

****************************************************************************
  FLOW PROCESS FROM NODE    457.00 TO NODE    458.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    538.00
  DOWNSTREAM ELEVATION(FEET) =    537.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    458.00 TO NODE    459.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   740.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.46
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.61
  STREET FLOW TRAVEL TIME(MIN.) =   7.21   Tc(MIN.) =   9.26
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.957
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.79      SUBAREA RUNOFF(CFS) =    3.41
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       3.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.84
  FLOW VELOCITY(FEET/SEC.) =  1.91   DEPTH*VELOCITY(FT*FT/SEC.) =   0.77
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    459.00 =     779.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    459.00 TO NODE    938.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.17
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.88
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   9.52
```

```
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    938.00 =     844.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    938.00 TO NODE    938.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.52
  RAINFALL INTENSITY(INCH/HR) =   4.87
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.88

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       14.77     3.43        7.377         2.90
     2        3.88     9.52        4.869         0.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       16.17     3.43        7.377
     2       13.63     9.52        4.869

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      16.17   Tc(MIN.) =    3.43
  TOTAL AREA(ACRES) =         3.8
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    938.00 =     844.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    938.00 TO NODE    940.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    88.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.90
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.17
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   3.68
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    940.00 =     932.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    940.00 TO NODE    940.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       16.17     3.68        7.377         3.80
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    940.00 =     932.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       43.40     6.64        6.144         9.99
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    940.00 =    1704.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1       40.21     3.68        7.377
     2       56.86     6.64        6.144

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      56.86   Tc(MIN.) =    6.64
  TOTAL AREA(ACRES) =       13.8

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    940.00 TO NODE    691.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   615.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  31.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.82
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      56.86
  PIPE TRAVEL TIME(MIN.) =   1.31    Tc(MIN.) =   7.95
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    691.50 =    2319.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    691.50 TO NODE    691.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.95
  RAINFALL INTENSITY(INCH/HR) =   5.47
  TOTAL STREAM AREA(ACRES) =    13.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     56.86

****************************************************************************
  FLOW PROCESS FROM NODE    690.00 TO NODE    691.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   451.00
  UPSTREAM ELEVATION(FEET) =    528.00
  DOWNSTREAM ELEVATION(FEET) =    524.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.274
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.74
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     17.97
  TOTAL AREA(ACRES) =      2.80   TOTAL RUNOFF(CFS) =     17.97

****************************************************************************
  FLOW PROCESS FROM NODE    691.00 TO NODE    691.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    61.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.0 INCHES
```

```
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.02
ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       17.97
PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   3.44
LONGEST FLOWPATH FROM NODE    690.00 TO NODE    691.50 =     512.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    691.50 TO NODE    691.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.44
RAINFALL INTENSITY(INCH/HR) =   7.38
TOTAL STREAM AREA(ACRES) =     2.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.97

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       56.86     7.95        5.470        13.79
    2       17.97     3.44        7.377         2.80

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       42.60     3.44       7.377
    2       70.19     7.95       5.470

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      70.19   Tc(MIN.) =    7.95
TOTAL AREA(ACRES) =       16.6
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    691.50 =    2319.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    691.50 TO NODE    525.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  45.0 INCH PIPE IS  31.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   8.46
ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       70.19
PIPE TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =   8.42
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.50 =    2559.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    525.50 TO NODE    525.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   8.42
RAINFALL INTENSITY(INCH/HR) =   5.27
TOTAL STREAM AREA(ACRES) =    16.59
PEAK FLOW RATE(CFS) AT CONFLUENCE =     70.19

****************************************************************************
FLOW PROCESS FROM NODE    419.00 TO NODE    420.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    524.00
DOWNSTREAM ELEVATION(FEET) =    523.22
ELEVATION DIFFERENCE(FEET) =      0.78
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.71
TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
FLOW PROCESS FROM NODE    420.00 TO NODE    421.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =   800.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.89
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.37
  HALFSTREET FLOOD WIDTH(FEET) =   12.30
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.77
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.66
STREET FLOW TRAVEL TIME(MIN.) =   7.52   Tc(MIN.) =   9.57
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.854
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    4.22
TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       4.69

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  14.94
FLOW VELOCITY(FEET/SEC.) =  1.99   DEPTH*VELOCITY(FT*FT/SEC.) =   0.85
LONGEST FLOWPATH FROM NODE    419.00 TO NODE    421.00 =     839.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    421.00 TO NODE    525.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.36
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       4.69
PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   9.63
LONGEST FLOWPATH FROM NODE    419.00 TO NODE    525.50 =     854.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    525.50 TO NODE    525.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.63
  RAINFALL INTENSITY(INCH/HR) =   4.84
  TOTAL STREAM AREA(ACRES) =      1.11
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.69

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    422.00 TO NODE    423.00 IS CODE =  21
--------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
====================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    519.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    423.00 TO NODE    424.00 IS CODE =  62
--------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
====================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   320.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.57
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.72
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.73
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.62
  STREET FLOW TRAVEL TIME(MIN.) =   3.09   Tc(MIN.) =   5.14
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.244
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.59      SUBAREA RUNOFF(CFS) =    3.72
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       4.41

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.57
  FLOW VELOCITY(FEET/SEC.) =  1.97   DEPTH*VELOCITY(FT*FT/SEC.) =   0.82
  LONGEST FLOWPATH FROM NODE    422.00 TO NODE    424.00 =     359.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    424.00 TO NODE    525.50 IS CODE =  31
--------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
====================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.30
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.41
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   5.40
  LONGEST FLOWPATH FROM NODE    422.00 TO NODE    525.50 =     424.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    525.50 TO NODE    525.50 IS CODE =   1
--------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
====================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.40
  RAINFALL INTENSITY(INCH/HR) =   7.02
  TOTAL STREAM AREA(ACRES) =      0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.41

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        70.19     8.42       5.270        16.59
     2         4.69     9.63       4.835         1.11
     3         4.41     5.40       7.024         0.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        59.69     5.40       7.024
     2        77.60     8.42       5.270
     3        72.13     9.63       4.835

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      77.60   Tc(MIN.) =    8.42
  TOTAL AREA(ACRES) =       18.4
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.50 =    2559.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    525.50 TO NODE    525.00 IS CODE =  31
--------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
====================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   185.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  34.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.57
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      77.60
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   8.78
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.00 =    2744.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    525.00 TO NODE    525.00 IS CODE =  11
--------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
====================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        77.60     8.78       5.129        18.40
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.00 =    2744.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
```

```
     1       89.77      5.12        7.268        16.60
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    525.00 =    1775.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)    (INCH/HOUR)
     1      134.98       5.12        7.268
     2      140.95       8.78        5.129

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     140.95   Tc(MIN.) =    8.78
  TOTAL AREA(ACRES) =       35.0

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    525.00 TO NODE    526.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   310.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  42.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.00
  ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     140.95
  PIPE TRAVEL TIME(MIN.) =   0.52    Tc(MIN.) =   9.30
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    526.00 =    3054.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    526.00 TO NODE    526.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.30
  RAINFALL INTENSITY(INCH/HR) =   4.94
  TOTAL STREAM AREA(ACRES) =    35.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    140.95

****************************************************************************
  FLOW PROCESS FROM NODE    710.00 TO NODE    711.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   468.00
  UPSTREAM ELEVATION(FEET) =    518.00
  DOWNSTREAM ELEVATION(FEET) =    510.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.836
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.09
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     15.40
  TOTAL AREA(ACRES) =      2.40   TOTAL RUNOFF(CFS) =     15.40

****************************************************************************
  FLOW PROCESS FROM NODE    711.00 TO NODE    526.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    77.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  19.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.66
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.40
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   3.06
  LONGEST FLOWPATH FROM NODE    710.00 TO NODE    526.00 =     545.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    526.00 TO NODE    526.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.06
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.40

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1       140.95     9.30        4.944         35.00
     2        15.40     3.06        7.377          2.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
     1        61.83     3.06        7.377
     2       151.28     9.30        4.944

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     151.28   Tc(MIN.) =    9.30
  TOTAL AREA(ACRES) =       37.4
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    526.00 =    3054.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    526.00 TO NODE    527.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  45.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.06
  ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     151.28
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   9.40
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    527.00 =    3117.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    527.00 TO NODE    527.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.40
  RAINFALL INTENSITY(INCH/HR) =   4.91
  TOTAL STREAM AREA(ACRES) =    37.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    151.28
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    590.00 TO NODE    591.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   347.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    514.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.830
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.29
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.84
  TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =     12.84

****************************************************************************
  FLOW PROCESS FROM NODE    591.00 TO NODE    527.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.54
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.84
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   3.09
  LONGEST FLOWPATH FROM NODE    590.00 TO NODE    527.00 =     432.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    527.00 TO NODE    527.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.09
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.84

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       151.28     9.40        4.908        37.40
     2        12.84     3.09        7.377         2.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       113.48     3.09       7.377
     2       159.82     9.40       4.908

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     159.82   Tc(MIN.) =    9.40
  TOTAL AREA(ACRES) =       39.4
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    527.00 =    3117.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    527.00 TO NODE    528.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   147.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  44.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.33
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     159.82
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   9.64
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    528.00 =    3264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    528.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.64
  RAINFALL INTENSITY(INCH/HR) =   4.83
  TOTAL STREAM AREA(ACRES) =    39.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    159.82

****************************************************************************
  FLOW PROCESS FROM NODE    720.00 TO NODE    721.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   304.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    506.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.756
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    69.74
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.99
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      8.99

****************************************************************************
  FLOW PROCESS FROM NODE    721.00 TO NODE    528.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.07
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.99
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   2.95
  LONGEST FLOWPATH FROM NODE    720.00 TO NODE    528.00 =     364.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    528.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```

```
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   2.95
RAINFALL INTENSITY(INCH/HR) =   7.38
TOTAL STREAM AREA(ACRES) =      1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.99

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1      159.82     9.64       4.830        39.40
    2        8.99     2.95       7.377         1.40

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1      113.62     2.95       7.377
    2      165.70     9.64       4.830

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     165.70   Tc(MIN.) =    9.64
TOTAL AREA(ACRES) =       40.8
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    528.00 =    3264.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    528.00 TO NODE    529.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  60.0 INCH PIPE IS  45.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  10.38
ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     165.70
PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   9.76
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    529.00 =    3339.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    529.00 TO NODE    529.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   9.76
RAINFALL INTENSITY(INCH/HR) =   4.79
TOTAL STREAM AREA(ACRES) =     40.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =    165.70

****************************************************************************
FLOW PROCESS FROM NODE    580.00 TO NODE    581.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   335.00
UPSTREAM ELEVATION(FEET) =    516.00
DOWNSTREAM ELEVATION(FEET) =    510.00
ELEVATION DIFFERENCE(FEET) =      6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.809
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    67.91
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION'
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      10.27
TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =     10.27

****************************************************************************
FLOW PROCESS FROM NODE    581.00 TO NODE    529.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.16
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      10.27
PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   3.07
LONGEST FLOWPATH FROM NODE    580.00 TO NODE    529.00 =     417.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    529.00 TO NODE    529.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.07
RAINFALL INTENSITY(INCH/HR) =   7.38
TOTAL STREAM AREA(ACRES) =      1.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.27

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1      165.70     9.76       4.792        40.80
    2       10.27     3.07       7.377         1.60

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1      117.89     3.07       7.377
    2      172.37     9.76       4.792

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     172.37   Tc(MIN.) =    9.76
TOTAL AREA(ACRES) =       42.4
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    529.00 =    3339.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    529.00 TO NODE    534.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   186.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  60.0 INCH PIPE IS  47.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  10.41
ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     172.37
PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =  10.06
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    534.00 =    3525.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.06
  RAINFALL INTENSITY(INCH/HR) =   4.70
  TOTAL STREAM AREA(ACRES) =    42.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    172.37

****************************************************************************
  FLOW PROCESS FROM NODE    425.00 TO NODE    426.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    426.00 TO NODE    427.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1375.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.47
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   13.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.85
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.72
  STREET FLOW TRAVEL TIME(MIN.) =  12.39   Tc(MIN.) =  14.44
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.722
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.59      SUBAREA RUNOFF(CFS) =    5.15
  TOTAL AREA(ACRES) =        1.7        PEAK FLOW RATE(CFS) =       5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.89
  FLOW VELOCITY(FEET/SEC.) =  2.08   DEPTH*VELOCITY(FT*FT/SEC.) =   0.92
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1375.0 FT WITH ELEVATION-DROP =   6.9 FT, IS   10.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    427.00
  LONGEST FLOWPATH FROM NODE    425.00 TO NODE    427.00 =    1414.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    427.00 TO NODE    534.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.51
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.50
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  14.57
  LONGEST FLOWPATH FROM NODE    425.00 TO NODE    534.00 =    1449.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.57
  RAINFALL INTENSITY(INCH/HR) =   3.70
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.50

****************************************************************************
  FLOW PROCESS FROM NODE    428.00 TO NODE    429.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    516.00
  DOWNSTREAM ELEVATION(FEET) =    515.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    429.00 TO NODE    430.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   742.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.75
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =    9.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.51
  STREET FLOW TRAVEL TIME(MIN.) =   7.84   Tc(MIN.) =   9.89
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.751
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.49      SUBAREA RUNOFF(CFS) =    2.03
  TOTAL AREA(ACRES) =        0.6        PEAK FLOW RATE(CFS) =       2.48
```

```
END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.50
FLOW VELOCITY(FEET/SEC.) =  1.72   DEPTH*VELOCITY(FT*FT/SEC.) =   0.61
LONGEST FLOWPATH FROM NODE    428.00 TO NODE    430.00 =     781.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    430.00 TO NODE    534.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    17.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   3.71
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =        2.48
PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   9.97
LONGEST FLOWPATH FROM NODE    428.00 TO NODE    534.00 =     798.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =   9.97
RAINFALL INTENSITY(INCH/HR) =   4.73
TOTAL STREAM AREA(ACRES) =      0.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.48

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1      172.37    10.06       4.700        42.40
    2        5.50    14.57       3.701         1.70
    3        2.48     9.97       4.728         0.60

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1      177.59     9.97       4.728
    2      178.64    10.06       4.700
    3      143.18    14.57       3.701

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     178.64   Tc(MIN.) =   10.06
TOTAL AREA(ACRES) =       44.7
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    534.00 =    3525.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    534.00 TO NODE    535.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    32.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  60.0 INCH PIPE IS  48.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  10.42
ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     178.64
PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =  10.11
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    535.00 =    3557.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    535.00 TO NODE    535.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  10.11
RAINFALL INTENSITY(INCH/HR) =   4.68
TOTAL STREAM AREA(ACRES) =    44.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =    178.64

****************************************************************************
FLOW PROCESS FROM NODE    730.00 TO NODE    731.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   354.00
UPSTREAM ELEVATION(FEET) =    508.00
DOWNSTREAM ELEVATION(FEET) =    502.00
ELEVATION DIFFERENCE(FEET) =      6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.841
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    66.95
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =     12.19
TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     12.19

****************************************************************************
FLOW PROCESS FROM NODE    731.00 TO NODE    535.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    61.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.49
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      12.19
PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   3.03
LONGEST FLOWPATH FROM NODE    730.00 TO NODE    535.00 =     415.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    535.00 TO NODE    535.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.03
RAINFALL INTENSITY(INCH/HR) =   7.38
TOTAL STREAM AREA(ACRES) =      1.90
PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.19

****************************************************************************
FLOW PROCESS FROM NODE    570.00 TO NODE    571.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   220.00
```

```
UPSTREAM ELEVATION(FEET) =    512.00
DOWNSTREAM ELEVATION(FEET) =    506.00
ELEVATION DIFFERENCE(FEET) =      6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.605
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    77.27
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =     10.27
TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =     10.27

****************************************************************************
FLOW PROCESS FROM NODE    571.00 TO NODE    535.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.16
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      10.27
PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   2.85
LONGEST FLOWPATH FROM NODE    570.00 TO NODE    535.00 =     295.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    535.00 TO NODE    535.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =   2.85
RAINFALL INTENSITY(INCH/HR) =   7.38
TOTAL STREAM AREA(ACRES) =      1.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.27

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1      178.64    10.11       4.684        44.70
    2       12.19     3.03       7.377         1.90
    3       10.27     2.85       7.377         1.60

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1      135.17     2.85       7.377
    2      135.89     3.03       7.377
    3      192.90    10.11       4.684

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     192.90   Tc(MIN.) =   10.11
TOTAL AREA(ACRES) =       48.2
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    535.00 =    3557.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    535.00 TO NODE    536.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  63.0 INCH PIPE IS  48.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  10.74
ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     192.90
PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =  10.27
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    536.00 =    3662.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    536.00 TO NODE    512.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  63.0 INCH PIPE IS  48.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  10.74
ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     192.90
PIPE TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =  10.74
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    512.00 =    3962.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    512.00 TO NODE    512.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    740.00 TO NODE    741.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   375.00
UPSTREAM ELEVATION(FEET) =    507.00
DOWNSTREAM ELEVATION(FEET) =    505.00
ELEVATION DIFFERENCE(FEET) =      2.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.634
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    50.67
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =     12.19
TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     12.19

****************************************************************************
FLOW PROCESS FROM NODE    741.00 TO NODE    751.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   280.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.49
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      12.19
PIPE TRAVEL TIME(MIN.) =   0.85    Tc(MIN.) =   4.48
LONGEST FLOWPATH FROM NODE    740.00 TO NODE    751.50 =     655.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    741.50 TO NODE    751.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.48
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.19

****************************************************************************
  FLOW PROCESS FROM NODE    750.00 TO NODE    751.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
  UPSTREAM ELEVATION(FEET) =    507.00
  DOWNSTREAM ELEVATION(FEET) =    504.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.277
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.65
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION'
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     10.91
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =     10.91

****************************************************************************
  FLOW PROCESS FROM NODE    751.00 TO NODE    751.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.18
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.91
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   3.32
  LONGEST FLOWPATH FROM NODE    750.00 TO NODE    751.50 =     352.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    751.50 TO NODE    751.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.32
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.91

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       12.19     4.48        7.377         1.90
     2       10.91     3.32        7.377         1.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       19.93     3.32        7.377
     2       23.11     4.48        7.377

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      23.11   Tc(MIN.) =    4.48
  TOTAL AREA(ACRES) =       3.6
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    751.50 =     655.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    751.50 TO NODE    512.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.42
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      23.11
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =   4.51
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    512.00 =     667.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    512.00 TO NODE    512.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       23.11     4.51        7.377         3.60
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    512.00 =     667.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      192.90    10.74        4.506        48.20
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    512.00 =    3962.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      104.20     4.51        7.377
     2      207.01    10.74        4.506

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     207.01   Tc(MIN.) =   10.74
  TOTAL AREA(ACRES) =       51.8

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    512.00 TO NODE    513.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  66.0 INCH PIPE IS  48.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.02
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     207.01
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =  10.80
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    513.00 =    4002.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    513.00 TO NODE    513.00 IS CODE =  11
```

```
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
     1       207.01    10.80       4.489       51.80
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    513.00 =    4002.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
     1        81.98    25.87       2.555       34.51
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    513.00 =    5481.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)      (MIN.)    (INCH/HOUR)
     1      241.23      10.80       4.489
     2      199.82      25.87       2.555

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     241.23   Tc(MIN.) =   10.80
  TOTAL AREA(ACRES) =       86.3

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    513.00 TO NODE    998.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    500.00  DOWNSTREAM(FEET) =    498.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   300.00   CHANNEL SLOPE =  0.0067
  CHANNEL FLOW THRU SUBAREA(CFS) =     241.23
  FLOW VELOCITY(FEET/SEC) =   5.08 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.98   Tc(MIN.) =  11.79
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    998.00 =    5781.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    998.00 TO NODE    998.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.243
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8421
  SUBAREA AREA(ACRES) =     4.90   SUBAREA RUNOFF(CFS) =     7.28
  TOTAL AREA(ACRES) =       91.2   TOTAL RUNOFF(CFS) =     325.92
  TC(MIN.) =  11.79

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    760.00 TO NODE    761.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   302.00
  UPSTREAM ELEVATION(FEET) =    522.00
  DOWNSTREAM ELEVATION(FEET) =    517.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.855
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.56
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.99
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      8.99

****************************************************************************
  FLOW PROCESS FROM NODE    761.00 TO NODE    614.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   260.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.07
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.99
  PIPE TRAVEL TIME(MIN.) =   0.85    Tc(MIN.) =   3.71
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    614.00 =     562.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    614.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.71
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.99

****************************************************************************
  FLOW PROCESS FROM NODE    780.00 TO NODE    781.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    516.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.973
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.75
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     10.91
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =     10.91

****************************************************************************
  FLOW PROCESS FROM NODE    781.00 TO NODE    614.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.18
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.91
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   3.29
  LONGEST FLOWPATH FROM NODE    780.00 TO NODE    614.00 =     391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    614.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.29
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.91

****************************************************************************
  FLOW PROCESS FROM NODE    770.00 TO NODE    771.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   344.00
  UPSTREAM ELEVATION(FEET) =    519.00
  DOWNSTREAM ELEVATION(FEET) =    512.00
  ELEVATION DIFFERENCE(FEET) =      7.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.740
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.35
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     11.55
  TOTAL AREA(ACRES) =      1.80   TOTAL RUNOFF(CFS) =     11.55

****************************************************************************
  FLOW PROCESS FROM NODE    771.00 TO NODE    614.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.43
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.55
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   2.99
  LONGEST FLOWPATH FROM NODE    770.00 TO NODE    614.00 =     424.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    614.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.99
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.55

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1        8.99     3.71       7.377         1.40
      2       10.91     3.29       7.377         1.70
      3       11.55     2.99       7.377         1.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       28.67     2.99       7.377
      2       30.44     3.29       7.377
      3       31.45     3.71       7.377

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      31.45   Tc(MIN.) =    3.71
  TOTAL AREA(ACRES) =        4.9
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    614.00 =     562.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.90
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      31.45
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   4.07
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    615.00 =     712.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.07
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     4.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     31.45

****************************************************************************
  FLOW PROCESS FROM NODE    810.00 TO NODE    811.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   287.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    508.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.964
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.94
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.06
  TOTAL AREA(ACRES) =      1.10   TOTAL RUNOFF(CFS) =      7.06
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     811.00 TO NODE     615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.67
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        7.06
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   3.26
  LONGEST FLOWPATH FROM NODE    810.00 TO NODE    615.00 =     369.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     615.00 TO NODE     615.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.26
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      1.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       7.06

****************************************************************************
  FLOW PROCESS FROM NODE     790.00 TO NODE     791.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   230.00
  UPSTREAM ELEVATION(FEET) =    514.00
  DOWNSTREAM ELEVATION(FEET) =    510.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.826
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.39
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       5.78
  TOTAL AREA(ACRES) =       0.90   TOTAL RUNOFF(CFS) =       5.78

****************************************************************************
  FLOW PROCESS FROM NODE     791.00 TO NODE     615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.55
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.78
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   3.06
  LONGEST FLOWPATH FROM NODE    790.00 TO NODE    615.00 =     295.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     615.00 TO NODE     615.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.06
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       5.78

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       31.45     4.07        7.377         4.90
     2        7.06     3.26        7.377         1.10
     3        5.78     3.06        7.377         0.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       43.87     3.06        7.377
     2       44.29     3.26        7.377
     3       44.29     4.07        7.377

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      44.29   Tc(MIN.) =    4.07
  TOTAL AREA(ACRES) =        6.9
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    615.00 =     712.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     615.00 TO NODE     616.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   210.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  28.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.41
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       44.29
  PIPE TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =   4.54
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    616.00 =     922.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     616.00 TO NODE     616.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.54
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      6.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      44.29

****************************************************************************
  FLOW PROCESS FROM NODE     830.00 TO NODE     831.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   317.00
  UPSTREAM ELEVATION(FEET) =    510.00
  DOWNSTREAM ELEVATION(FEET) =    504.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.779
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    68.93
           (Reference: Table 3-1B of Hydrology Manual)
```

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          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.99
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      8.99

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    831.00 TO NODE    616.00 IS CODE =  31
--------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
====================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.07
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.99
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   3.06
  LONGEST FLOWPATH FROM NODE    830.00 TO NODE    616.00 =     402.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    616.00 TO NODE    616.00 IS CODE =   1
--------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
====================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.06
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.99

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    820.00 TO NODE    821.00 IS CODE =  21
--------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
====================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   298.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    506.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.746
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.13
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.99
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      8.99

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    821.00 TO NODE    616.00 IS CODE =  31
--------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
====================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.07
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.99
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   2.96
  LONGEST FLOWPATH FROM NODE    820.00 TO NODE    616.00 =     363.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    616.00 TO NODE    616.00 IS CODE =   1
--------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
====================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.96
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.99

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       44.29     4.54        7.377         6.90
     2        8.99     3.06        7.377         1.40
     3        8.99     2.96        7.377         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       61.97     2.96       7.377
     2       62.26     3.06       7.377
     3       62.26     4.54       7.377

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      62.26   Tc(MIN.) =    4.54
  TOTAL AREA(ACRES) =         9.7
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    616.00 =     922.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    616.00 TO NODE    616.50 IS CODE =  31
--------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
====================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   121.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  31.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.15
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      62.26
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   4.79
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    616.50 =    1043.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    616.50 TO NODE    616.50 IS CODE =   1
--------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
====================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.79
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      9.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     62.26

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    437.00 TO NODE    438.00 IS CODE =  21
--------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
====================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
```

```
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.64
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.64

****************************************************************************
  FLOW PROCESS FROM NODE    438.00 TO NODE    439.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1360.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.05
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.81
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.68
  STREET FLOW TRAVEL TIME(MIN.) =  12.52   Tc(MIN.) =  14.57
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.701
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.40      SUBAREA RUNOFF(CFS) =    4.51
  TOTAL AREA(ACRES) =        1.5        PEAK FLOW RATE(CFS) =       4.83

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.09
  FLOW VELOCITY(FEET/SEC.) =  2.02   DEPTH*VELOCITY(FT*FT/SEC.) =   0.86
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1360.0 FT WITH ELEVATION-DROP =   6.8 FT, IS    9.0 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    439.00
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    439.00 =    1399.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    439.00 TO NODE    616.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.39
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.83
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =  14.71
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    616.50 =    1435.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.50 TO NODE    616.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.71
  RAINFALL INTENSITY(INCH/HR) =   3.68
  TOTAL STREAM AREA(ACRES) =     1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.83

****************************************************************************
  FLOW PROCESS FROM NODE    440.00 TO NODE    441.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    518.00
  DOWNSTREAM ELEVATION(FEET) =    517.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    441.00 TO NODE    442.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   886.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.94
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.78
  STREET FLOW TRAVEL TIME(MIN.) =   7.70   Tc(MIN.) =   9.75
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.795
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.49      SUBAREA RUNOFF(CFS) =    6.22
  TOTAL AREA(ACRES) =        1.6        PEAK FLOW RATE(CFS) =       6.67

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  17.14
  FLOW VELOCITY(FEET/SEC.) =  2.18   DEPTH*VELOCITY(FT*FT/SEC.) =   1.02
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  886.0 FT WITH ELEVATION-DROP =   4.4 FT, IS    9.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    442.00
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    442.00 =     925.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    442.00 TO NODE    616.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    16.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.6 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.65
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        6.67
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   9.81
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    616.50 =     941.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.50 TO NODE    616.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.81
  RAINFALL INTENSITY(INCH/HR) =   4.78
  TOTAL STREAM AREA(ACRES) =      1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.67

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       62.26     4.79        7.377         9.70
     2        4.83    14.71        3.679         1.50
     3        6.67     9.81        4.777         1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       67.09     4.79        7.377
     2       50.21     9.81        4.777
     3       41.02    14.71        3.679

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      67.09   Tc(MIN.) =    4.79
  TOTAL AREA(ACRES) =       12.8
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    616.50 =    1435.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.50 TO NODE    617.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   168.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.21
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      67.09
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   5.13
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    617.00 =    1603.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    617.00 TO NODE    617.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.13
  RAINFALL INTENSITY(INCH/HR) =   7.25
  TOTAL STREAM AREA(ACRES) =    12.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     67.09

****************************************************************************
  FLOW PROCESS FROM NODE    840.00 TO NODE    841.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   355.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    502.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.843
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.90
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.19
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     12.19

****************************************************************************
  FLOW PROCESS FROM NODE    841.00 TO NODE    617.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.49
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.19
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   3.02
  LONGEST FLOWPATH FROM NODE    840.00 TO NODE    617.00 =     415.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    617.00 TO NODE    617.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.02
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.19

****************************************************************************
  FLOW PROCESS FROM NODE    850.00 TO NODE    851.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   369.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    501.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.983
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.55
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.84
  TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =     12.84

****************************************************************************
  FLOW PROCESS FROM NODE    851.00 TO NODE    617.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.54
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       12.84
PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   3.23
LONGEST FLOWPATH FROM NODE    850.00 TO NODE    617.00 =     451.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    617.00 TO NODE    617.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =   3.23
RAINFALL INTENSITY(INCH/HR) =   7.38
TOTAL STREAM AREA(ACRES) =      2.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.84

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       67.09     5.13        7.253        12.80
    2       12.19     3.02        7.377         1.90
    3       12.84     3.23        7.377         2.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       90.19     3.02       7.377
    2       91.00     3.23       7.377
    3       91.70     5.13       7.253

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      91.70   Tc(MIN.) =    5.13
TOTAL AREA(ACRES) =       16.7
LONGEST FLOWPATH FROM NODE    437.00 TO NODE    617.00 =    1603.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    617.00 TO NODE    618.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  48.0 INCH PIPE IS  36.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   8.94
ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       91.70
PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   5.26
LONGEST FLOWPATH FROM NODE    437.00 TO NODE    618.00 =    1673.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    618.00 TO NODE    618.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
==============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    443.00 TO NODE    444.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    524.00
DOWNSTREAM ELEVATION(FEET) =    523.22
ELEVATION DIFFERENCE(FEET) =      0.78
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =       0.64
TOTAL AREA(ACRES) =       0.10   TOTAL RUNOFF(CFS) =       0.64

****************************************************************************
FLOW PROCESS FROM NODE    444.00 TO NODE    445.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =  1965.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.73
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.40
  HALFSTREET FLOOD WIDTH(FEET) =   13.62
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.89
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.75
STREET FLOW TRAVEL TIME(MIN.) =  17.32   Tc(MIN.) =  19.37
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.080
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    2.10      SUBAREA RUNOFF(CFS) =    5.63
TOTAL AREA(ACRES) =        2.2        PEAK FLOW RATE(CFS) =       5.89

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  16.33
FLOW VELOCITY(FEET/SEC.) =  2.12   DEPTH*VELOCITY(FT*FT/SEC.) =   0.96
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L = 1965.0 FT WITH ELEVATION-DROP =    9.8 FT, IS   13.5 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    445.00
LONGEST FLOWPATH FROM NODE    443.00 TO NODE    445.00 =    2004.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    445.00 TO NODE    618.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    23.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.57
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       5.89
PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =  19.45
LONGEST FLOWPATH FROM NODE    443.00 TO NODE    618.50 =    2027.00 FEET.

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    618.50 TO NODE    618.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.45
  RAINFALL INTENSITY(INCH/HR) =   3.07
  TOTAL STREAM AREA(ACRES) =     2.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.89

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    446.00 TO NODE    447.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    526.00
  DOWNSTREAM ELEVATION(FEET) =    525.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    447.00 TO NODE    448.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  2195.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.23
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.41
    HALFSTREET FLOOD WIDTH(FEET) =   14.35
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.94
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.80
  STREET FLOW TRAVEL TIME(MIN.) =  18.85   Tc(MIN.) =  20.90
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.933
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.49      SUBAREA RUNOFF(CFS) =    6.35
  TOTAL AREA(ACRES) =        2.6        PEAK FLOW RATE(CFS) =       6.63

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  17.14
  FLOW VELOCITY(FEET/SEC.) =  2.17   DEPTH*VELOCITY(FT*FT/SEC.) =   1.02
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 2195.0 FT WITH ELEVATION-DROP =  11.0 FT, IS   16.0 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    448.00
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    448.00 =    2234.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    448.00 TO NODE    618.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.65
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.63
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =  21.06
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.50 =    2278.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    618.50 TO NODE    618.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.06
  RAINFALL INTENSITY(INCH/HR) =   2.92
  TOTAL STREAM AREA(ACRES) =     2.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.63

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        5.89    19.45       3.071          2.20
     2        6.63    21.06       2.918          2.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       12.02    19.45       3.071
     2       12.24    21.06       2.918

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      12.24   Tc(MIN.) =   21.06
  TOTAL AREA(ACRES) =        4.8
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.50 =    2278.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    618.50 TO NODE    618.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   227.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.49
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.24
  PIPE TRAVEL TIME(MIN.) =   0.69    Tc(MIN.) =  21.74
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.00 =    2505.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    618.00 TO NODE    618.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       12.24    21.74       2.858          4.80
```

```
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.00 =    2505.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        91.70     5.26       7.137       16.70
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    618.00 =    1673.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      94.66       5.26       7.137
     2      48.96      21.74       2.858

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      94.66   Tc(MIN.) =    5.26
  TOTAL AREA(ACRES) =       21.5

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
======================================================================

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    618.00 TO NODE    619.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   293.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  37.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.97
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      94.66
  PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =   5.81
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    619.00 =    2798.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    619.00 TO NODE    619.00 IS CODE =  10
----------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
======================================================================

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
======================================================================

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    449.00 TO NODE    450.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    502.00
  DOWNSTREAM ELEVATION(FEET) =    501.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.71

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    450.00 TO NODE    622.00 IS CODE =  62
----------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   365.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.46
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.42
    HALFSTREET FLOOD WIDTH(FEET) =   14.65
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.97
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.83
  STREET FLOW TRAVEL TIME(MIN.) =   3.08   Tc(MIN.) =   5.14
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.251
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.19      SUBAREA RUNOFF(CFS) =    7.51
  TOTAL AREA(ACRES) =        1.3        PEAK FLOW RATE(CFS) =       8.20

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.60
  FLOW VELOCITY(FEET/SEC.) =  2.29   DEPTH*VELOCITY(FT*FT/SEC.) =   1.14
  LONGEST FLOWPATH FROM NODE    449.00 TO NODE    622.00 =     404.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    622.00 TO NODE    619.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    74.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.98
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.20
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   5.38
  LONGEST FLOWPATH FROM NODE    449.00 TO NODE    619.00 =     478.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    619.00 TO NODE    619.00 IS CODE =  11
----------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
======================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        8.20      5.38       7.034        1.30
  LONGEST FLOWPATH FROM NODE    449.00 TO NODE    619.00 =     478.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       94.66      5.81       6.698       21.50
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    619.00 =    2798.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
```

```
     1      95.95        5.38        7.034
     2     102.47        5.81        6.698

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     102.47   Tc(MIN.) =    5.81
  TOTAL AREA(ACRES) =       22.8

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    619.00 TO NODE    623.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    96.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.26
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     102.47
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   5.98
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    623.00 =    2894.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    623.00 TO NODE    623.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.98
  RAINFALL INTENSITY(INCH/HR) =   6.57
  TOTAL STREAM AREA(ACRES) =    22.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    102.47

****************************************************************************
  FLOW PROCESS FROM NODE    860.00 TO NODE    861.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   265.00
  UPSTREAM ELEVATION(FEET) =    504.00
  DOWNSTREAM ELEVATION(FEET) =    501.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.111
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.32
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.06
  TOTAL AREA(ACRES) =      1.10   TOTAL RUNOFF(CFS) =      7.06

****************************************************************************
  FLOW PROCESS FROM NODE    861.00 TO NODE    623.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    23.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.67
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.06
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   3.19
  LONGEST FLOWPATH FROM NODE    860.00 TO NODE    623.00 =     288.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    623.00 TO NODE    623.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.19
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.06

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       102.47     5.98        6.572        22.80
     2         7.06     3.19        7.377         1.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        61.76     3.19       7.377
     2       108.76     5.98       6.572

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     108.76   Tc(MIN.) =    5.98
  TOTAL AREA(ACRES) =       23.9
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    623.00 =    2894.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    623.00 TO NODE    624.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   187.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  39.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.32
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     108.76
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   6.32
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    624.00 =    3081.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    624.00 TO NODE    624.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.32
  RAINFALL INTENSITY(INCH/HR) =   6.35
  TOTAL STREAM AREA(ACRES) =    23.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    108.76

****************************************************************************
  FLOW PROCESS FROM NODE    870.00 TO NODE    871.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
```

```
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   245.00
  UPSTREAM ELEVATION(FEET) =     504.00
  DOWNSTREAM ELEVATION(FEET) =    501.50
  ELEVATION DIFFERENCE(FEET) =      2.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.191
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    60.20
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      5.78
  TOTAL AREA(ACRES) =      0.90   TOTAL RUNOFF(CFS) =      5.78

****************************************************************************
  FLOW PROCESS FROM NODE    871.00 TO NODE    624.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.55
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.78
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   3.28
  LONGEST FLOWPATH FROM NODE    870.00 TO NODE    624.00 =     269.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    624.00 TO NODE    624.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.28
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.78

****************************************************************************
  FLOW PROCESS FROM NODE   1050.00 TO NODE   1051.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   320.00
  UPSTREAM ELEVATION(FEET) =    502.00
  DOWNSTREAM ELEVATION(FEET) =    500.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.508
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    52.50
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.99
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      8.99

****************************************************************************
  FLOW PROCESS FROM NODE   1051.00 TO NODE    624.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.07
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        8.99
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   3.57
  LONGEST FLOWPATH FROM NODE   1050.00 TO NODE    624.00 =     340.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    624.00 TO NODE    624.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.57
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.99

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       108.76     6.32       6.346        23.90
     2         5.78     3.28       7.377         0.90
     3         8.99     3.57       7.377         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       107.57     3.28       7.377
     2       108.32     3.57       7.377
     3       121.46     6.32       6.346

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     121.46   Tc(MIN.) =    6.32
  TOTAL AREA(ACRES) =       26.2
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    624.00 =    3081.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    624.00 TO NODE    625.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  39.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.64
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     121.46
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   6.49
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    625.50 =    3181.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.50 TO NODE    625.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.49
  RAINFALL INTENSITY(INCH/HR) =   6.24
  TOTAL STREAM AREA(ACRES) =    26.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    121.46
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    928.00 TO NODE    929.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   255.00
  UPSTREAM ELEVATION(FEET) =    504.00
  DOWNSTREAM ELEVATION(FEET) =    501.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.082
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.76
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     10.91
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =     10.91

****************************************************************************
  FLOW PROCESS FROM NODE    929.00 TO NODE    625.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.18
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.91
  PIPE TRAVEL TIME(MIN.) =   0.81    Tc(MIN.) =   3.89
  LONGEST FLOWPATH FROM NODE    928.00 TO NODE    625.50 =     505.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.50 TO NODE    625.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.89
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.91

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       121.46     6.49        6.236        26.20
     2        10.91     3.89        7.377         1.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       113.58     3.89       7.377
     2       130.68     6.49       6.236

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     130.68   Tc(MIN.) =    6.49
  TOTAL AREA(ACRES) =       27.9
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    625.50 =    3181.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    625.50 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  42.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.71
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     130.68
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   6.60
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    625.00 =    3246.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    908.00 TO NODE    909.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   419.00
  UPSTREAM ELEVATION(FEET) =    522.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.232
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    59.09
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     18.61
  TOTAL AREA(ACRES) =      2.90   TOTAL RUNOFF(CFS) =     18.61

****************************************************************************
  FLOW PROCESS FROM NODE    909.00 TO NODE    941.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   124.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.05
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.61
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   3.57
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    941.00 =     543.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    941.00 TO NODE    941.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```

```
  TIME OF CONCENTRATION(MIN.) =   3.57
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      2.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.61

****************************************************************************
  FLOW PROCESS FROM NODE    910.00 TO NODE    911.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   260.00
  UPSTREAM ELEVATION(FEET) =    526.00
  DOWNSTREAM ELEVATION(FEET) =    524.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.363
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    55.38
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      11.55
  TOTAL AREA(ACRES) =      1.80   TOTAL RUNOFF(CFS) =     11.55

****************************************************************************
  FLOW PROCESS FROM NODE    911.00 TO NODE    941.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.43
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.55
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   3.68
  LONGEST FLOWPATH FROM NODE    910.00 TO NODE    941.00 =     365.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    941.00 TO NODE    941.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.68
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.55

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       18.61     3.57        7.377          2.90
     2       11.55     3.68        7.377          1.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       29.82     3.57        7.377
     2       30.17     3.68        7.377

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      30.17   Tc(MIN.) =    3.68
  TOTAL AREA(ACRES) =        4.7
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    941.00 =     543.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    941.00 TO NODE    942.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   155.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.86
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      30.17
  PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =   4.06
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    942.00 =     698.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    942.00 TO NODE    942.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.06
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      4.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     30.17

****************************************************************************
  FLOW PROCESS FROM NODE    910.50 TO NODE    911.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   250.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.337
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    56.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       5.78
  TOTAL AREA(ACRES) =       0.90   TOTAL RUNOFF(CFS) =       5.78

****************************************************************************
  FLOW PROCESS FROM NODE    911.50 TO NODE    942.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.55
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.78
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   3.63
  LONGEST FLOWPATH FROM NODE    910.50 TO NODE    942.00 =     330.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    942.00 TO NODE    942.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.63
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.78

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       30.17     4.06       7.377          4.70
      2        5.78     3.63       7.377          0.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       35.94     3.63       7.377
      2       35.94     4.06       7.377

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      35.94   Tc(MIN.) =    4.06
  TOTAL AREA(ACRES) =         5.6
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    942.00 =     698.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    942.00 TO NODE    943.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  26.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.00
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      35.94
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   4.25
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    943.00 =     778.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    943.00 TO NODE    943.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.25
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      5.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     35.94

****************************************************************************
  FLOW PROCESS FROM NODE    914.00 TO NODE    915.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   451.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    516.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.274
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH =    57.74
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      19.90
  TOTAL AREA(ACRES) =      3.10   TOTAL RUNOFF(CFS) =     19.90

****************************************************************************
  FLOW PROCESS FROM NODE    915.00 TO NODE    943.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.10
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      19.90
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   3.44
  LONGEST FLOWPATH FROM NODE    914.00 TO NODE    943.00 =     513.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    943.00 TO NODE    943.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.44
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      3.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.90

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       35.94     4.25       7.377          5.60
      2       19.90     3.44       7.377          3.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       55.84     3.44       7.377
      2       55.84     4.25       7.377

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      55.84   Tc(MIN.) =    4.25
  TOTAL AREA(ACRES) =         8.7
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    943.00 =     778.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    943.00 TO NODE    944.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  31.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.82
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      55.84
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   4.33
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    944.00 =     814.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     944.00 TO NODE     944.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE       0.00 TO NODE       0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     932.00 TO NODE     933.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   516.00
  UPSTREAM ELEVATION(FEET) =     528.00
  DOWNSTREAM ELEVATION(FEET) =     522.00
  ELEVATION DIFFERENCE(FEET) =       6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     3.091
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =     61.63
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      27.60
  TOTAL AREA(ACRES) =       4.30   TOTAL RUNOFF(CFS) =      27.60

****************************************************************************
  FLOW PROCESS FROM NODE     933.00 TO NODE     935.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   195.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  24.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.56
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       27.60
  PIPE TRAVEL TIME(MIN.) =   0.50    Tc(MIN.) =   3.59
  LONGEST FLOWPATH FROM NODE     932.00 TO NODE     935.00 =     711.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     935.00 TO NODE     935.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.59
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      4.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     27.60

****************************************************************************
  FLOW PROCESS FROM NODE     934.00 TO NODE     935.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   690.00
  UPSTREAM ELEVATION(FEET) =     526.00
  DOWNSTREAM ELEVATION(FEET) =     520.00
  ELEVATION DIFFERENCE(FEET) =       6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     3.286
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =     57.39
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      30.17
  TOTAL AREA(ACRES) =       4.70   TOTAL RUNOFF(CFS) =      30.17

****************************************************************************
  FLOW PROCESS FROM NODE     935.00 TO NODE     935.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.29
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =      4.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     30.17

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       27.60     3.59        7.377         4.30
     2       30.17     3.29        7.377         4.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       55.46     3.29        7.377
     2       57.76     3.59        7.377

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       57.76   Tc(MIN.) =    3.59
  TOTAL AREA(ACRES) =          9.0
  LONGEST FLOWPATH FROM NODE     932.00 TO NODE     935.00 =     711.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     935.00 TO NODE     944.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   630.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  29.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.06
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       57.76
  PIPE TRAVEL TIME(MIN.) =   1.30    Tc(MIN.) =   4.89
  LONGEST FLOWPATH FROM NODE     932.00 TO NODE     944.00 =    1341.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     944.00 TO NODE     944.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       57.76     4.89        7.377         9.00
  LONGEST FLOWPATH FROM NODE     932.00 TO NODE     944.00 =    1341.00 FEET.
```

```
** MEMORY BANK #  2 CONFLUENCE DATA **
STREAM     RUNOFF     Tc      INTENSITY     AREA
NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
    1       55.84    4.33       7.377        8.70
LONGEST FLOWPATH FROM NODE    908.00 TO NODE    944.00 =     814.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF       Tc      INTENSITY
NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
    1     106.99      4.33       7.377
    2     113.60      4.89       7.377

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     113.60   Tc(MIN.) =    4.89
TOTAL AREA(ACRES) =       17.7

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
>>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    944.00 TO NODE    945.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  51.0 INCH PIPE IS  40.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.35
ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     113.60
PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   5.12
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    945.00 =    1471.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    945.00 TO NODE    945.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   5.12
RAINFALL INTENSITY(INCH/HR) =   7.27
TOTAL STREAM AREA(ACRES) =    17.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =    113.60

****************************************************************************
FLOW PROCESS FROM NODE    916.00 TO NODE    917.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   593.00
UPSTREAM ELEVATION(FEET) =    518.00
DOWNSTREAM ELEVATION(FEET) =    514.00
ELEVATION DIFFERENCE(FEET) =      4.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.452
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    53.49
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
  50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =     26.31
TOTAL AREA(ACRES) =      4.10   TOTAL RUNOFF(CFS) =     26.31

****************************************************************************
FLOW PROCESS FROM NODE    917.00 TO NODE    945.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    61.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.54
ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      26.31
PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =   3.61
LONGEST FLOWPATH FROM NODE    916.00 TO NODE    945.00 =     654.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    945.00 TO NODE    945.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.61
RAINFALL INTENSITY(INCH/HR) =   7.38
TOTAL STREAM AREA(ACRES) =     4.10
PEAK FLOW RATE(CFS) AT CONFLUENCE =     26.31

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1      113.60     5.12       7.265         17.70
    2       26.31     3.61       7.377          4.10

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1      106.37     3.61       7.377
    2      139.52     5.12       7.265

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     139.52   Tc(MIN.) =    5.12
TOTAL AREA(ACRES) =       21.8
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    945.00 =    1471.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    945.00 TO NODE    946.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   473.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  57.0 INCH PIPE IS  41.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.98
ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     139.52
PIPE TRAVEL TIME(MIN.) =   0.79    Tc(MIN.) =   5.91
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    946.00 =    1944.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    946.00 TO NODE    946.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```

```
  TIME OF CONCENTRATION(MIN.) =   5.91
  RAINFALL INTENSITY(INCH/HR) =   6.62
  TOTAL STREAM AREA(ACRES) =    21.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    139.52

****************************************************************************
  FLOW PROCESS FROM NODE    918.00 TO NODE    919.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   522.00
  UPSTREAM ELEVATION(FEET) =    515.00
  DOWNSTREAM ELEVATION(FEET) =    512.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.573
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.49
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     22.46
  TOTAL AREA(ACRES) =      3.50   TOTAL RUNOFF(CFS) =     22.46

****************************************************************************
  FLOW PROCESS FROM NODE    919.00 TO NODE    946.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.39
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       22.46
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   3.78
  LONGEST FLOWPATH FROM NODE    918.00 TO NODE    946.00 =     602.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    946.00 TO NODE    946.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.78
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     3.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     22.46

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      139.52     5.91        6.623         21.80
     2       22.46     3.78        7.377          3.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      147.73     3.78        7.377
     2      159.69     5.91        6.623

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     159.69   Tc(MIN.) =    5.91
  TOTAL AREA(ACRES) =       25.3
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    946.00 =    1944.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    946.00 TO NODE    947.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    52.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  44.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.33
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     159.69
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   5.99
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    947.00 =    1996.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    947.00 TO NODE    947.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.99
  RAINFALL INTENSITY(INCH/HR) =   6.56
  TOTAL STREAM AREA(ACRES) =    25.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    159.69

****************************************************************************
  FLOW PROCESS FROM NODE    912.00 TO NODE    913.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   381.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    514.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.885
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    65.75
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     17.33
  TOTAL AREA(ACRES) =      2.70   TOTAL RUNOFF(CFS) =     17.33

****************************************************************************
  FLOW PROCESS FROM NODE    913.00 TO NODE    947.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.98
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.33
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   3.18
  LONGEST FLOWPATH FROM NODE    912.00 TO NODE    947.00 =     486.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    947.00 TO NODE    947.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.18
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     2.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.33

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       159.69     5.99        6.563         25.30
     2        17.33     3.18        7.377          2.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       159.40     3.18        7.377
     2       175.10     5.99        6.563

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     175.10   Tc(MIN.) =    5.99
  TOTAL AREA(ACRES) =       28.0
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    947.00 =    1996.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    947.00 TO NODE    948.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   212.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  47.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.42
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     175.10
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   6.33
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    948.00 =    2208.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    948.00 TO NODE    948.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.33
  RAINFALL INTENSITY(INCH/HR) =   6.33
  TOTAL STREAM AREA(ACRES) =    28.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    175.10

****************************************************************************
  FLOW PROCESS FROM NODE    920.00 TO NODE    921.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   295.00
  UPSTREAM ELEVATION(FEET) =    516.00
  DOWNSTREAM ELEVATION(FEET) =    512.00
  ELEVATION DIFFERENCE(FEET) =     4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.982
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH =    63.56
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.99
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      8.99

****************************************************************************
  FLOW PROCESS FROM NODE    921.00 TO NODE    948.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.07
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.99
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =   3.33
  LONGEST FLOWPATH FROM NODE    920.00 TO NODE    948.00 =     400.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    948.00 TO NODE    948.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.33
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.99

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       175.10     6.33        6.335         28.00
     2         8.99     3.33        7.377          1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       159.34     3.33        7.377
     2       182.82     6.33        6.335

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     182.82   Tc(MIN.) =    6.33
  TOTAL AREA(ACRES) =       29.4
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    948.00 =    2208.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    948.00 TO NODE    949.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    31.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  63.0 INCH PIPE IS  46.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.68
  ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     182.82
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   6.38
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    949.00 =    2239.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     949.00 TO NODE     949.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.38
  RAINFALL INTENSITY(INCH/HR) =    6.30
  TOTAL STREAM AREA(ACRES) =     29.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     182.82

****************************************************************************
  FLOW PROCESS FROM NODE     922.00 TO NODE     923.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    469.00
  UPSTREAM ELEVATION(FEET) =     512.00
  DOWNSTREAM ELEVATION(FEET) =     509.00
  ELEVATION DIFFERENCE(FEET) =       3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     3.491
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =     52.79
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      22.46
  TOTAL AREA(ACRES) =       3.50   TOTAL RUNOFF(CFS) =      22.46

****************************************************************************
  FLOW PROCESS FROM NODE     923.00 TO NODE     949.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =     88.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.39
  ESTIMATED PIPE DIAMETER(INCH) =  30.00     NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       22.46
  PIPE TRAVEL TIME(MIN.) =   0.23     Tc(MIN.) =   3.72
  LONGEST FLOWPATH FROM NODE     922.00 TO NODE     949.00 =     557.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     949.00 TO NODE     949.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.72
  RAINFALL INTENSITY(INCH/HR) =    7.38
  TOTAL STREAM AREA(ACRES) =      3.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      22.46

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1       182.82     6.38        6.304        29.40
     2        22.46     3.72        7.377         3.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
     1       178.67     3.72        7.377
     2       202.01     6.38        6.304

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     202.01   Tc(MIN.) =    6.38
  TOTAL AREA(ACRES) =       32.9
  LONGEST FLOWPATH FROM NODE     932.00 TO NODE     949.00 =    2239.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     949.00 TO NODE     950.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    240.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  63.0 INCH PIPE IS  51.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.77
  ESTIMATED PIPE DIAMETER(INCH) =  63.00     NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     202.01
  PIPE TRAVEL TIME(MIN.) =   0.37     Tc(MIN.) =   6.75
  LONGEST FLOWPATH FROM NODE     932.00 TO NODE     950.00 =    2479.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     950.00 TO NODE     950.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.75
  RAINFALL INTENSITY(INCH/HR) =    6.08
  TOTAL STREAM AREA(ACRES) =     32.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     202.01

****************************************************************************
  FLOW PROCESS FROM NODE     924.00 TO NODE     925.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    336.00
  UPSTREAM ELEVATION(FEET) =     512.00
  DOWNSTREAM ELEVATION(FEET) =     508.00
  ELEVATION DIFFERENCE(FEET) =       4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =     3.073
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =     61.90
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      12.84
  TOTAL AREA(ACRES) =       2.00   TOTAL RUNOFF(CFS) =      12.84

****************************************************************************
  FLOW PROCESS FROM NODE     925.00 TO NODE     950.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.54
  ESTIMATED PIPE DIAMETER(INCH) =  24.00     NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =      12.84
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   3.39
  LONGEST FLOWPATH FROM NODE    924.00 TO NODE    950.00 =     441.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    950.00 TO NODE    950.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.39
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.84

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      202.01     6.75        6.078         32.90
     2       12.84     3.39        7.377          2.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      179.26     3.39        7.377
     2      212.59     6.75        6.078

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     212.59   Tc(MIN.) =    6.75
  TOTAL AREA(ACRES) =       34.9
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    950.00 =    2479.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    950.00 TO NODE    951.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    56.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  66.0 INCH PIPE IS  49.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.05
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     212.59
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   6.84
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    951.00 =    2535.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    951.00 TO NODE    951.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.84
  RAINFALL INTENSITY(INCH/HR) =   6.03
  TOTAL STREAM AREA(ACRES) =    34.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    212.59

****************************************************************************
  FLOW PROCESS FROM NODE    926.00 TO NODE    927.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   516.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    505.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.564
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.63
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     22.46
  TOTAL AREA(ACRES) =      3.50   TOTAL RUNOFF(CFS) =     22.46

****************************************************************************
  FLOW PROCESS FROM NODE    927.00 TO NODE    951.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   103.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.39
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      22.46
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   3.83
  LONGEST FLOWPATH FROM NODE    926.00 TO NODE    951.00 =     619.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    951.00 TO NODE    951.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.83
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     3.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     22.46

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      212.59     6.84        6.029         34.90
     2       22.46     3.83        7.377          3.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      196.20     3.83        7.377
     2      230.95     6.84        6.029

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     230.95   Tc(MIN.) =    6.84
  TOTAL AREA(ACRES) =       38.4
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    951.00 =    2535.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    951.00 TO NODE    952.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   310.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  66.0 INCH PIPE IS  54.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.10
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     230.95
  PIPE TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =   7.30
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    952.00 =    2845.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    952.00 TO NODE    952.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.30
  RAINFALL INTENSITY(INCH/HR) =   5.78
  TOTAL STREAM AREA(ACRES) =    38.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    230.95

****************************************************************************
  FLOW PROCESS FROM NODE    930.00 TO NODE    931.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   700.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    502.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.578
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.43
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.377
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     28.24
  TOTAL AREA(ACRES) =      4.40   TOTAL RUNOFF(CFS) =     28.24

****************************************************************************
  FLOW PROCESS FROM NODE    931.00 TO NODE    952.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  24.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.56
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      28.24
  PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =   3.96
  LONGEST FLOWPATH FROM NODE    930.00 TO NODE    952.00 =     850.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    952.00 TO NODE    952.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.96
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     4.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.24

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1       230.95     7.30        5.778        38.40
     2        28.24     3.96        7.377         4.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
     1       209.13     3.96        7.377
     2       253.07     7.30        5.778

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     253.07   Tc(MIN.) =    7.30
  TOTAL AREA(ACRES) =       42.8
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    952.00 =    2845.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    952.00 TO NODE    953.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    42.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  69.0 INCH PIPE IS  54.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.43
  ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     253.07
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   7.36
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    953.00 =    2887.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    953.00 TO NODE    953.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1       253.07     7.36        5.747        42.80
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    953.00 =    2887.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1       130.68     6.60        6.168        27.90
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    953.00 =    3246.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
     1       357.50     6.60        6.168
     2       374.84     7.36        5.747

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     374.84   Tc(MIN.) =    7.36
  TOTAL AREA(ACRES) =       70.7

****************************************************************************
  FLOW PROCESS FROM NODE    953.00 TO NODE    999.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    486.00  DOWNSTREAM(FEET) =    484.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   165.00   CHANNEL SLOPE =  0.0121
  CHANNEL FLOW THRU SUBAREA(CFS) =     374.84
  FLOW VELOCITY(FEET/SEC) =   7.86 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
```

```
  TRAVEL TIME(MIN.) =   0.35   Tc(MIN.) =   7.71
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    999.00 =    3411.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    999.00 TO NODE    999.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.578
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8522
  SUBAREA AREA(ACRES) =    2.50   SUBAREA RUNOFF(CFS) =    4.88
  TOTAL AREA(ACRES) =       73.2   TOTAL RUNOFF(CFS) =     374.84
  TC(MIN.) =   7.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE    999.00 TO NODE   1013.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  81.0 INCH PIPE IS  62.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.69
  ESTIMATED PIPE DIAMETER(INCH) =  81.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     374.84
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =   7.87
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1013.00 =    3531.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1010.00 TO NODE   1010.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  34.20   RAIN INTENSITY(INCH/HOUR) =  2.13
  TOTAL AREA(ACRES) =   625.90   TOTAL RUNOFF(CFS) =    514.50

****************************************************************************
  FLOW PROCESS FROM NODE   1010.00 TO NODE   1011.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    528.00  DOWNSTREAM(FEET) =    524.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   180.00   CHANNEL SLOPE =  0.0222
  CHANNEL FLOW THRU SUBAREA(CFS) =     514.50
  FLOW VELOCITY(FEET/SEC) =  11.78 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.25   Tc(MIN.) =  34.45
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1011.00 =    3711.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1011.00 TO NODE   1011.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.124
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3851
  SUBAREA AREA(ACRES) =    1.20   SUBAREA RUNOFF(CFS) =    0.89
  TOTAL AREA(ACRES) =      627.1   TOTAL RUNOFF(CFS) =     514.50
  TC(MIN.) =  34.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE   1011.00 TO NODE   1012.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   167.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  90.0 INCH PIPE IS  71.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.65
  ESTIMATED PIPE DIAMETER(INCH) =  90.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     514.50
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  34.66
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1012.00 =    3878.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1012.00 TO NODE   1013.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    518.00  DOWNSTREAM(FEET) =    486.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3050.00   CHANNEL SLOPE =  0.0105
  CHANNEL FLOW THRU SUBAREA(CFS) =     514.50
  FLOW VELOCITY(FEET/SEC) =   8.09 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   6.28   Tc(MIN.) =  40.94
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1013.00 =    6928.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1013.00 TO NODE   1013.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    50 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.901
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3844
  SUBAREA AREA(ACRES) =   11.20   SUBAREA RUNOFF(CFS) =    7.45
  TOTAL AREA(ACRES) =      638.3   TOTAL RUNOFF(CFS) =     514.50
  TC(MIN.) =  40.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        0.0  TC(MIN.) =      5.00
  PEAK FLOW RATE(CFS)   =       1.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                          2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2006 Advanced Engineering Software (aes)
            Ver. 2.0 Release Date: 06/01/2005  License ID 1499

                          Analysis prepared by:

                     Kimley-Horn & Associates, Inc
                         401 B Street Suite 600
                          San Diego, CA 92101
                              619-234-9411

 ************************* DESCRIPTION OF STUDY *************************
* Otay Business Park Proposed condition                                 *
* 100-year; P = 3.0"                                                    *
* 2010-04-12 AG                                                         *
 ************************************************************************

  FILE NAME: 100.DAT
  TIME/DATE OF STUDY: 16:42 04/12/2010
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.000
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ==========  ==================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150
  2   39.0     34.0    0.020/0.020/ ---    0.50    1.50 0.0313 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    657.00
  DOWNSTREAM ELEVATION(FEET) =    640.00
  ELEVATION DIFFERENCE(FEET) =     17.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.431
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    640.00  DOWNSTREAM(FEET) =    540.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3300.00   CHANNEL SLOPE =  0.0303
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.30
  FLOW VELOCITY(FEET/SEC) =   2.61 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  21.06   Tc(MIN.) =  25.49
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    3350.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.764
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  101.30   SUBAREA RUNOFF(CFS) =   98.00
  TOTAL AREA(ACRES) =      101.4   TOTAL RUNOFF(CFS) =      98.10
  TC(MIN.) =  25.49

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  39.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.98
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      98.10
  PIPE TRAVEL TIME(MIN.) =   0.46    Tc(MIN.) =  25.96
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    203.00 =    3600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.96
  RAINFALL INTENSITY(INCH/HR) =   2.73
  TOTAL STREAM AREA(ACRES) =   101.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     98.10

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    601.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    638.00
  DOWNSTREAM ELEVATION(FEET) =    632.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.431
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     601.00 TO NODE     602.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.00  DOWNSTREAM(FEET) =    531.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3766.00   CHANNEL SLOPE =  0.0268
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =        0.30
  FLOW VELOCITY(FEET/SEC) =   2.46 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  25.55   Tc(MIN.) =  29.98
  LONGEST FLOWPATH FROM NODE     600.00 TO NODE     602.00 =    3816.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     602.00 TO NODE     602.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.490
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =  102.19   SUBAREA RUNOFF(CFS) =   89.04
  TOTAL AREA(ACRES) =      102.3   TOTAL RUNOFF(CFS) =      89.14
  TC(MIN.) =  29.98

****************************************************************************
  FLOW PROCESS FROM NODE     602.00 TO NODE     203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   440.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  35.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.92
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      89.14
  PIPE TRAVEL TIME(MIN.) =   0.82    Tc(MIN.) =  30.81
  LONGEST FLOWPATH FROM NODE     600.00 TO NODE     203.00 =    4256.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     203.00 TO NODE     203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  30.81
  RAINFALL INTENSITY(INCH/HR) =   2.45
  TOTAL STREAM AREA(ACRES) =   102.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     89.14

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        98.10    25.96       2.732        101.41
     2        89.14    30.81       2.446        102.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       173.22    25.96       2.732
     2       176.98    30.81       2.446

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     176.98   Tc(MIN.) =   30.81
  TOTAL AREA(ACRES) =      203.7
  LONGEST FLOWPATH FROM NODE     600.00 TO NODE     203.00 =    4256.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     203.00 TO NODE     204.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =  1200.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  48.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.42
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     176.98
  PIPE TRAVEL TIME(MIN.) =   1.92    Tc(MIN.) =  32.72
  LONGEST FLOWPATH FROM NODE     600.00 TO NODE     204.00 =    5456.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     204.00 TO NODE     204.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  32.72
  RAINFALL INTENSITY(INCH/HR) =   2.35
  TOTAL STREAM AREA(ACRES) =   203.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     176.98

****************************************************************************
  FLOW PROCESS FROM NODE     400.00 TO NODE     401.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     3.00
  UPSTREAM ELEVATION(FEET) =    555.00
  DOWNSTREAM ELEVATION(FEET) =    552.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.085
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE     401.00 TO NODE     402.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    552.00  DOWNSTREAM(FEET) =    519.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1517.00   CHANNEL SLOPE =  0.0218
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =        0.30
  FLOW VELOCITY(FEET/SEC) =   2.21 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  11.43   Tc(MIN.) =  12.51
  LONGEST FLOWPATH FROM NODE     400.00 TO NODE     402.00 =    1520.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     402.00 TO NODE     402.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.374
*USER SPECIFIED(SUBAREA):
DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) =   21.69   SUBAREA RUNOFF(CFS) =   33.21
TOTAL AREA(ACRES) =       21.8   TOTAL RUNOFF(CFS) =      33.37
TC(MIN.) =  12.51

****************************************************************************
FLOW PROCESS FROM NODE    402.00 TO NODE    204.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  33.0 INCH PIPE IS  24.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.96
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      33.37
PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =  12.63
LONGEST FLOWPATH FROM NODE    400.00 TO NODE    204.00 =    1570.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    204.00 TO NODE    204.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  12.63
RAINFALL INTENSITY(INCH/HR) =   4.35
TOTAL STREAM AREA(ACRES) =    21.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =     33.37

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
    1      176.98    32.72        2.353        203.71
    2       33.37    12.63        4.347         21.80

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
    1      129.16    12.63       4.347
    2      195.05    32.72       2.353

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     195.05   Tc(MIN.) =   32.72
TOTAL AREA(ACRES) =      225.5
LONGEST FLOWPATH FROM NODE    600.00 TO NODE    204.00 =    5456.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    204.00 TO NODE    204.50 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =  1370.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  63.0 INCH PIPE IS  49.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  10.75
ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     195.05
PIPE TRAVEL TIME(MIN.) =   2.12    Tc(MIN.) =  34.85
LONGEST FLOWPATH FROM NODE    600.00 TO NODE    204.50 =    6826.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    204.50 TO NODE    204.50 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  34.85
RAINFALL INTENSITY(INCH/HR) =   2.26
TOTAL STREAM AREA(ACRES) =   225.51
PEAK FLOW RATE(CFS) AT CONFLUENCE =    195.05

****************************************************************************
FLOW PROCESS FROM NODE   1030.00 TO NODE   1031.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    20.00
UPSTREAM ELEVATION(FEET) =    524.00
DOWNSTREAM ELEVATION(FEET) =    523.60
ELEVATION DIFFERENCE(FEET) =      0.40
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.470
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =       0.69
TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.69

****************************************************************************
FLOW PROCESS FROM NODE   1031.00 TO NODE   1032.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =  1300.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.00
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.38
  HALFSTREET FLOOD WIDTH(FEET) =   12.45
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.80
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.68
STREET FLOW TRAVEL TIME(MIN.) =  12.04   Tc(MIN.) =  13.50
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.164
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    1.20      SUBAREA RUNOFF(CFS) =    4.35
TOTAL AREA(ACRES) =        1.3        PEAK FLOW RATE(CFS) =       4.71

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  14.94
FLOW VELOCITY(FEET/SEC.) =  2.00   DEPTH*VELOCITY(FT*FT/SEC.) =   0.85
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L = 1300.0 FT WITH ELEVATION-DROP =   6.5 FT, IS    8.3 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   1032.00
LONGEST FLOWPATH FROM NODE   1030.00 TO NODE   1032.00 =    1320.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   1032.00 TO NODE    204.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.36
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        4.71
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =  13.70
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    204.50 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    204.50 TO NODE    204.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.70
  RAINFALL INTENSITY(INCH/HR) =   4.13
  TOTAL STREAM AREA(ACRES) =      1.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.71

****************************************************************************
  FLOW PROCESS FROM NODE    280.00 TO NODE    281.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    20.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.60
  ELEVATION DIFFERENCE(FEET) =      0.40
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.470
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.69
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.69

****************************************************************************
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1300.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.76
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =    9.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.59
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.52
  STREET FLOW TRAVEL TIME(MIN.) =  13.65   Tc(MIN.) =  15.12
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.871
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.60      SUBAREA RUNOFF(CFS) =    2.02
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       2.36

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.28
  FLOW VELOCITY(FEET/SEC.) =  1.70   DEPTH*VELOCITY(FT*FT/SEC.) =   0.60
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =    1320.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    204.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.66
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        2.36
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =  15.35
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    204.50 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    204.50 TO NODE    204.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.35
  RAINFALL INTENSITY(INCH/HR) =   3.83
  TOTAL STREAM AREA(ACRES) =      0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.36

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       195.05    34.85       2.259        225.51
     2         4.71    13.70       4.127          1.30
     3         2.36    15.35       3.834          0.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       113.60    13.70       4.127
     2       121.68    15.35       3.834
     3       199.02    34.85       2.259

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     199.02   Tc(MIN.) =   34.85
  TOTAL AREA(ACRES) =      227.5
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    204.50 =    6826.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    204.50 TO NODE    205.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    22.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  63.0 INCH PIPE IS  50.2 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.76
  ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      199.02
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =  34.88
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    205.00 =    6848.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    121.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    586.00
  DOWNSTREAM ELEVATION(FEET) =    583.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.254
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.656
  SUBAREA RUNOFF(CFS) =      0.29
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.29

****************************************************************************
  FLOW PROCESS FROM NODE    121.00 TO NODE    122.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    583.00  DOWNSTREAM(FEET) =    551.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   600.00   CHANNEL SLOPE =  0.0533
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.29
  FLOW VELOCITY(FEET/SEC) =   3.46 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.89   Tc(MIN.) =   8.14
  LONGEST FLOWPATH FROM NODE    120.00 TO NODE    122.00 =     650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.772
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    5.80   SUBAREA RUNOFF(CFS) =   11.72
  TOTAL AREA(ACRES) =        5.9   TOTAL RUNOFF(CFS) =      11.94
  TC(MIN.) =   8.14

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.14
  RAINFALL INTENSITY(INCH/HR) =   5.77
  TOTAL STREAM AREA(ACRES) =     5.91
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.94

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   5.00   RAIN INTENSITY(INCH/HOUR) =  7.90
  TOTAL AREA(ACRES) =    59.90   TOTAL RUNOFF(CFS) =     52.30

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.00
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =    59.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     52.30

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       11.94     8.14        5.772         5.91
     2       52.30     5.00        7.904        59.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       59.63     5.00        7.904
     2       50.13     8.14        5.772

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      59.63   Tc(MIN.) =    5.00
  TOTAL AREA(ACRES) =       65.8
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    122.00 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    123.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.10
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      59.63
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   5.34
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    123.00 =    1535.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    123.00 TO NODE    117.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    550.00  DOWNSTREAM(FEET) =    520.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1210.00   CHANNEL SLOPE =  0.0248
  CHANNEL FLOW THRU SUBAREA(CFS) =      59.63
  FLOW VELOCITY(FEET/SEC) =   6.41 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.14   Tc(MIN.) =   8.48
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    117.00 =    2745.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.620
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB FAIR COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.1711
  SUBAREA AREA(ACRES) =   14.40   SUBAREA RUNOFF(CFS) =   28.33
  TOTAL AREA(ACRES) =       80.2   TOTAL RUNOFF(CFS) =      77.14
  TC(MIN.) =   8.48

****************************************************************************
  FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.48
  RAINFALL INTENSITY(INCH/HR) =   5.62
  TOTAL STREAM AREA(ACRES) =    80.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     77.14

****************************************************************************
  FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
==============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   5.00   RAIN INTENSITY(INCH/HOUR) =  7.90
  TOTAL AREA(ACRES) =   206.40   TOTAL RUNOFF(CFS) =    180.40

****************************************************************************
  FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.00
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =   206.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    180.40

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        77.14     8.48        5.620        80.21
     2       180.40     5.00        7.904       206.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       235.25     5.00        7.904
     2       205.41     8.48        5.620

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     235.25   Tc(MIN.) =    5.00
  TOTAL AREA(ACRES) =      286.6
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    117.00 =    2745.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    117.00 TO NODE    118.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  69.0 INCH PIPE IS  51.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.36
  ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       235.25
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   5.25
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE    118.00 =    2915.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    325.00 TO NODE    326.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    618.00
  DOWNSTREAM ELEVATION(FEET) =    617.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    326.00 TO NODE    327.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1580.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.72
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.75
  STREET FLOW TRAVEL TIME(MIN.) =  13.97   Tc(MIN.) =  16.02
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.729
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.69      SUBAREA RUNOFF(CFS) =    5.48
  TOTAL AREA(ACRES) =        1.8        PEAK FLOW RATE(CFS) =       5.84

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  16.26
  FLOW VELOCITY(FEET/SEC.) =  2.11   DEPTH*VELOCITY(FT*FT/SEC.) =   0.95
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1580.0 FT WITH ELEVATION-DROP =   7.9 FT, IS   11.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    327.00
```

```
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    327.00 =    1619.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    327.00 TO NODE    310.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.56
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.84
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =  16.26
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    310.00 =    1684.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.26
  RAINFALL INTENSITY(INCH/HR) =   3.69
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.84

****************************************************************************
  FLOW PROCESS FROM NODE    330.00 TO NODE    331.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    618.00
  DOWNSTREAM ELEVATION(FEET) =    617.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    331.00 TO NODE    332.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1580.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.72
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.75
  STREET FLOW TRAVEL TIME(MIN.) =  13.97   Tc(MIN.) =  16.02
```

```
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.729
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     1.69      SUBAREA RUNOFF(CFS) =     5.48
  TOTAL AREA(ACRES) =        1.8        PEAK FLOW RATE(CFS) =       5.84

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  16.26
  FLOW VELOCITY(FEET/SEC.) =  2.11   DEPTH*VELOCITY(FT*FT/SEC.) =   0.95
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1580.0 FT WITH ELEVATION-DROP =   7.9 FT, IS   11.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    332.00
  LONGEST FLOWPATH FROM NODE    330.00 TO NODE    332.00 =    1619.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    332.00 TO NODE    310.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.56
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.84
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  16.10
  LONGEST FLOWPATH FROM NODE    330.00 TO NODE    310.00 =    1639.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.10
  RAINFALL INTENSITY(INCH/HR) =   3.72
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.84

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1         5.84    16.26        3.694         1.80
     2         5.84    16.10        3.718         1.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        11.62    16.10       3.718
     2        11.64    16.26       3.694

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.64   Tc(MIN.) =   16.26
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    310.00 =    1684.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    311.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
```

```
  FLOW LENGTH(FEET) =   920.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.44
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       11.64
  PIPE TRAVEL TIME(MIN.) =   2.82    Tc(MIN.) =  19.08
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    311.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.08
  RAINFALL INTENSITY(INCH/HR) =   3.33
  TOTAL STREAM AREA(ACRES) =     3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.64

****************************************************************************
  FLOW PROCESS FROM NODE    340.00 TO NODE    341.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    554.00
  DOWNSTREAM ELEVATION(FEET) =    553.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    341.00 TO NODE    342.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   900.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.72
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.76
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.64
  STREET FLOW TRAVEL TIME(MIN.) =   8.52   Tc(MIN.) =  10.57
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.877
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.89      SUBAREA RUNOFF(CFS) =    3.78
  TOTAL AREA(ACRES) =        1.0        PEAK FLOW RATE(CFS) =       4.24

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.35
  FLOW VELOCITY(FEET/SEC.) =  1.95   DEPTH*VELOCITY(FT*FT/SEC.) =   0.81
  LONGEST FLOWPATH FROM NODE    340.00 TO NODE    342.00 =     939.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    342.00 TO NODE    311.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.26
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.24
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =  10.80
  LONGEST FLOWPATH FROM NODE    340.00 TO NODE    311.00 =     999.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.80
  RAINFALL INTENSITY(INCH/HR) =   4.81
  TOTAL STREAM AREA(ACRES) =     1.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.24

****************************************************************************
  FLOW PROCESS FROM NODE    350.00 TO NODE    351.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    554.00
  DOWNSTREAM ELEVATION(FEET) =    553.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    351.00 TO NODE    352.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   900.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.97
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.37
    HALFSTREET FLOOD WIDTH(FEET) =   12.38
```

```
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.80
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.67
  STREET FLOW TRAVEL TIME(MIN.) =   8.34   Tc(MIN.) =  10.39
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.932
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.99      SUBAREA RUNOFF(CFS) =    4.25
  TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  14.94
  FLOW VELOCITY(FEET/SEC.) =  2.01   DEPTH*VELOCITY(FT*FT/SEC.) =   0.85
  LONGEST FLOWPATH FROM NODE    350.00 TO NODE    352.00 =     939.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    311.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.36
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.72
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =  10.47
  LONGEST FLOWPATH FROM NODE    350.00 TO NODE    311.00 =     959.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.47
  RAINFALL INTENSITY(INCH/HR) =   4.91
  TOTAL STREAM AREA(ACRES) =     1.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.72

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       11.64    19.08       3.332         3.60
      2        4.24    10.80       4.809         1.00
      3        4.72    10.47       4.908         1.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       16.73    10.47       4.908
      2       16.93    10.80       4.809
      3       17.79    19.08       3.332

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      17.79   Tc(MIN.) =   19.08
  TOTAL AREA(ACRES) =        5.7
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    311.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.01
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.79
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =  19.30
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    312.00 =    2684.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    312.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    360.00 TO NODE    361.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    560.00
  DOWNSTREAM ELEVATION(FEET) =    559.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    361.00 TO NODE    362.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1130.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.39
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   13.11
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.85
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.72
  STREET FLOW TRAVEL TIME(MIN.) =  10.20   Tc(MIN.) =  12.23
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.439
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    4.98
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       5.41

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.82
  FLOW VELOCITY(FEET/SEC.) =  2.06   DEPTH*VELOCITY(FT*FT/SEC.) =   0.91
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1130.0 FT WITH ELEVATION-DROP =   5.7 FT, IS    8.9 CFS,
```

```
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    362.00
  LONGEST FLOWPATH FROM NODE    360.00 TO NODE    362.00 =    1169.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    362.00 TO NODE    363.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.49
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.41
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =  12.51
  LONGEST FLOWPATH FROM NODE    360.00 TO NODE    363.00 =    1244.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    363.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.51
  RAINFALL INTENSITY(INCH/HR) =   4.37
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.41

****************************************************************************
  FLOW PROCESS FROM NODE    370.00 TO NODE    371.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    34.00
  UPSTREAM ELEVATION(FEET) =    560.00
  DOWNSTREAM ELEVATION(FEET) =    559.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.815
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    371.00 TO NODE    372.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1220.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.32
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   12.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.71
```

```
  STREET FLOW TRAVEL TIME(MIN.) =  11.02   Tc(MIN.) =  12.84
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.302
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    4.83
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       5.24

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.60
  FLOW VELOCITY(FEET/SEC.) =  2.05   DEPTH*VELOCITY(FT*FT/SEC.) =   0.90
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1220.0 FT WITH ELEVATION-DROP =   6.1 FT, IS    8.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    372.00
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    372.00 =    1254.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    372.00 TO NODE    363.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.24
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =  12.93
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    363.00 =    1279.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    363.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.93
  RAINFALL INTENSITY(INCH/HR) =   4.28
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.24

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        5.41    12.51        4.375         1.40
     2        5.24    12.93        4.282         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       10.48    12.51       4.375
     2       10.53    12.93       4.282

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.53   Tc(MIN.) =   12.93
  TOTAL AREA(ACRES) =       2.8
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    363.00 =    1279.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    312.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.17
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.53
  PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =  13.32
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    312.00 =    1399.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    312.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1       10.53    13.32       4.202        2.80
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    312.00 =    1399.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1       17.79    19.30       3.308        5.70
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    312.00 =    2684.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      22.81      13.32       4.202
     2      26.08      19.30       3.308

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      26.08   Tc(MIN.) =   19.30
  TOTAL AREA(ACRES) =        8.5

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    313.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   354.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.54
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      26.08
  PIPE TRAVEL TIME(MIN.) =   0.90    Tc(MIN.) =  20.20
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    313.00 =    3038.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  20.20
  RAINFALL INTENSITY(INCH/HR) =   3.21
  TOTAL STREAM AREA(ACRES) =     8.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     26.08

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    500.00 TO NODE    501.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
  UPSTREAM ELEVATION(FEET) =    546.00
  DOWNSTREAM ELEVATION(FEET) =    540.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.818
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.65
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     13.07
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     13.07

****************************************************************************
  FLOW PROCESS FROM NODE    501.00 TO NODE    313.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.56
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.07
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   2.94
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    313.00 =     380.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.94
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.07

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       26.08    20.20       3.212          8.50
     2       13.07     2.94       7.904          1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       16.86     2.94       7.904
     2       31.39    20.20       3.212

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      31.39   Tc(MIN.) =   20.20
  TOTAL AREA(ACRES) =       10.4
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    313.00 =    3038.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    313.00 TO NODE    314.00 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.90
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      31.39
  PIPE TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =  20.93
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    314.00 =    3338.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    314.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  20.93
  RAINFALL INTENSITY(INCH/HR) =   3.14
  TOTAL STREAM AREA(ACRES) =    10.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     31.39

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    511.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   370.00
  UPSTREAM ELEVATION(FEET) =    540.00
  DOWNSTREAM ELEVATION(FEET) =    534.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.868
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.22
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     13.07
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     13.07

****************************************************************************
  FLOW PROCESS FROM NODE    511.00 TO NODE    314.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.56
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.07
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   2.99
  LONGEST FLOWPATH FROM NODE    510.00 TO NODE    314.00 =     410.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    314.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.99
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.07

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        31.39    20.93       3.139         10.40
     2        13.07     2.99       7.904          1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        25.53     2.99       7.904
     2        36.58    20.93       3.139

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      36.58   Tc(MIN.) =   20.93
  TOTAL AREA(ACRES) =       12.3
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    314.00 =    3338.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    315.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  24.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.22
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      36.58
  PIPE TRAVEL TIME(MIN.) =   0.69    Tc(MIN.) =  21.62
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    315.00 =    3638.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    315.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.62
  RAINFALL INTENSITY(INCH/HR) =   3.07
  TOTAL STREAM AREA(ACRES) =    12.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     36.58

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    521.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   365.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.859
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.44
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     13.07
```

```
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     13.07

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    521.00 TO NODE    315.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.56
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.07
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   2.98
  LONGEST FLOWPATH FROM NODE    520.00 TO NODE    315.00 =     405.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    315.00 TO NODE    315.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.98
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.07

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       36.58    21.62        3.074        12.30
     2       13.07     2.98        7.904         1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
     1       27.29     2.98       7.904
     2       41.66    21.62       3.074

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      41.66   Tc(MIN.) =   21.62
  TOTAL AREA(ACRES) =       14.2
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    315.00 =    3638.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    315.00 TO NODE    316.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.37
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      41.66
  PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =  22.16
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    316.00 =    3878.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    316.00 TO NODE    316.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  22.16
  RAINFALL INTENSITY(INCH/HR) =   3.03
  TOTAL STREAM AREA(ACRES) =    14.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     41.66

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    390.00 TO NODE    391.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    544.00
  DOWNSTREAM ELEVATION(FEET) =    543.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    391.00 TO NODE    392.00 IS CODE =  62
----------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1200.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.31
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   12.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.71
  STREET FLOW TRAVEL TIME(MIN.) =  10.87   Tc(MIN.) =  12.90
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.288
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    4.81
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       5.22

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.60
  FLOW VELOCITY(FEET/SEC.) =  2.05   DEPTH*VELOCITY(FT*FT/SEC.) =   0.90
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1200.0 FT WITH ELEVATION-DROP =   6.0 FT, IS    8.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    392.00
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    392.00 =    1239.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    392.00 TO NODE    316.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
```

```
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.22
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =  13.15
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    316.00 =    1304.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    316.00 TO NODE    316.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.15
  RAINFALL INTENSITY(INCH/HR) =   4.24
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.22

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        41.66    22.16       3.025        14.20
     2         5.22    13.15       4.237         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        34.97    13.15       4.237
     2        45.39    22.16       3.025

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      45.39   Tc(MIN.) =   22.16
  TOTAL AREA(ACRES) =        15.6
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    316.00 =    3878.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    316.00 TO NODE    317.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  29.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.41
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      45.39
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  22.26
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    317.00 =    3923.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    317.00 TO NODE    317.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    531.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   350.00
  UPSTREAM ELEVATION(FEET) =    528.00
  DOWNSTREAM ELEVATION(FEET) =    522.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.835
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.14
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.38
  TOTAL AREA(ACRES) =      1.80   TOTAL RUNOFF(CFS) =     12.38

****************************************************************************
  FLOW PROCESS FROM NODE    531.00 TO NODE    532.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.51
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.38
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   2.90
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    532.00 =     370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    532.00 TO NODE    532.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.90
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.38

****************************************************************************
  FLOW PROCESS FROM NODE    380.00 TO NODE    381.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    34.00
  UPSTREAM ELEVATION(FEET) =    542.00
  DOWNSTREAM ELEVATION(FEET) =    541.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.815
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    381.00 TO NODE    532.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1200.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.34
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   13.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.71
  STREET FLOW TRAVEL TIME(MIN.) =  10.88   Tc(MIN.) =  12.70
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.333
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    4.86
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       5.28

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.67
  FLOW VELOCITY(FEET/SEC.) =  2.05   DEPTH*VELOCITY(FT*FT/SEC.) =   0.90
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1200.0 FT WITH ELEVATION-DROP =   6.0 FT, IS    8.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    532.00
  LONGEST FLOWPATH FROM NODE    380.00 TO NODE    532.00 =    1234.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    532.00 TO NODE    532.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.70
  RAINFALL INTENSITY(INCH/HR) =   4.33
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.28

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       12.38     2.90        7.904         1.80
     2        5.28    12.70        4.333         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       13.58     2.90        7.904
     2       12.06    12.70        4.333

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      13.58   Tc(MIN.) =    2.90
  TOTAL AREA(ACRES) =        3.2
  LONGEST FLOWPATH FROM NODE    380.00 TO NODE    532.00 =    1234.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    532.00 TO NODE    517.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.59
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.58
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   2.93
  LONGEST FLOWPATH FROM NODE    380.00 TO NODE    517.00 =    1246.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    317.00 TO NODE    317.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       13.58     2.93        7.904         3.20
  LONGEST FLOWPATH FROM NODE    380.00 TO NODE    317.00 =    1246.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       45.39    22.26        3.016        15.60
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    317.00 =    3923.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       19.56     2.93        7.904
     2       50.57    22.26        3.016

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      50.57   Tc(MIN.) =   22.26
  TOTAL AREA(ACRES) =       18.8

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    317.00 TO NODE    318.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  28.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.75
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      50.57
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =  22.44
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    318.00 =    4003.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    318.00 TO NODE    318.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    240.00 TO NODE    241.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    540.00
  DOWNSTREAM ELEVATION(FEET) =    539.20
  ELEVATION DIFFERENCE(FEET) =      0.80
```

```
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    241.00 TO NODE    242.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1200.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.31
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   12.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.71
  STREET FLOW TRAVEL TIME(MIN.) =  10.87   Tc(MIN.) =  12.90
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.288
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.29      SUBAREA RUNOFF(CFS) =    4.81
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       5.22

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.60
  FLOW VELOCITY(FEET/SEC.) =  2.05   DEPTH*VELOCITY(FT*FT/SEC.) =   0.90
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1200.0 FT WITH ELEVATION-DROP =   6.0 FT, IS    8.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    242.00
  LONGEST FLOWPATH FROM NODE    240.00 TO NODE    242.00 =    1239.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    242.00 TO NODE    243.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.22
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =  13.09
  LONGEST FLOWPATH FROM NODE    240.00 TO NODE    243.00 =    1289.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    243.00 TO NODE    243.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.09
  RAINFALL INTENSITY(INCH/HR) =   4.25
  TOTAL STREAM AREA(ACRES) =      1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.22

****************************************************************************
  FLOW PROCESS FROM NODE    250.00 TO NODE    251.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    547.50
  DOWNSTREAM ELEVATION(FEET) =    547.20
  ELEVATION DIFFERENCE(FEET) =      0.30
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.822
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  2039.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.47
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.42
    HALFSTREET FLOOD WIDTH(FEET) =   14.65
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.97
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.83
  STREET FLOW TRAVEL TIME(MIN.) =  17.22   Tc(MIN.) =  20.04
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.228
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.40      SUBAREA RUNOFF(CFS) =    6.74
  TOTAL AREA(ACRES) =        2.5        PEAK FLOW RATE(CFS) =       7.05

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.50
  FLOW VELOCITY(FEET/SEC.) =  2.22   DEPTH*VELOCITY(FT*FT/SEC.) =   1.06
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 2039.0 FT WITH ELEVATION-DROP =  10.2 FT, IS   16.5 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    252.00
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    252.00 =    2078.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    252.00 TO NODE    243.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    54.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.67
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =        7.05
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =  20.23
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    243.00 =    2132.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    243.00 TO NODE    243.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  20.23
  RAINFALL INTENSITY(INCH/HR) =   3.21
  TOTAL STREAM AREA(ACRES) =     2.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.05

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        5.22    13.09        4.249         1.40
     2        7.05    20.23        3.208         2.51

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        9.78    13.09       4.249
     2       10.99    20.23       3.208

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.99   Tc(MIN.) =   20.23
  TOTAL AREA(ACRES) =         3.9
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    243.00 =    2132.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    243.00 TO NODE    318.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   112.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.38
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.99
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =  20.58
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    318.00 =    2244.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    318.00 TO NODE    318.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       10.99    20.58       3.173         3.91
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    318.00 =    2244.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       50.57    22.44       3.001        18.80
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    318.00 =    4003.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       57.38    20.58       3.173
     2       60.97    22.44       3.001

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      60.97   Tc(MIN.) =   22.44
  TOTAL AREA(ACRES) =        22.7

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    318.00 TO NODE    319.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.13
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      60.97
  PIPE TRAVEL TIME(MIN.) =   0.55    Tc(MIN.) =  22.99
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.00 =    4273.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.00 TO NODE    319.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  22.99
  RAINFALL INTENSITY(INCH/HR) =   2.95
  TOTAL STREAM AREA(ACRES) =    22.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     60.97

****************************************************************************
  FLOW PROCESS FROM NODE    540.00 TO NODE    541.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   345.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.826
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.39
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     11.69
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =     11.69

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    319.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
```

```
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.44
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.69
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   2.95
  LONGEST FLOWPATH FROM NODE    540.00 TO NODE    319.00 =     385.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.00 TO NODE    319.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.95
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.69

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       60.97    22.99        2.955        22.71
     2       11.69     2.95        7.904         1.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       19.51     2.95       7.904
     2       65.34    22.99       2.955

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      65.34   Tc(MIN.) =   22.99
  TOTAL AREA(ACRES) =       24.4
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.00 =    4273.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.00 TO NODE    319.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   220.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  32.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.20
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      65.34
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =  23.44
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.50 =    4493.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.50 TO NODE    319.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.44
  RAINFALL INTENSITY(INCH/HR) =   2.92
  TOTAL STREAM AREA(ACRES) =    24.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     65.34

****************************************************************************
  FLOW PROCESS FROM NODE    550.00 TO NODE    551.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
  UPSTREAM ELEVATION(FEET) =    518.00
  DOWNSTREAM ELEVATION(FEET) =    512.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.818
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.65
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     11.00
  TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =     11.00

****************************************************************************
  FLOW PROCESS FROM NODE    551.00 TO NODE    319.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.38
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.00
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   2.94
  LONGEST FLOWPATH FROM NODE    550.00 TO NODE    319.50 =     380.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.50 TO NODE    319.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.94
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.00

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       65.34    23.44        2.918        24.41
     2       11.00     2.94        7.904         1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       35.13     2.94       7.904
     2       69.40    23.44       2.918

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      69.40   Tc(MIN.) =   23.44
  TOTAL AREA(ACRES) =       26.0
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    319.50 =    4493.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    319.50 TO NODE    320.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   280.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  31.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.44
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      69.40
  PIPE TRAVEL TIME(MIN.) =   0.55    Tc(MIN.) =  23.99
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    320.00 =    4773.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    280.00 TO NODE    281.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   700.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.18
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.67
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =     0.57
  STREET FLOW TRAVEL TIME(MIN.) =   7.01   Tc(MIN.) =   9.06
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.388
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.59      SUBAREA RUNOFF(CFS) =    2.77
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       3.28

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.89
  FLOW VELOCITY(FEET/SEC.) =  1.84   DEPTH*VELOCITY(FT*FT/SEC.) =   0.71
  LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =     739.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    282.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.06
  RAINFALL INTENSITY(INCH/HR) =   5.39
  TOTAL STREAM AREA(ACRES) =     0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.28

****************************************************************************
  FLOW PROCESS FROM NODE    560.00 TO NODE    561.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   330.00
  UPSTREAM ELEVATION(FEET) =    514.00
  DOWNSTREAM ELEVATION(FEET) =    508.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.801
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    68.18
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     11.00
  TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =     11.00

****************************************************************************
  FLOW PROCESS FROM NODE    561.00 TO NODE    282.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.38
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.00
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   2.88
  LONGEST FLOWPATH FROM NODE    560.00 TO NODE    282.00 =     355.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    282.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.88
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.00

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
```

```
NUMBER      (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
    1        3.28      9.06        5.388          0.70
    2       11.00      2.88        7.904          1.60

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc       INTENSITY
NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
    1       12.05      2.88        7.904
    2       10.78      9.06        5.388

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      12.05   Tc(MIN.) =    2.88
TOTAL AREA(ACRES) =        2.3
LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =     739.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    282.00 TO NODE    320.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.48
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      12.05
PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   2.92
LONGEST FLOWPATH FROM NODE    280.00 TO NODE    320.00 =     754.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =  11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
STREAM     RUNOFF      Tc       INTENSITY     AREA
NUMBER      (CFS)     (MIN.)    (INCH/HOUR)   (ACRE)
    1       12.05      2.92        7.904        2.30
LONGEST FLOWPATH FROM NODE    280.00 TO NODE    320.00 =     754.00 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
STREAM     RUNOFF      Tc       INTENSITY     AREA
NUMBER      (CFS)     (MIN.)    (INCH/HOUR)   (ACRE)
    1       69.40     23.99        2.875       26.01
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    320.00 =    4773.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF       Tc       INTENSITY
NUMBER     (CFS)      (MIN.)    (INCH/HOUR)
    1      20.50       2.92        7.904
    2      73.78      23.99        2.875

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      73.78   Tc(MIN.) =   23.99
TOTAL AREA(ACRES) =        28.3

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
>>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    320.00 TO NODE    321.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   8.52
ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      73.78
PIPE TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =  24.58
LONGEST FLOWPATH FROM NODE    325.00 TO NODE    321.00 =    5073.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  24.58
RAINFALL INTENSITY(INCH/HR) =   2.83
TOTAL STREAM AREA(ACRES) =    28.31
PEAK FLOW RATE(CFS) AT CONFLUENCE =     73.78

****************************************************************************
FLOW PROCESS FROM NODE    290.00 TO NODE    291.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    508.00
DOWNSTREAM ELEVATION(FEET) =    507.20
ELEVATION DIFFERENCE(FEET) =      0.80
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.76
TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
FLOW PROCESS FROM NODE    291.00 TO NODE    292.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =   420.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.89
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.37
  HALFSTREET FLOOD WIDTH(FEET) =   12.30
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.77
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =     0.66
STREET FLOW TRAVEL TIME(MIN.) =   3.95   Tc(MIN.) =   5.99
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.038
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    0.69      SUBAREA RUNOFF(CFS) =    4.22
```

```
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       4.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.16
  FLOW VELOCITY(FEET/SEC.) =  2.03   DEPTH*VELOCITY(FT*FT/SEC.) =   0.87
  LONGEST FLOWPATH FROM NODE    290.00 TO NODE    292.00 =     459.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    292.00 TO NODE    321.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.40
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.90
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   6.08
  LONGEST FLOWPATH FROM NODE    290.00 TO NODE    321.00 =     484.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.08
  RAINFALL INTENSITY(INCH/HR) =   6.97
  TOTAL STREAM AREA(ACRES) =      0.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.90

****************************************************************************
  FLOW PROCESS FROM NODE    410.00 TO NODE    411.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    507.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.035
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    411.00 TO NODE    412.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   400.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.60
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.72
    AVERAGE FLOW VELOCITY(FEET/SEC.) =     1.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =     0.63
  STREET FLOW TRAVEL TIME(MIN.) =   3.83   Tc(MIN.) =   5.86
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.133
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     0.59      SUBAREA RUNOFF(CFS) =     3.66
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       4.34

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.50
  FLOW VELOCITY(FEET/SEC.) =  1.96   DEPTH*VELOCITY(FT*FT/SEC.) =   0.81
  LONGEST FLOWPATH FROM NODE    410.00 TO NODE    412.00 =     439.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    412.00 TO NODE    321.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.28
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.34
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   6.03
  LONGEST FLOWPATH FROM NODE    410.00 TO NODE    321.00 =     483.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.03
  RAINFALL INTENSITY(INCH/HR) =   7.00
  TOTAL STREAM AREA(ACRES) =      0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.34

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        73.78    24.58       2.830        28.31
     2         4.90     6.08       6.967         0.80
     3         4.34     6.03       7.002         0.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        27.32     6.03       7.002
     2        27.48     6.08       6.967
     3        77.53    24.58       2.830

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      77.53   Tc(MIN.) =   24.58
  TOTAL AREA(ACRES) =       29.8
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    321.00 =    5073.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    322.00 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   350.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  34.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.57
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      77.53
  PIPE TRAVEL TIME(MIN.) =   0.68    Tc(MIN.) =  25.26
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    322.00 =    5423.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.26
  RAINFALL INTENSITY(INCH/HR) =   2.78
  TOTAL STREAM AREA(ACRES) =    29.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     77.53

****************************************************************************
  FLOW PROCESS FROM NODE   1002.00 TO NODE   1003.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   360.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    499.00
  ELEVATION DIFFERENCE(FEET) =      7.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.764
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    69.44
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     13.07
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     13.07

****************************************************************************
  FLOW PROCESS FROM NODE   1003.00 TO NODE    322.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.56
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.07
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   2.81
  LONGEST FLOWPATH FROM NODE   1002.00 TO NODE    322.00 =     375.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    322.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.81
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.07

****************************************************************************
  FLOW PROCESS FROM NODE   1000.00 TO NODE   1001.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   360.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    504.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.600
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.11
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     19.25
  TOTAL AREA(ACRES) =      2.80   TOTAL RUNOFF(CFS) =     19.25

****************************************************************************
  FLOW PROCESS FROM NODE   1001.00 TO NODE    322.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.08
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      19.25
  PIPE TRAVEL TIME(MIN.) =   0.80    Tc(MIN.) =   4.40
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE    322.00 =     650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    322.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.40
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     2.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.25

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        77.53    25.26       2.781        29.81
     2        13.07     2.81       7.904         1.90
     3        19.25     4.40       7.904         2.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        52.65     2.81       7.904
     2        59.59     4.40       7.904
     3        88.90    25.26       2.781

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =      88.90   Tc(MIN.) =   25.26
  TOTAL AREA(ACRES) =       34.5
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    322.00 =    5423.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    323.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    58.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  35.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.91
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      88.90
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =  25.37
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    323.00 =    5481.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    323.00 TO NODE    323.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    641.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   350.00
  UPSTREAM ELEVATION(FEET) =    540.00
  DOWNSTREAM ELEVATION(FEET) =    534.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.835
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.14
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     11.69
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =     11.69

****************************************************************************
  FLOW PROCESS FROM NODE    641.00 TO NODE    514.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.44
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.69
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   3.16
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    514.00 =     455.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    514.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.16
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.69

****************************************************************************
  FLOW PROCESS FROM NODE    650.00 TO NODE    651.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   195.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    530.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.736
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.51
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      8.94
  TOTAL AREA(ACRES) =      1.30   TOTAL RUNOFF(CFS) =      8.94

****************************************************************************
  FLOW PROCESS FROM NODE    651.00 TO NODE    514.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.06
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.94
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   3.07
  LONGEST FLOWPATH FROM NODE    650.00 TO NODE    514.00 =     295.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    514.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.07
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.94

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       11.69     3.16        7.904         1.70
     2        8.94     3.07        7.904         1.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
```

```
     1       20.29     3.07       7.904
     2       20.63     3.16       7.904

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      20.63   Tc(MIN.) =    3.16
  TOTAL AREA(ACRES) =         3.0
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    514.00 =     455.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   202.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.11
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      20.63
  PIPE TRAVEL TIME(MIN.) =   0.55    Tc(MIN.) =   3.71
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.00 =     657.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.71
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     3.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.63

****************************************************************************
  FLOW PROCESS FROM NODE    660.00 TO NODE    661.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   297.00
  UPSTREAM ELEVATION(FEET) =    532.00
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.987
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.47
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     10.31
  TOTAL AREA(ACRES) =      1.50   TOTAL RUNOFF(CFS) =     10.31

****************************************************************************
  FLOW PROCESS FROM NODE    661.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.16
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.31
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   3.26
  LONGEST FLOWPATH FROM NODE    660.00 TO NODE    515.00 =     382.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.26
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.31

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       20.63     3.71        7.904         3.00
     2       10.31     3.26        7.904         1.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       30.94     3.26        7.904
     2       30.94     3.71        7.904

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      30.94   Tc(MIN.) =    3.71
  TOTAL AREA(ACRES) =         4.5
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.00 =     657.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    90.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.89
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      30.94
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   3.92
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.50 =     747.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.50 TO NODE    515.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.92
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     4.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     30.94

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    631.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   364.00
  UPSTREAM ELEVATION(FEET) =    536.00
```

```
  DOWNSTREAM ELEVATION(FEET) =    528.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.702
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    71.98
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      13.07
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     13.07

****************************************************************************
  FLOW PROCESS FROM NODE    631.00 TO NODE    515.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.56
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.07
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   2.93
  LONGEST FLOWPATH FROM NODE    630.00 TO NODE    515.50 =     439.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.50 TO NODE    515.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.93
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.07

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       30.94     3.92        7.904         4.50
     2       13.07     2.93        7.904         1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       44.01     2.93       7.904
     2       44.01     3.92       7.904

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      44.01   Tc(MIN.) =    3.92
  TOTAL AREA(ACRES) =        6.4
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    515.50 =     747.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.50 TO NODE    516.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  28.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.40
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      44.01
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   4.19
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    516.00 =     867.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    516.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.19
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     6.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     44.01

****************************************************************************
  FLOW PROCESS FROM NODE    670.00 TO NODE    671.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   298.00
  UPSTREAM ELEVATION(FEET) =    528.00
  DOWNSTREAM ELEVATION(FEET) =    524.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.989
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.42
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      10.31
  TOTAL AREA(ACRES) =      1.50   TOTAL RUNOFF(CFS) =     10.31

****************************************************************************
  FLOW PROCESS FROM NODE    671.00 TO NODE    516.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.16
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.31
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   3.25
  LONGEST FLOWPATH FROM NODE    670.00 TO NODE    516.00 =     378.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    516.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.25
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.31

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       44.01     4.19        7.904         6.40
     2       10.31     3.25        7.904         1.50
```

```
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
      1       54.33     3.25       7.904
      2       54.33     4.19       7.904

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      54.33   Tc(MIN.) =    4.19
  TOTAL AREA(ACRES) =        7.9
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    516.00 =     867.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    517.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   190.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  30.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.81
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      54.33
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =   4.60
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    517.00 =    1057.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    517.00 TO NODE    517.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.60
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     7.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     54.33

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    621.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   363.00
  UPSTREAM ELEVATION(FEET) =    530.00
  DOWNSTREAM ELEVATION(FEET) =    522.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.700
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    72.04
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      13.07
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     13.07

****************************************************************************
  FLOW PROCESS FROM NODE    621.00 TO NODE    517.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    77.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.56
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.07
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   2.93
  LONGEST FLOWPATH FROM NODE    620.00 TO NODE    517.00 =     440.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    517.00 TO NODE    517.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.93
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.07

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
      1       54.33     4.60       7.904          7.90
      2       13.07     2.93       7.904          1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
      1       67.39     2.93       7.904
      2       67.39     4.60       7.904

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      67.39   Tc(MIN.) =    4.60
  TOTAL AREA(ACRES) =        9.8
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    517.00 =    1057.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    517.00 TO NODE    518.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   145.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.21
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      67.39
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   4.89
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    518.00 =    1202.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.89
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     9.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     67.39

****************************************************************************
  FLOW PROCESS FROM NODE    413.00 TO NODE    414.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    542.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =     24.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.200
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

******************************************************************************
  FLOW PROCESS FROM NODE    414.00 TO NODE    415.00 IS CODE =  62
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1600.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.08
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.43
    HALFSTREET FLOOD WIDTH(FEET) =   15.38
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.04
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.89
  STREET FLOW TRAVEL TIME(MIN.) =  13.05   Tc(MIN.) =  14.25
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.023
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.29      SUBAREA RUNOFF(CFS) =    8.02
  TOTAL AREA(ACRES) =        2.4        PEAK FLOW RATE(CFS) =       8.40

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.75
  FLOW VELOCITY(FEET/SEC.) =  2.31   DEPTH*VELOCITY(FT*FT/SEC.) =   1.16
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1600.0 FT WITH ELEVATION-DROP =   8.0 FT, IS   15.7 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    415.00
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    415.00 =    1639.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE    415.00 TO NODE    518.00 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.01
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.40
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =  14.37
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    518.00 =    1675.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.37
  RAINFALL INTENSITY(INCH/HR) =   4.00
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.40

******************************************************************************
  FLOW PROCESS FROM NODE    416.00 TO NODE    417.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    533.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

******************************************************************************
  FLOW PROCESS FROM NODE    417.00 TO NODE    418.00 IS CODE =  62
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   975.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.18
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.67
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.57
  STREET FLOW TRAVEL TIME(MIN.) =   9.74   Tc(MIN.) =  11.79
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.544
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.69      SUBAREA RUNOFF(CFS) =    2.73
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       3.16

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.74
  FLOW VELOCITY(FEET/SEC.) =  1.82   DEPTH*VELOCITY(FT*FT/SEC.) =   0.69
  LONGEST FLOWPATH FROM NODE    416.00 TO NODE    418.00 =    1014.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE    418.00 TO NODE    518.00 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    17.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   3.96
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       3.16
PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  11.87
LONGEST FLOWPATH FROM NODE    416.00 TO NODE    518.00 =    1031.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =  11.87
RAINFALL INTENSITY(INCH/HR) =   4.53
TOTAL STREAM AREA(ACRES) =      0.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.16

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       67.39     4.89       7.904         9.80
    2        8.40    14.37       4.001         2.40
    3        3.16    11.87       4.527         0.80

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       71.56     4.89       7.904
    2       48.69    11.87       4.527
    3       45.31    14.37       4.001

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      71.56   Tc(MIN.) =    4.89
TOTAL AREA(ACRES) =       13.0
LONGEST FLOWPATH FROM NODE    413.00 TO NODE    518.00 =    1675.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    518.00 TO NODE    519.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.48
ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      71.56
PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   4.97
LONGEST FLOWPATH FROM NODE    413.00 TO NODE    519.00 =    1715.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    519.00 TO NODE    519.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   4.97
RAINFALL INTENSITY(INCH/HR) =   7.90
TOTAL STREAM AREA(ACRES) =     13.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =     71.56

****************************************************************************
FLOW PROCESS FROM NODE    680.00 TO NODE    681.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   390.00
UPSTREAM ELEVATION(FEET) =    524.00
DOWNSTREAM ELEVATION(FEET) =    518.00
ELEVATION DIFFERENCE(FEET) =      6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.900
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    65.38
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      13.75
TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =     13.75

****************************************************************************
FLOW PROCESS FROM NODE    681.00 TO NODE    519.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.60
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      13.75
PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   3.08
LONGEST FLOWPATH FROM NODE    680.00 TO NODE    519.00 =     452.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    519.00 TO NODE    519.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.08
RAINFALL INTENSITY(INCH/HR) =   7.90
TOTAL STREAM AREA(ACRES) =      2.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.75

****************************************************************************
FLOW PROCESS FROM NODE    610.00 TO NODE    611.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   316.00
UPSTREAM ELEVATION(FEET) =    524.00
DOWNSTREAM ELEVATION(FEET) =    518.00
ELEVATION DIFFERENCE(FEET) =      6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.777
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    68.99
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
```

```
  SUBAREA RUNOFF(CFS) =      11.00
  TOTAL AREA(ACRES) =       1.60   TOTAL RUNOFF(CFS) =      11.00

****************************************************************************
  FLOW PROCESS FROM NODE     611.00 TO NODE     519.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =     75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.38
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       11.00
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   3.01
  LONGEST FLOWPATH FROM NODE     610.00 TO NODE     519.00 =     391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     519.00 TO NODE     519.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.01
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      11.00

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        71.56     4.97       7.904        13.00
     2        13.75     3.08       7.904         2.00
     3        11.00     3.01       7.904         1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        95.98     3.01       7.904
     2        96.31     3.08       7.904
     3        96.31     4.97       7.904

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      96.31   Tc(MIN.) =    4.97
  TOTAL AREA(ACRES) =       16.6
  LONGEST FLOWPATH FROM NODE     413.00 TO NODE     519.00 =    1715.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     519.00 TO NODE     525.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =     60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  38.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.98
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       96.31
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   5.08
  LONGEST FLOWPATH FROM NODE     413.00 TO NODE     525.00 =    1775.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     525.00 TO NODE     525.00 IS CODE =  10
----------------------------------------------------------------------------
```

```
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE       0.00 TO NODE       0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     900.00 TO NODE     900.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =     50.00
  UPSTREAM ELEVATION(FEET) =     531.00
  DOWNSTREAM ELEVATION(FEET) =     528.00
  ELEVATION DIFFERENCE(FEET) =       3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.611
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.69
  TOTAL AREA(ACRES) =       0.10   TOTAL RUNOFF(CFS) =       0.69

****************************************************************************
  FLOW PROCESS FROM NODE     900.50 TO NODE     901.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   270.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 15.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.010
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.010

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.63
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.37
    HALFSTREET FLOOD WIDTH(FEET) =   15.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.74
  STREET FLOW TRAVEL TIME(MIN.) =   2.23   Tc(MIN.) =   3.84
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     2.60      SUBAREA RUNOFF(CFS) =   17.88
  TOTAL AREA(ACRES) =        2.7        PEAK FLOW RATE(CFS) =      18.57

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.00
  FLOW VELOCITY(FEET/SEC.) =  2.63   DEPTH*VELOCITY(FT*FT/SEC.) =   1.16
  LONGEST FLOWPATH FROM NODE     900.00 TO NODE     901.00 =     320.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     901.00 TO NODE     936.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   293.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.05
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.57
  PIPE TRAVEL TIME(MIN.) =   0.81    Tc(MIN.) =   4.64
  LONGEST FLOWPATH FROM NODE    900.00 TO NODE    936.00 =     613.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    936.00 TO NODE    936.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.64
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     2.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.57

****************************************************************************
  FLOW PROCESS FROM NODE    451.00 TO NODE    452.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    544.00
  DOWNSTREAM ELEVATION(FEET) =    543.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.69
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.69

****************************************************************************
  FLOW PROCESS FROM NODE    452.00 TO NODE    453.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1410.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.92
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.43
    HALFSTREET FLOOD WIDTH(FEET) =   15.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.87
  STREET FLOW TRAVEL TIME(MIN.) =  11.66   Tc(MIN.) =  13.71
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.124
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     2.20      SUBAREA RUNOFF(CFS) =     7.89
  TOTAL AREA(ACRES) =        2.3        PEAK FLOW RATE(CFS) =       8.25

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.68
  FLOW VELOCITY(FEET/SEC.) =  2.29   DEPTH*VELOCITY(FT*FT/SEC.) =   1.14
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1410.0 FT WITH ELEVATION-DROP =   7.1 FT, IS   15.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    453.00
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    453.00 =    1449.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    453.00 TO NODE    936.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.99
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.25
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =  13.77
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    936.00 =    1468.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    936.00 TO NODE    936.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.77
  RAINFALL INTENSITY(INCH/HR) =   4.11
  TOTAL STREAM AREA(ACRES) =     2.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.25

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       18.57     4.64        7.904         2.70
      2        8.25    13.77        4.112         2.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       21.35     4.64        7.904
      2       17.91    13.77        4.112

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      21.35   Tc(MIN.) =    4.64
  TOTAL AREA(ACRES) =        5.0
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    936.00 =    1468.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    936.00 TO NODE    936.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    454.00 TO NODE    455.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
```

```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    534.00
  DOWNSTREAM ELEVATION(FEET) =    533.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    455.00 TO NODE    456.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   705.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.70
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.75
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.64
  STREET FLOW TRAVEL TIME(MIN.) =   6.71   Tc(MIN.) =   8.77
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.503
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.79      SUBAREA RUNOFF(CFS) =    3.78
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       4.31

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.43
  FLOW VELOCITY(FEET/SEC.) =  1.96   DEPTH*VELOCITY(FT*FT/SEC.) =   0.81
  LONGEST FLOWPATH FROM NODE    454.00 TO NODE    456.00 =     744.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    456.00 TO NODE    456.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.77
  RAINFALL INTENSITY(INCH/HR) =   5.50
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.31

****************************************************************************
  FLOW PROCESS FROM NODE    902.00 TO NODE    902.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    532.00
  DOWNSTREAM ELEVATION(FEET) =    530.00
  ELEVATION DIFFERENCE(FEET) =      2.00
```

```
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.844
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.69
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.69

****************************************************************************
  FLOW PROCESS FROM NODE    902.50 TO NODE    903.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   400.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 15.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.010
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.010

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.39
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   15.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.57
  STREET FLOW TRAVEL TIME(MIN.) =   3.90   Tc(MIN.) =   5.74
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.230
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.79      SUBAREA RUNOFF(CFS) =   11.26
  TOTAL AREA(ACRES) =        1.9        PEAK FLOW RATE(CFS) =      11.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  15.00
  FLOW VELOCITY(FEET/SEC.) =  2.19   DEPTH*VELOCITY(FT*FT/SEC.) =   0.85
  LONGEST FLOWPATH FROM NODE    902.00 TO NODE    903.00 =     450.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    903.00 TO NODE    456.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.47
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.89
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   5.80
  LONGEST FLOWPATH FROM NODE    902.00 TO NODE    456.00 =     469.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    456.00 TO NODE    456.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.80
  RAINFALL INTENSITY(INCH/HR) =   7.18
  TOTAL STREAM AREA(ACRES) =     1.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.89
```

```
** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1        4.31     8.77       5.503         0.90
    2       11.89     5.80       7.184         1.89

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       14.74     5.80       7.184
    2       13.42     8.77       5.503

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      14.74   Tc(MIN.) =     5.80
TOTAL AREA(ACRES) =         2.8
LONGEST FLOWPATH FROM NODE    454.00 TO NODE    456.00 =     744.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    456.00 TO NODE    936.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.65
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      14.74
PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   5.98
LONGEST FLOWPATH FROM NODE    454.00 TO NODE    936.00 =     804.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    936.00 TO NODE    936.00 IS CODE =  11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       14.74     5.98       7.045         2.79
LONGEST FLOWPATH FROM NODE `  454.00 TO NODE    936.00 =     804.00 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       21.35     4.64       7.904         5.00
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    936.00 =    1468.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       32.80     4.64       7.904
    2       33.77     5.98       7.045

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      33.77   Tc(MIN.) =     5.98
TOTAL AREA(ACRES) =         7.8

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
>>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    936.00 TO NODE    937.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    51.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.97
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      33.77
PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   6.10
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    937.00 =    1519.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    937.00 TO NODE    937.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   6.10
RAINFALL INTENSITY(INCH/HR) =   6.95
TOTAL STREAM AREA(ACRES) =      7.79
PEAK FLOW RATE(CFS) AT CONFLUENCE =     33.77

****************************************************************************
FLOW PROCESS FROM NODE    904.00 TO NODE    905.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   420.00
UPSTREAM ELEVATION(FEET) =    532.00
DOWNSTREAM ELEVATION(FEET) =    528.00
ELEVATION DIFFERENCE(FEET) =      4.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.233
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    59.05
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      15.13
TOTAL AREA(ACRES) =      2.20   TOTAL RUNOFF(CFS) =     15.13

****************************************************************************
FLOW PROCESS FROM NODE    905.00 TO NODE    937.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  19.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.65
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      15.13
PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   3.38
LONGEST FLOWPATH FROM NODE    904.00 TO NODE    937.00 =     470.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    937.00 TO NODE    937.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
```

```
TIME OF CONCENTRATION(MIN.) =   3.38
RAINFALL INTENSITY(INCH/HR) =   7.90
TOTAL STREAM AREA(ACRES) =      2.20
PEAK FLOW RATE(CFS) AT CONFLUENCE =      15.13

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       33.77     6.10        6.954         7.79
    2       15.13     3.38        7.904         2.20

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       33.85     3.38       7.904
    2       47.08     6.10       6.954

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      47.08   Tc(MIN.) =     6.10
TOTAL AREA(ACRES) =        10.0
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    937.00 =    1519.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    937.00 TO NODE    940.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   185.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.67
ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      47.08
PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =   6.50
LONGEST FLOWPATH FROM NODE    451.00 TO NODE    940.00 =    1704.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    940.00 TO NODE    940.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
>>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    460.00 TO NODE    461.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    538.00
DOWNSTREAM ELEVATION(FEET) =    537.22
ELEVATION DIFFERENCE(FEET) =      0.78
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.76
TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
```

```
FLOW PROCESS FROM NODE    461.00 TO NODE    462.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =   713.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.43
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.35
  HALFSTREET FLOOD WIDTH(FEET) =   11.42
  AVERAGE FLOW VELOCITY(FEET/SEC.) =     1.71
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.61
STREET FLOW TRAVEL TIME(MIN.) =   6.96   Tc(MIN.) =   9.02
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.404
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =    0.69      SUBAREA RUNOFF(CFS) =    3.24
TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       3.76

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.69
FLOW VELOCITY(FEET/SEC.) =  1.89   DEPTH*VELOCITY(FT*FT/SEC.) =   0.75
LONGEST FLOWPATH FROM NODE    460.00 TO NODE    462.00 =     752.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    462.00 TO NODE    462.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   9.02
RAINFALL INTENSITY(INCH/HR) =   5.40
TOTAL STREAM AREA(ACRES) =     0.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.76

****************************************************************************
FLOW PROCESS FROM NODE    906.00 TO NODE    907.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   450.00
UPSTREAM ELEVATION(FEET) =    532.00
DOWNSTREAM ELEVATION(FEET) =    528.00
ELEVATION DIFFERENCE(FEET) =      4.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.273
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    57.78
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =     14.44
TOTAL AREA(ACRES) =      2.10   TOTAL RUNOFF(CFS) =     14.44

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    907.00 TO NODE    462.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.63
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       14.44
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   3.38
  LONGEST FLOWPATH FROM NODE    906.00 TO NODE    462.00 =     485.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    462.00 TO NODE    462.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.38
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      2.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.44

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.76     9.02        5.404         0.80
     2       14.44     3.38        7.904         2.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       15.85     3.38       7.904
     2       13.63     9.02       5.404

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      15.85   Tc(MIN.) =    3.38
  TOTAL AREA(ACRES) =        2.9
  LONGEST FLOWPATH FROM NODE    460.00 TO NODE    462.00 =     752.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    462.00 TO NODE    938.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.88
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       15.85
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   3.43
  LONGEST FLOWPATH FROM NODE    460.00 TO NODE    938.00 =     770.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    938.00 TO NODE    938.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.43
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      2.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.85

****************************************************************************
  FLOW PROCESS FROM NODE    457.00 TO NODE    458.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    538.00
  DOWNSTREAM ELEVATION(FEET) =    537.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    458.00 TO NODE    459.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   740.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.66
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.63
  STREET FLOW TRAVEL TIME(MIN.) =   7.09   Tc(MIN.) =   9.14
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.357
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.79      SUBAREA RUNOFF(CFS) =    3.68
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       4.19

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.28
  FLOW VELOCITY(FEET/SEC.) =  1.94   DEPTH*VELOCITY(FT*FT/SEC.) =   0.80
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    459.00 =     779.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    459.00 TO NODE    938.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.25
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.19
```

```
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   9.39
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    938.00 =     844.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    938.00 TO NODE    938.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.39
  RAINFALL INTENSITY(INCH/HR) =   5.26
  TOTAL STREAM AREA(ACRES) =      0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.19

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       15.85     3.43        7.904         2.90
      2        4.19     9.39        5.263         0.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       17.38     3.43        7.904
      2       14.75     9.39        5.263

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      17.38   Tc(MIN.) =    3.43
  TOTAL AREA(ACRES) =         3.8
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    938.00 =     844.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    938.00 TO NODE    940.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    88.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.98
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.38
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   3.67
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    940.00 =     932.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    940.00 TO NODE    940.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       17.38     3.67        7.904         3.80
  LONGEST FLOWPATH FROM NODE    457.00 TO NODE    940.00 =     932.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       47.08     6.50        6.674         9.99
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    940.00 =    1704.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
```

```
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       43.98     3.67        7.904
      2       61.75     6.50        6.674

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      61.75   Tc(MIN.) =    6.50
  TOTAL AREA(ACRES) =        13.8

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    940.00 TO NODE    691.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   615.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.14
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      61.75
  PIPE TRAVEL TIME(MIN.) =   1.26    Tc(MIN.) =   7.76
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    691.50 =    2319.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    691.50 TO NODE    691.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.76
  RAINFALL INTENSITY(INCH/HR) =   5.95
  TOTAL STREAM AREA(ACRES) =    13.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     61.75

****************************************************************************
  FLOW PROCESS FROM NODE    690.00 TO NODE    691.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   451.00
  UPSTREAM ELEVATION(FEET) =    528.00
  DOWNSTREAM ELEVATION(FEET) =    524.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.274
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.74
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     19.25
  TOTAL AREA(ACRES) =      2.80   TOTAL RUNOFF(CFS) =     19.25

****************************************************************************
  FLOW PROCESS FROM NODE    691.00 TO NODE    691.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    61.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.08
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      19.25
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   3.44
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    691.50 =     512.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    691.50 TO NODE    691.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.44
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     2.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.25

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        61.75     7.76        5.954        13.79
     2        19.25     3.44        7.904         2.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        46.65     3.44       7.904
     2        76.26     7.76       5.954

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      76.26   Tc(MIN.) =    7.76
  TOTAL AREA(ACRES) =       16.6
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    691.50 =    2319.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    691.50 TO NODE    525.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  33.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.56
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      76.26
  PIPE TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =   8.23
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.50 =    2559.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.50 TO NODE    525.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.23
  RAINFALL INTENSITY(INCH/HR) =   5.73
  TOTAL STREAM AREA(ACRES) =     16.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     76.26

****************************************************************************
  FLOW PROCESS FROM NODE    419.00 TO NODE    420.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    420.00 TO NODE    421.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   800.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.13
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.67
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.81
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.69
  STREET FLOW TRAVEL TIME(MIN.) =   7.35   Tc(MIN.) =   9.40
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.259
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    4.58
  TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       5.08

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.38
  FLOW VELOCITY(FEET/SEC.) =  2.05   DEPTH*VELOCITY(FT*FT/SEC.) =   0.89
  LONGEST FLOWPATH FROM NODE    419.00 TO NODE    421.00 =     839.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    421.00 TO NODE    525.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.43
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.08
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   9.46
  LONGEST FLOWPATH FROM NODE    419.00 TO NODE    525.50 =     854.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.50 TO NODE    525.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
```

```
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.46
  RAINFALL INTENSITY(INCH/HR) =   5.24
  TOTAL STREAM AREA(ACRES) =     1.11
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.08

****************************************************************************
  FLOW PROCESS FROM NODE    422.00 TO NODE    423.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =     520.00
  DOWNSTREAM ELEVATION(FEET) =    519.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    423.00 TO NODE    424.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   320.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.77
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.37
    HALFSTREET FLOOD WIDTH(FEET) =   12.08
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.75
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.64
  STREET FLOW TRAVEL TIME(MIN.) =   3.04   Tc(MIN.) =   5.10
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.808
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.59      SUBAREA RUNOFF(CFS) =    4.01
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       4.76

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.01
  FLOW VELOCITY(FEET/SEC.) =  2.00   DEPTH*VELOCITY(FT*FT/SEC.) =   0.86
  LONGEST FLOWPATH FROM NODE    422.00 TO NODE    424.00 =     359.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    424.00 TO NODE    525.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.37
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.76
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   5.34
  LONGEST FLOWPATH FROM NODE    422.00 TO NODE    525.50 =     424.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.50 TO NODE    525.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.34
  RAINFALL INTENSITY(INCH/HR) =   7.57
  TOTAL STREAM AREA(ACRES) =     0.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.76

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       76.26     8.23        5.733         16.59
     2        5.08     9.46        5.239          1.11
     3        4.76     5.34        7.573          0.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       65.35     5.34       7.573
     2       84.27     8.23       5.733
     3       78.05     9.46       5.239

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      84.27   Tc(MIN.) =    8.23
  TOTAL AREA(ACRES) =        18.4
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.50 =    2559.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.50 TO NODE    525.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   185.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  34.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.84
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      84.27
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =   8.57
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.00 =    2744.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    525.00 TO NODE    525.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       84.27     8.57       5.582         18.40
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    525.00 =    2744.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
```

```
     1       96.31     5.08        7.819        16.60
  LONGEST FLOWPATH FROM NODE    413.00 TO NODE    525.00 =    1775.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)    (INCH/HOUR)
     1      146.28      5.08        7.819
     2      153.02      8.57        5.582

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     153.02   Tc(MIN.) =    8.57
  TOTAL AREA(ACRES) =       35.0

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
======================================================================

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    525.00 TO NODE    526.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   310.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  45.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.07
  ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     153.02
  PIPE TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =   9.09
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    526.00 =    3054.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    526.00 TO NODE    526.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.09
  RAINFALL INTENSITY(INCH/HR) =   5.38
  TOTAL STREAM AREA(ACRES) =    35.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    153.02

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    710.00 TO NODE    711.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   468.00
  UPSTREAM ELEVATION(FEET) =    518.00
  DOWNSTREAM ELEVATION(FEET) =    510.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.836
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.09
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     16.50
  TOTAL AREA(ACRES) =      2.40   TOTAL RUNOFF(CFS) =     16.50

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    711.00 TO NODE    526.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    77.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.93
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.50
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   3.05
  LONGEST FLOWPATH FROM NODE    710.00 TO NODE    526.00 =     545.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    526.00 TO NODE    526.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.05
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.50

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       153.02     9.09       5.376        35.00
     2        16.50     3.05       7.904         2.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        67.91     3.05       7.904
     2       164.25     9.09       5.376

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     164.25   Tc(MIN.) =    9.09
  TOTAL AREA(ACRES) =       37.4
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    526.00 =    3054.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    526.00 TO NODE    527.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  45.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.37
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     164.25
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   9.19
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    527.00 =    3117.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    527.00 TO NODE    527.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.19
  RAINFALL INTENSITY(INCH/HR) =   5.34
  TOTAL STREAM AREA(ACRES) =    37.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    164.25
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     590.00 TO NODE     591.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   347.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    514.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.830
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.29
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      13.75
  TOTAL AREA(ACRES) =       2.00   TOTAL RUNOFF(CFS) =      13.75

****************************************************************************
  FLOW PROCESS FROM NODE     591.00 TO NODE     527.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.60
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       13.75
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   3.08
  LONGEST FLOWPATH FROM NODE     590.00 TO NODE     527.00 =     432.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     527.00 TO NODE     527.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.08
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      13.75

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
      1       164.25      9.19        5.338         37.40
      2        13.75      3.08        7.904          2.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1       124.68      3.08        7.904
      2       173.54      9.19        5.338

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      173.54   Tc(MIN.) =     9.19
  TOTAL AREA(ACRES) =        39.4
  LONGEST FLOWPATH FROM NODE     451.00 TO NODE     527.00 =    3117.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     527.00 TO NODE     528.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   147.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  47.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.41
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      173.54
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   9.42
  LONGEST FLOWPATH FROM NODE     451.00 TO NODE     528.00 =    3264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     528.00 TO NODE     528.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.42
  RAINFALL INTENSITY(INCH/HR) =   5.25
  TOTAL STREAM AREA(ACRES) =     39.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     173.54

****************************************************************************
  FLOW PROCESS FROM NODE     720.00 TO NODE     721.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   304.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    506.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.756
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    69.74
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       9.63
  TOTAL AREA(ACRES) =       1.40   TOTAL RUNOFF(CFS) =       9.63

****************************************************************************
  FLOW PROCESS FROM NODE     721.00 TO NODE     528.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.12
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        9.63
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   2.95
  LONGEST FLOWPATH FROM NODE     720.00 TO NODE     528.00 =     364.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     528.00 TO NODE     528.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.95
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.63

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1      173.54     9.42        5.252        39.40
      2        9.63     2.95        7.904         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      124.93     2.95       7.904
      2      179.93     9.42       5.252

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     179.93   Tc(MIN.) =    9.42
  TOTAL AREA(ACRES) =       40.8
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    528.00 =    3264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    529.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  63.0 INCH PIPE IS  45.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.66
  ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     179.93
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   9.54
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    529.00 =    3339.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    529.00 TO NODE    529.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.54
  RAINFALL INTENSITY(INCH/HR) =   5.21
  TOTAL STREAM AREA(ACRES) =    40.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    179.93

****************************************************************************
  FLOW PROCESS FROM NODE    580.00 TO NODE    581.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   335.00
  UPSTREAM ELEVATION(FEET) =    516.00
  DOWNSTREAM ELEVATION(FEET) =    510.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.809
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.91
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      11.00
  TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =     11.00

****************************************************************************
  FLOW PROCESS FROM NODE    581.00 TO NODE    529.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.38
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.00
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   3.06
  LONGEST FLOWPATH FROM NODE    580.00 TO NODE    529.00 =     417.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    529.00 TO NODE    529.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.06
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.00

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1      179.93     9.54        5.210        40.80
      2       11.00     3.06        7.904         1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      129.60     3.06       7.904
      2      187.19     9.54       5.210

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     187.19   Tc(MIN.) =    9.54
  TOTAL AREA(ACRES) =       42.4
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    529.00 =    3339.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    529.00 TO NODE    534.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   186.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  63.0 INCH PIPE IS  47.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.71
  ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     187.19
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   9.83
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    534.00 =    3525.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.83
  RAINFALL INTENSITY(INCH/HR) =   5.11
  TOTAL STREAM AREA(ACRES) =    42.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    187.19

****************************************************************************
  FLOW PROCESS FROM NODE    425.00 TO NODE    426.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    426.00 TO NODE    427.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1375.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.74
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.90
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.76
  STREET FLOW TRAVEL TIME(MIN.) =  12.08   Tc(MIN.) =  14.13
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.044
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.59      SUBAREA RUNOFF(CFS) =    5.59
  TOTAL AREA(ACRES) =        1.7        PEAK FLOW RATE(CFS) =       5.98

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  16.40
  FLOW VELOCITY(FEET/SEC.) =  2.13   DEPTH*VELOCITY(FT*FT/SEC.) =   0.97
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1375.0 FT WITH ELEVATION-DROP =   6.9 FT, IS   10.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    427.00
  LONGEST FLOWPATH FROM NODE    425.00 TO NODE    427.00 =    1414.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    427.00 TO NODE    534.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.57
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.98
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  14.26
  LONGEST FLOWPATH FROM NODE    425.00 TO NODE    534.00 =    1449.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.26
  RAINFALL INTENSITY(INCH/HR) =   4.02
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.98

****************************************************************************
  FLOW PROCESS FROM NODE    428.00 TO NODE    429.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    516.00
  DOWNSTREAM ELEVATION(FEET) =    515.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    429.00 TO NODE    430.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   742.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.89
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   10.25
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.54
  STREET FLOW TRAVEL TIME(MIN.) =   7.66   Tc(MIN.) =   9.71
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.152
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.49      SUBAREA RUNOFF(CFS) =    2.20
  TOTAL AREA(ACRES) =        0.6        PEAK FLOW RATE(CFS) =       2.69
```

```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.94
  FLOW VELOCITY(FEET/SEC.) =  1.74   DEPTH*VELOCITY(FT*FT/SEC.) =   0.64
  LONGEST FLOWPATH FROM NODE    428.00 TO NODE    430.00 =     781.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    430.00 TO NODE    534.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    17.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.79
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.69
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   9.78
  LONGEST FLOWPATH FROM NODE    428.00 TO NODE    534.00 =     798.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    534.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.78
  RAINFALL INTENSITY(INCH/HR) =   5.13
  TOTAL STREAM AREA(ACRES) =     0.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.69

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       187.19     9.83        5.110        42.40
     2         5.98    14.26        4.021         1.70
     3         2.69     9.78        5.126         0.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       193.39     9.78        5.126
     2       193.99     9.83        5.110
     3       155.38    14.26        4.021

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     193.99   Tc(MIN.) =    9.83
  TOTAL AREA(ACRES) =       44.7
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    534.00 =    3525.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    534.00 TO NODE    535.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    32.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  63.0 INCH PIPE IS  49.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.75
  ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     193.99
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   9.88
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    535.00 =    3557.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    535.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.88
  RAINFALL INTENSITY(INCH/HR) =   5.09
  TOTAL STREAM AREA(ACRES) =    44.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    193.99

****************************************************************************
  FLOW PROCESS FROM NODE    730.00 TO NODE    731.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   354.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    502.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.841
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.95
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      13.07
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     13.07

****************************************************************************
  FLOW PROCESS FROM NODE    731.00 TO NODE    535.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    61.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.56
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.07
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   3.02
  LONGEST FLOWPATH FROM NODE    730.00 TO NODE    535.00 =     415.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    535.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.02
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.07

****************************************************************************
  FLOW PROCESS FROM NODE    570.00 TO NODE    571.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   220.00
```

```
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    506.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.605
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    77.27
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     11.00
  TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =     11.00

****************************************************************************
  FLOW PROCESS FROM NODE    571.00 TO NODE    535.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.38
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.00
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   2.84
  LONGEST FLOWPATH FROM NODE    570.00 TO NODE    535.00 =     295.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    535.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.84
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.00

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1      193.99     9.88        5.094        44.70
      2       13.07     3.02        7.904         1.90
      3       11.00     2.84        7.904         1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      148.28     2.84       7.904
      2      149.09     3.02       7.904
      3      209.50     9.88       5.094

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     209.50   Tc(MIN.) =    9.88
  TOTAL AREA(ACRES) =       48.2
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    535.00 =    3557.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    536.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  66.0 INCH PIPE IS  49.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.03
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     209.50
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =  10.04
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    536.00 =    3662.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    536.00 TO NODE    512.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  66.0 INCH PIPE IS  49.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.03
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     209.50
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =  10.49
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    512.00 =    3962.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    512.00 TO NODE    512.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    740.00 TO NODE    741.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   375.00
  UPSTREAM ELEVATION(FEET) =    507.00
  DOWNSTREAM ELEVATION(FEET) =    505.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.634
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.67
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     13.07
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     13.07

****************************************************************************
  FLOW PROCESS FROM NODE    741.00 TO NODE    751.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   280.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.56
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.07
  PIPE TRAVEL TIME(MIN.) =   0.84    Tc(MIN.) =   4.47
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    751.50 =     655.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    741.50 TO NODE    751.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.47
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.07

****************************************************************************
  FLOW PROCESS FROM NODE    750.00 TO NODE    751.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
  UPSTREAM ELEVATION(FEET) =    507.00
  DOWNSTREAM ELEVATION(FEET) =    504.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.277
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.65
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     11.69
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =     11.69

****************************************************************************
  FLOW PROCESS FROM NODE    751.00 TO NODE    751.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.44
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        11.69
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   3.31
  LONGEST FLOWPATH FROM NODE    750.00 TO NODE    751.50 =     352.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    751.50 TO NODE    751.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.31
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.69

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       13.07     4.47        7.904          1.90
     2       11.69     3.31        7.904          1.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       21.37     3.31        7.904
     2       24.76     4.47        7.904

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.76   Tc(MIN.) =    4.47
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    751.50 =     655.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    751.50 TO NODE    512.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.49
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       24.76
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =   4.50
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    512.00 =     667.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    512.00 TO NODE    512.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       24.76     4.50        7.904          3.60
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    512.00 =     667.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      209.50    10.49        4.900         48.20
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    512.00 =    3962.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      114.69     4.50        7.904
     2      224.85    10.49        4.900

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     224.85   Tc(MIN.) =   10.49
  TOTAL AREA(ACRES) =       51.8

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    512.00 TO NODE    513.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  66.0 INCH PIPE IS  52.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.10
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     224.85
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =  10.55
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    513.00 =    4002.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    513.00 TO NODE    513.00 IS CODE =  11
```

```
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       224.85    10.55       4.882       51.80
  LONGEST FLOWPATH FROM NODE    451.00 TO NODE    513.00 =    4002.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        88.90    25.37       2.773       34.51
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    513.00 =    5481.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      261.83      10.55       4.882
     2      216.61      25.37       2.773

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     261.83   Tc(MIN.) =   10.55
  TOTAL AREA(ACRES) =       86.3

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    513.00 TO NODE    998.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    500.00  DOWNSTREAM(FEET) =    498.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   300.00   CHANNEL SLOPE =  0.0067
  CHANNEL FLOW THRU SUBAREA(CFS) =     261.83
  FLOW VELOCITY(FEET/SEC) =   5.21 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.96   Tc(MIN.) =  11.51
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    998.00 =    5781.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    998.00 TO NODE    998.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.616
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8421
  SUBAREA AREA(ACRES) =     4.90   SUBAREA RUNOFF(CFS) =     7.92
  TOTAL AREA(ACRES) =       91.2   TOTAL RUNOFF(CFS) =     354.50
  TC(MIN.) =  11.51

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    760.00 TO NODE    761.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   302.00
  UPSTREAM ELEVATION(FEET) =    522.00
  DOWNSTREAM ELEVATION(FEET) =    517.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.855
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.56
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      9.63
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      9.63

****************************************************************************
  FLOW PROCESS FROM NODE    761.00 TO NODE    614.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   260.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.12
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.63
  PIPE TRAVEL TIME(MIN.) =   0.85    Tc(MIN.) =   3.70
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    614.00 =     562.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    614.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.70
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.63

****************************************************************************
  FLOW PROCESS FROM NODE    780.00 TO NODE    781.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    516.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.973
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.75
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     11.69
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =     11.69

****************************************************************************
  FLOW PROCESS FROM NODE    781.00 TO NODE    614.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.44
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.69
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   3.28
  LONGEST FLOWPATH FROM NODE    780.00 TO NODE    614.00 =     391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    614.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.28
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.69

****************************************************************************
  FLOW PROCESS FROM NODE    770.00 TO NODE    771.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   344.00
  UPSTREAM ELEVATION(FEET) =    519.00
  DOWNSTREAM ELEVATION(FEET) =    512.00
  ELEVATION DIFFERENCE(FEET) =      7.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.740
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.35
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.38
  TOTAL AREA(ACRES) =      1.80   TOTAL RUNOFF(CFS) =     12.38

****************************************************************************
  FLOW PROCESS FROM NODE    771.00 TO NODE    614.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.51
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.38
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   2.98
  LONGEST FLOWPATH FROM NODE    770.00 TO NODE    614.00 =     424.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    614.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.98
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.38

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1         9.63     3.70        7.904         1.40
     2        11.69     3.28        7.904         1.70
     3        12.38     2.98        7.904         1.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        30.77     2.98       7.904
     2        32.60     3.28       7.904
     3        33.70     3.70       7.904

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      33.70   Tc(MIN.) =    3.70
  TOTAL AREA(ACRES) =        4.9
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    614.00 =     562.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    614.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.97
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      33.70
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   4.06
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    615.00 =     712.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.06
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     4.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     33.70

****************************************************************************
  FLOW PROCESS FROM NODE    810.00 TO NODE    811.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   287.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    508.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.964
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.94
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.56
  TOTAL AREA(ACRES) =      1.10   TOTAL RUNOFF(CFS) =      7.56
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    811.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.90
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        7.56
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   3.24
  LONGEST FLOWPATH FROM NODE    810.00 TO NODE    615.00 =     369.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.24
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      1.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.56

****************************************************************************
  FLOW PROCESS FROM NODE    790.00 TO NODE    791.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   230.00
  UPSTREAM ELEVATION(FEET) =    514.00
  DOWNSTREAM ELEVATION(FEET) =    510.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.826
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.39
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       6.19
  TOTAL AREA(ACRES) =      0.90   TOTAL RUNOFF(CFS) =      6.19

****************************************************************************
  FLOW PROCESS FROM NODE    791.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.60
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        6.19
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   3.06
  LONGEST FLOWPATH FROM NODE    790.00 TO NODE    615.00 =     295.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.06
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.19

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       33.70     4.06        7.904          4.90
     2        7.56     3.24        7.904          1.10
     3        6.19     3.06        7.904          0.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       47.03     3.06       7.904
     2       47.45     3.24       7.904
     3       47.45     4.06       7.904

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      47.45   Tc(MIN.) =    4.06
  TOTAL AREA(ACRES) =        6.9
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    615.00 =     712.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    616.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   210.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.68
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      47.45
  PIPE TRAVEL TIME(MIN.) =   0.46    Tc(MIN.) =   4.52
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    616.00 =     922.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.00 TO NODE    616.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.52
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      6.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     47.45

****************************************************************************
  FLOW PROCESS FROM NODE    830.00 TO NODE    831.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   317.00
  UPSTREAM ELEVATION(FEET) =    510.00
  DOWNSTREAM ELEVATION(FEET) =    504.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.779
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    68.93
           (Reference: Table 3-1B of Hydrology Manual)
```

```
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      9.63
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      9.63

****************************************************************************
  FLOW PROCESS FROM NODE    831.00 TO NODE    616.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.12
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.63
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   3.06
  LONGEST FLOWPATH FROM NODE    830.00 TO NODE    616.00 =     402.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.00 TO NODE    616.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.06
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.63

****************************************************************************
  FLOW PROCESS FROM NODE    820.00 TO NODE    821.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   298.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    506.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.746
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.13
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      9.63
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      9.63

****************************************************************************
  FLOW PROCESS FROM NODE    821.00 TO NODE    616.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.12
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.63
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   2.96
  LONGEST FLOWPATH FROM NODE    820.00 TO NODE    616.00 =     363.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.00 TO NODE    616.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   2.96
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.63

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       47.45     4.52        7.904         6.90
      2        9.63     3.06        7.904         1.40
      3        9.63     2.96        7.904         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       66.39     2.96       7.904
      2       66.70     3.06       7.904
      3       66.70     4.52       7.904

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      66.70   Tc(MIN.) =    4.52
  TOTAL AREA(ACRES) =        9.7
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    616.00 =     922.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.00 TO NODE    616.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   121.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.21
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      66.70
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   4.76
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    616.50 =    1043.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.50 TO NODE    616.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.76
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     9.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     66.70

****************************************************************************
  FLOW PROCESS FROM NODE    437.00 TO NODE    438.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
```

```
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.69
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.69

****************************************************************************
  FLOW PROCESS FROM NODE    438.00 TO NODE    439.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1360.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.29
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   12.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.83
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.71
  STREET FLOW TRAVEL TIME(MIN.) =  12.38   Tc(MIN.) =  14.43
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.990
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.40      SUBAREA RUNOFF(CFS) =    4.86
  TOTAL AREA(ACRES) =        1.5        PEAK FLOW RATE(CFS) =       5.21

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.53
  FLOW VELOCITY(FEET/SEC.) =  2.06   DEPTH*VELOCITY(FT*FT/SEC.) =   0.90
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1360.0 FT WITH ELEVATION-DROP =   6.8 FT, IS    9.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    439.00
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    439.00 =    1399.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    439.00 TO NODE    616.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.21
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  14.56
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    616.50 =    1435.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.50 TO NODE    616.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.56
  RAINFALL INTENSITY(INCH/HR) =   3.97
  TOTAL STREAM AREA(ACRES) =      1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.21

****************************************************************************
  FLOW PROCESS FROM NODE    440.00 TO NODE    441.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =     518.00
  DOWNSTREAM ELEVATION(FEET) =    517.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    441.00 TO NODE    442.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =   886.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.25
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.41
    HALFSTREET FLOOD WIDTH(FEET) =   14.35
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.81
  STREET FLOW TRAVEL TIME(MIN.) =   7.57   Tc(MIN.) =   9.62
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.183
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    1.49      SUBAREA RUNOFF(CFS) =    6.72
  TOTAL AREA(ACRES) =        1.6        PEAK FLOW RATE(CFS) =       7.21

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.72
  FLOW VELOCITY(FEET/SEC.) =  2.21   DEPTH*VELOCITY(FT*FT/SEC.) =   1.06
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  886.0 FT WITH ELEVATION-DROP =   4.4 FT, IS   10.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    442.00
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    442.00 =     925.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    442.00 TO NODE    616.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    16.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.7 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.67
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        7.21
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   9.68
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    616.50 =     941.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.50 TO NODE    616.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.68
  RAINFALL INTENSITY(INCH/HR) =   5.16
  TOTAL STREAM AREA(ACRES) =      1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.21

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        66.70     4.76       7.904         9.70
     2         5.21    14.56       3.967         1.50
     3         7.21     9.68       5.163         1.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        71.96     4.76       7.904
     2        54.25     9.68       5.163
     3        44.22    14.56       3.967

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      71.96   Tc(MIN.) =    4.76
  TOTAL AREA(ACRES) =        12.8
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    616.50 =    1435.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    616.50 TO NODE    617.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   168.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.49
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      71.96
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   5.09
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    617.00 =    1603.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    617.00 TO NODE    617.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.09
  RAINFALL INTENSITY(INCH/HR) =   7.81
  TOTAL STREAM AREA(ACRES) =    12.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     71.96

****************************************************************************
  FLOW PROCESS FROM NODE    840.00 TO NODE    841.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   355.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    502.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.843
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    66.90
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     13.07
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =     13.07

****************************************************************************
  FLOW PROCESS FROM NODE    841.00 TO NODE    617.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.56
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.07
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   3.02
  LONGEST FLOWPATH FROM NODE    840.00 TO NODE    617.00 =     415.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    617.00 TO NODE    617.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.02
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.07

****************************************************************************
  FLOW PROCESS FROM NODE    850.00 TO NODE    851.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   369.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    501.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.983
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.55
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     13.75
  TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =     13.75

****************************************************************************
  FLOW PROCESS FROM NODE    851.00 TO NODE    617.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.60
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.75
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   3.23
  LONGEST FLOWPATH FROM NODE    850.00 TO NODE    617.00 =     451.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    617.00 TO NODE    617.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.23
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.75

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       71.96     5.09        7.813        12.80
      2       13.07     3.02        7.904         1.90
      3       13.75     3.23        7.904         2.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       97.07     3.02       7.904
      2       97.94     3.23       7.904
      3       98.47     5.09       7.813

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      98.47   Tc(MIN.) =    5.09
  TOTAL AREA(ACRES) =       16.7
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    617.00 =    1603.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    617.00 TO NODE    618.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  39.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.98
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      98.47
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   5.22
  LONGEST FLOWPATH FROM NODE    437.00 TO NODE    618.00 =    1673.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.00 TO NODE    618.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    443.00 TO NODE    444.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =    524.00
  DOWNSTREAM ELEVATION(FEET) =    523.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.69
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.69

****************************************************************************
  FLOW PROCESS FROM NODE    444.00 TO NODE    445.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  1965.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.04
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.41
    HALFSTREET FLOOD WIDTH(FEET) =   14.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.93
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =     0.79
  STREET FLOW TRAVEL TIME(MIN.) =  16.98   Tc(MIN.) =  19.03
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.337
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    2.10      SUBAREA RUNOFF(CFS) =    6.10
  TOTAL AREA(ACRES) =        2.2        PEAK FLOW RATE(CFS) =       6.39

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  16.84
  FLOW VELOCITY(FEET/SEC.) =  2.16   DEPTH*VELOCITY(FT*FT/SEC.) =   1.00
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1965.0 FT WITH ELEVATION-DROP =   9.8 FT, IS   14.4 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    445.00
  LONGEST FLOWPATH FROM NODE    443.00 TO NODE    445.00 =    2004.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    445.00 TO NODE    618.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    23.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.62
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.39
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =  19.12
  LONGEST FLOWPATH FROM NODE    443.00 TO NODE    618.50 =    2027.00 FEET.

****************************************************************************
```

```
  FLOW PROCESS FROM NODE     618.50 TO NODE     618.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.12
  RAINFALL INTENSITY(INCH/HR) =   3.33
  TOTAL STREAM AREA(ACRES) =      2.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       6.39

****************************************************************************
  FLOW PROCESS FROM NODE     446.00 TO NODE     447.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
  UPSTREAM ELEVATION(FEET) =     526.00
  DOWNSTREAM ELEVATION(FEET) =    525.22
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       0.76
  TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.76

****************************************************************************
  FLOW PROCESS FROM NODE     447.00 TO NODE     448.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  STREET LENGTH(FEET) =  2195.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =        4.57
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.42
    HALFSTREET FLOOD WIDTH(FEET) =   14.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.98
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.84
  STREET FLOW TRAVEL TIME(MIN.) =  18.47   Tc(MIN.) =  20.52
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.179
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =     2.49      SUBAREA RUNOFF(CFS) =     6.89
  TOTAL AREA(ACRES) =        2.6        PEAK FLOW RATE(CFS) =       7.19

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.65
  FLOW VELOCITY(FEET/SEC.) =  2.22   DEPTH*VELOCITY(FT*FT/SEC.) =   1.07
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 2195.0 FT WITH ELEVATION-DROP =  11.0 FT, IS   17.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE    448.00
  LONGEST FLOWPATH FROM NODE     446.00 TO NODE     448.00 =    2234.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     448.00 TO NODE     618.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.67
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.19
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =  20.68
  LONGEST FLOWPATH FROM NODE     446.00 TO NODE     618.50 =    2278.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     618.50 TO NODE     618.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  20.68
  RAINFALL INTENSITY(INCH/HR) =   3.16
  TOTAL STREAM AREA(ACRES) =      2.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       7.19

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1         6.39     19.12        3.328          2.20
     2         7.19     20.68        3.164          2.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        13.04     19.12        3.328
     2        13.26     20.68        3.164

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       13.26   Tc(MIN.) =   20.68
  TOTAL AREA(ACRES) =         4.8
  LONGEST FLOWPATH FROM NODE     446.00 TO NODE     618.50 =    2278.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     618.50 TO NODE     618.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   227.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.57
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.26
  PIPE TRAVEL TIME(MIN.) =   0.68    Tc(MIN.) =  21.36
  LONGEST FLOWPATH FROM NODE     446.00 TO NODE     618.00 =    2505.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     618.00 TO NODE     618.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY       AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)     (ACRE)
     1        13.26     21.36        3.098          4.80
```

```
LONGEST FLOWPATH FROM NODE    446.00 TO NODE    618.00 =    2505.00 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
STREAM     RUNOFF     Tc      INTENSITY     AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
    1       98.47     5.22       7.687       16.70
LONGEST FLOWPATH FROM NODE    437.00 TO NODE    618.00 =    1673.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF       Tc      INTENSITY
NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
    1     101.71       5.22       7.687
    2      52.95      21.36       3.098

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     101.71   Tc(MIN.) =    5.22
TOTAL AREA(ACRES) =       21.5

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
>>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    618.00 TO NODE    619.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   293.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  51.0 INCH PIPE IS  36.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.25
ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     101.71
PIPE TRAVEL TIME(MIN.) =   0.53    Tc(MIN.) =   5.75
LONGEST FLOWPATH FROM NODE    446.00 TO NODE    619.00 =    2798.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    619.00 TO NODE    619.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
>>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    449.00 TO NODE    450.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =    39.00
UPSTREAM ELEVATION(FEET) =    502.00
DOWNSTREAM ELEVATION(FEET) =    501.22
ELEVATION DIFFERENCE(FEET) =      0.78
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.052
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =       0.76
TOTAL AREA(ACRES) =       0.11   TOTAL RUNOFF(CFS) =       0.76

****************************************************************************
FLOW PROCESS FROM NODE    450.00 TO NODE    622.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
STREET LENGTH(FEET) =   365.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 39.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  34.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.80
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.43
  HALFSTREET FLOOD WIDTH(FEET) =   15.09
  AVERAGE FLOW VELOCITY(FEET/SEC.) =     2.01
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =     0.86
STREET FLOW TRAVEL TIME(MIN.) =   3.03   Tc(MIN.) =   5.06
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.820
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
SUBAREA AREA(ACRES) =     1.19      SUBAREA RUNOFF(CFS) =     8.10
TOTAL AREA(ACRES) =        1.3        PEAK FLOW RATE(CFS) =       8.84

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  19.19
FLOW VELOCITY(FEET/SEC.) =  2.33   DEPTH*VELOCITY(FT*FT/SEC.) =   1.19
LONGEST FLOWPATH FROM NODE    449.00 TO NODE    622.00 =     404.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    622.00 TO NODE    619.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    74.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.06
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       8.84
PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   5.33
LONGEST FLOWPATH FROM NODE    449.00 TO NODE    619.00 =     478.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    619.00 TO NODE    619.00 IS CODE =  11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
STREAM     RUNOFF     Tc      INTENSITY     AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
    1        8.84     5.33       7.587        1.30
LONGEST FLOWPATH FROM NODE    449.00 TO NODE    619.00 =     478.00 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
STREAM     RUNOFF     Tc      INTENSITY     AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
    1      101.71     5.75       7.224       21.50
LONGEST FLOWPATH FROM NODE    446.00 TO NODE    619.00 =    2798.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF       Tc      INTENSITY
NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
```

```
     1     103.10       5.33        7.587
     2     110.13       5.75        7.224

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     110.13   Tc(MIN.) =    5.75
  TOTAL AREA(ACRES) =       22.8

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
======================================================================

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    619.00 TO NODE    623.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    96.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  39.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.33
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     110.13
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   5.92
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    623.00 =    2894.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    623.00 TO NODE    623.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.92
  RAINFALL INTENSITY(INCH/HR) =   7.09
  TOTAL STREAM AREA(ACRES) =    22.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    110.13

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    860.00 TO NODE    861.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   265.00
  UPSTREAM ELEVATION(FEET) =    504.00
  DOWNSTREAM ELEVATION(FEET) =    501.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.111
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.32
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      7.56
  TOTAL AREA(ACRES) =      1.10   TOTAL RUNOFF(CFS) =      7.56

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    861.00 TO NODE    623.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    23.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.90
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.56
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   3.19
  LONGEST FLOWPATH FROM NODE    860.00 TO NODE    623.00 =     288.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    623.00 TO NODE    623.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.19
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.56

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      110.13     5.92        7.088        22.80
     2        7.56     3.19        7.904         1.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       66.88     3.19       7.904
     2      116.91     5.92       7.088

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     116.91   Tc(MIN.) =    5.92
  TOTAL AREA(ACRES) =       23.9
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    623.00 =    2894.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    623.00 TO NODE    624.00 IS CODE =  31
----------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   187.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  38.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.59
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     116.91
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   6.25
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    624.00 =    3081.00 FEET.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    624.00 TO NODE    624.00 IS CODE =   1
----------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.25
  RAINFALL INTENSITY(INCH/HR) =   6.85
  TOTAL STREAM AREA(ACRES) =    23.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    116.91

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  FLOW PROCESS FROM NODE    870.00 TO NODE    871.00 IS CODE =  21
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
======================================================================
```

```
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   245.00
  UPSTREAM ELEVATION(FEET) =    504.00
  DOWNSTREAM ELEVATION(FEET) =    501.50
  ELEVATION DIFFERENCE(FEET) =      2.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.191
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    60.20
           (Reference: Table 3-1B of Hydrology Manual)
         . THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       6.19
  TOTAL AREA(ACRES) =      0.90   TOTAL RUNOFF(CFS) =      6.19

****************************************************************************
  FLOW PROCESS FROM NODE    871.00 TO NODE    624.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.60
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.19
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   3.28
  LONGEST FLOWPATH FROM NODE    870.00 TO NODE    624.00 =     269.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    624.00 TO NODE    624.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.28
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.19

****************************************************************************
  FLOW PROCESS FROM NODE   1050.00 TO NODE   1051.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   320.00
  UPSTREAM ELEVATION(FEET) =    502.00
  DOWNSTREAM ELEVATION(FEET) =    500.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.508
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    52.50
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =       9.63
  TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      9.63

****************************************************************************
  FLOW PROCESS FROM NODE   1051.00 TO NODE    624.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.12
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.63
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   3.57
  LONGEST FLOWPATH FROM NODE   1050.00 TO NODE    624.00 =     340.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    624.00 TO NODE    624.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.57
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      1.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.63

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       116.91     6.25        6.848        23.90
     2         6.19     3.28        7.904         0.90
     3         9.63     3.57        7.904         1.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       116.31     3.28        7.904
     2       117.10     3.57        7.904
     3       130.61     6.25        6.848

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     130.61   Tc(MIN.) =    6.25
  TOTAL AREA(ACRES) =       26.2
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    624.00 =    3081.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    624.00 TO NODE    625.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  42.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.71
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     130.61
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   6.42
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    625.50 =    3181.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.50 TO NODE    625.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.42
  RAINFALL INTENSITY(INCH/HR) =   6.73
  TOTAL STREAM AREA(ACRES) =     26.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    130.61
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    928.00 TO NODE    929.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   255.00
  UPSTREAM ELEVATION(FEET) =    504.00
  DOWNSTREAM ELEVATION(FEET) =    501.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.082
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.76
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     11.69
  TOTAL AREA(ACRES) =      1.70   TOTAL RUNOFF(CFS) =     11.69

****************************************************************************
  FLOW PROCESS FROM NODE    929.00 TO NODE    625.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.44
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.69
  PIPE TRAVEL TIME(MIN.) =   0.77    Tc(MIN.) =   3.85
  LONGEST FLOWPATH FROM NODE    928.00 TO NODE    625.50 =     505.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.50 TO NODE    625.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.85
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.69

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       130.61     6.42        6.729        26.20
     2        11.69     3.85        7.904         1.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       122.88     3.85       7.904
     2       140.57     6.42       6.729

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     140.57   Tc(MIN.) =    6.42
  TOTAL AREA(ACRES) =       27.9
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    625.50 =    3181.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.50 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  42.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.99
  ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     140.57
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   6.53
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    625.00 =    3246.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    908.00 TO NODE    909.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   419.00
  UPSTREAM ELEVATION(FEET) =    522.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.232
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    59.09
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     19.94
  TOTAL AREA(ACRES) =      2.90   TOTAL RUNOFF(CFS) =     19.94

****************************************************************************
  FLOW PROCESS FROM NODE    909.00 TO NODE    941.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   124.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.10
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      19.94
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   3.57
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    941.00 =     543.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    941.00 TO NODE    941.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```

```
  TIME OF CONCENTRATION(MIN.) =   3.57
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      2.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.94

****************************************************************************
  FLOW PROCESS FROM NODE    910.00 TO NODE    911.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   260.00
  UPSTREAM ELEVATION(FEET) =    526.00
  DOWNSTREAM ELEVATION(FEET) =    524.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.363
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    55.38
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     12.38
  TOTAL AREA(ACRES) =      1.80   TOTAL RUNOFF(CFS) =     12.38

****************************************************************************
  FLOW PROCESS FROM NODE    911.00 TO NODE    941.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.51
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.38
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   3.68
  LONGEST FLOWPATH FROM NODE    910.00 TO NODE    941.00 =     365.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    941.00 TO NODE    941.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.68
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.38

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       19.94     3.57        7.904         2.90
     2       12.38     3.68        7.904         1.80

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       31.95     3.57        7.904
     2       32.32     3.68        7.904

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =      32.32   Tc(MIN.) =    3.68
  TOTAL AREA(ACRES) =         4.7
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    941.00 =     543.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    941.00 TO NODE    942.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   155.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  24.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.93
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      32.32
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =   4.05
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    942.00 =     698.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    942.00 TO NODE    942.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.05
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      4.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.32

****************************************************************************
  FLOW PROCESS FROM NODE    910.50 TO NODE    911.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   250.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    518.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.337
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    56.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      6.19
  TOTAL AREA(ACRES) =      0.90   TOTAL RUNOFF(CFS) =      6.19

****************************************************************************
  FLOW PROCESS FROM NODE    911.50 TO NODE    942.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.60
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.19
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   3.63
  LONGEST FLOWPATH FROM NODE    910.50 TO NODE    942.00 =     330.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    942.00 TO NODE    942.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.63
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     0.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.19

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       32.32     4.05        7.904          4.70
      2        6.19     3.63        7.904          0.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       38.51     3.63       7.904
      2       38.51     4.05       7.904

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      38.51   Tc(MIN.) =    4.05
  TOTAL AREA(ACRES) =        5.6
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    942.00 =     698.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    942.00 TO NODE    943.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.28
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      38.51
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   4.24
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    943.00 =     778.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    943.00 TO NODE    943.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   4.24
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     5.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     38.51

****************************************************************************
  FLOW PROCESS FROM NODE    914.00 TO NODE    915.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   451.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    516.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.274
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH =    57.74
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     21.32
  TOTAL AREA(ACRES) =      3.10   TOTAL RUNOFF(CFS) =     21.32

****************************************************************************
  FLOW PROCESS FROM NODE    915.00 TO NODE    943.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  22.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.12
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      21.32
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   3.44
  LONGEST FLOWPATH FROM NODE    914.00 TO NODE    943.00 =     513.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    943.00 TO NODE    943.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.44
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     3.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.32

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       38.51     4.24        7.904          5.60
      2       21.32     3.44        7.904          3.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       59.83     3.44       7.904
      2       59.83     4.24       7.904

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      59.83   Tc(MIN.) =    4.24
  TOTAL AREA(ACRES) =        8.7
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    943.00 =     778.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    943.00 TO NODE    944.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.11
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      59.83
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   4.31
  LONGEST FLOWPATH FROM NODE    908.00 TO NODE    944.00 =     814.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     944.00 TO NODE     944.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE       0.00 TO NODE       0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     932.00 TO NODE     933.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   516.00
  UPSTREAM ELEVATION(FEET) =    528.00
  DOWNSTREAM ELEVATION(FEET) =    522.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.091
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.63
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     29.57
  TOTAL AREA(ACRES) =      4.30   TOTAL RUNOFF(CFS) =     29.57

****************************************************************************
  FLOW PROCESS FROM NODE     933.00 TO NODE     935.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   195.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.83
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      29.57
  PIPE TRAVEL TIME(MIN.) =   0.48    Tc(MIN.) =   3.57
  LONGEST FLOWPATH FROM NODE     932.00 TO NODE     935.00 =     711.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     935.00 TO NODE     935.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.57
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      4.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.57

****************************************************************************
  FLOW PROCESS FROM NODE     934.00 TO NODE     935.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   690.00
  UPSTREAM ELEVATION(FEET) =    526.00
  DOWNSTREAM ELEVATION(FEET) =    520.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.286
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    57.39
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     32.32
  TOTAL AREA(ACRES) =      4.70   TOTAL RUNOFF(CFS) =     32.32

****************************************************************************
  FLOW PROCESS FROM NODE     935.00 TO NODE     935.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.29
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =      4.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.32

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       29.57     3.57        7.904         4.30
     2       32.32     3.29        7.904         4.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       59.57     3.29        7.904
     2       61.89     3.57        7.904

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      61.89   Tc(MIN.) =    3.57
  TOTAL AREA(ACRES) =         9.0
  LONGEST FLOWPATH FROM NODE     932.00 TO NODE     935.00 =     711.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     935.00 TO NODE     944.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   630.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.15
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      61.89
  PIPE TRAVEL TIME(MIN.) =   1.29    Tc(MIN.) =   4.86
  LONGEST FLOWPATH FROM NODE     932.00 TO NODE     944.00 =    1341.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     944.00 TO NODE     944.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       61.89     4.86        7.904         9.00
  LONGEST FLOWPATH FROM NODE     932.00 TO NODE     944.00 =    1341.00 FEET.
```

```
** MEMORY BANK #  2 CONFLUENCE DATA **
STREAM     RUNOFF     Tc      INTENSITY     AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
    1       59.83     4.31       7.904        8.70
LONGEST FLOWPATH FROM NODE    908.00 TO NODE    944.00 =     814.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF       Tc      INTENSITY
NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
    1     114.77       4.31       7.904
    2     121.72       4.86       7.904

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     121.72   Tc(MIN.) =    4.86
TOTAL AREA(ACRES) =       17.7

****************************************************************************
 FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    944.00 TO NODE    945.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  54.0 INCH PIPE IS  40.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.64
 ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     121.72
 PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   5.08
 LONGEST FLOWPATH FROM NODE    932.00 TO NODE    945.00 =    1471.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    945.00 TO NODE    945.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.08
 RAINFALL INTENSITY(INCH/HR) =   7.82
 TOTAL STREAM AREA(ACRES) =    17.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    121.72

****************************************************************************
 FLOW PROCESS FROM NODE    916.00 TO NODE    917.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  97
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   593.00
 UPSTREAM ELEVATION(FEET) =    518.00
 DOWNSTREAM ELEVATION(FEET) =    514.00
 ELEVATION DIFFERENCE(FEET) =      4.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.452
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH =    53.49
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =     28.19
 TOTAL AREA(ACRES) =      4.10   TOTAL RUNOFF(CFS) =     28.19

****************************************************************************
 FLOW PROCESS FROM NODE    917.00 TO NODE    945.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 FLOW LENGTH(FEET) =    61.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  24.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.56
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      28.19
 PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   3.61
 LONGEST FLOWPATH FROM NODE    916.00 TO NODE    945.00 =     654.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    945.00 TO NODE    945.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   3.61
 RAINFALL INTENSITY(INCH/HR) =   7.90
 TOTAL STREAM AREA(ACRES) =     4.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.19

 ** CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY      AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      121.72     5.08       7.824         17.70
     2       28.19     3.61       7.904          4.10

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      114.63     3.61       7.904
     2      149.62     5.08       7.824

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     149.62   Tc(MIN.) =    5.08
 TOTAL AREA(ACRES) =       21.8
 LONGEST FLOWPATH FROM NODE    932.00 TO NODE    945.00 =    1471.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    945.00 TO NODE    946.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 REPRESENTATIVE SLOPE =  0.0050
 FLOW LENGTH(FEET) =   473.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  57.0 INCH PIPE IS  44.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  10.06
 ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     149.62
 PIPE TRAVEL TIME(MIN.) =   0.78    Tc(MIN.) =   5.86
 LONGEST FLOWPATH FROM NODE    932.00 TO NODE    946.00 =    1944.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    946.00 TO NODE    946.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```

```
  TIME OF CONCENTRATION(MIN.) =   5.86
  RAINFALL INTENSITY(INCH/HR) =   7.13
  TOTAL STREAM AREA(ACRES) =    21.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    149.62

****************************************************************************
  FLOW PROCESS FROM NODE    918.00 TO NODE    919.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   522.00
  UPSTREAM ELEVATION(FEET) =    515.00
  DOWNSTREAM ELEVATION(FEET) =    512.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.573
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.49
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     24.07
  TOTAL AREA(ACRES) =      3.50   TOTAL RUNOFF(CFS) =     24.07

****************************************************************************
  FLOW PROCESS FROM NODE    919.00 TO NODE    946.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.47
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.07
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   3.78
  LONGEST FLOWPATH FROM NODE    918.00 TO NODE    946.00 =     602.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    946.00 TO NODE    946.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.78
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     3.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.07

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       149.62     5.86        7.132        21.80
     2        24.07     3.78        7.904         3.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       159.08     3.78        7.904
     2       171.34     5.86        7.132

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

  PEAK FLOW RATE(CFS) =     171.34   Tc(MIN.) =    5.86
  TOTAL AREA(ACRES) =       25.3
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    946.00 =    1944.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    946.00 TO NODE    947.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    52.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  46.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.41
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     171.34
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   5.95
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    947.00 =    1996.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    947.00 TO NODE    947.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   5.95
  RAINFALL INTENSITY(INCH/HR) =   7.07
  TOTAL STREAM AREA(ACRES) =    25.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    171.34

****************************************************************************
  FLOW PROCESS FROM NODE    912.00 TO NODE    913.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   381.00
  UPSTREAM ELEVATION(FEET) =    520.00
  DOWNSTREAM ELEVATION(FEET) =    514.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.885
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    65.75
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     18.57
  TOTAL AREA(ACRES) =      2.70   TOTAL RUNOFF(CFS) =     18.57

****************************************************************************
  FLOW PROCESS FROM NODE    913.00 TO NODE    947.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.05
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.57
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   3.17
  LONGEST FLOWPATH FROM NODE    912.00 TO NODE    947.00 =     486.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    947.00 TO NODE    947.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.17
RAINFALL INTENSITY(INCH/HR) =   7.90
TOTAL STREAM AREA(ACRES) =     2.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.57

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1      171.34     5.95        7.068         25.30
    2       18.57     3.17        7.904          2.70

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1      171.78     3.17       7.904
    2      187.94     5.95       7.068

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     187.94   Tc(MIN.) =    5.95
TOTAL AREA(ACRES) =       28.0
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    947.00 =    1996.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    947.00 TO NODE    948.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   212.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  63.0 INCH PIPE IS  47.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  10.71
ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      187.94
PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   6.28
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    948.00 =    2208.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    948.00 TO NODE    948.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   6.28
RAINFALL INTENSITY(INCH/HR) =   6.83
TOTAL STREAM AREA(ACRES) =    28.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =    187.94

****************************************************************************
FLOW PROCESS FROM NODE    920.00 TO NODE    921.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "D"
S.C.S. CURVE NUMBER (AMC II) =  97
INITIAL SUBAREA FLOW-LENGTH(FEET) =   295.00
UPSTREAM ELEVATION(FEET) =    516.00
DOWNSTREAM ELEVATION(FEET) =    512.00
ELEVATION DIFFERENCE(FEET) =      4.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.982
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    63.56
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      9.63
TOTAL AREA(ACRES) =      1.40   TOTAL RUNOFF(CFS) =      9.63

****************************************************************************
FLOW PROCESS FROM NODE    921.00 TO NODE    948.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.12
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       9.63
PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   3.32
LONGEST FLOWPATH FROM NODE    920.00 TO NODE    948.00 =     400.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    948.00 TO NODE    948.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   3.32
RAINFALL INTENSITY(INCH/HR) =   7.90
TOTAL STREAM AREA(ACRES) =     1.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.63

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1      187.94     6.28        6.826         28.00
    2        9.63     3.32        7.904          1.40

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1      171.93     3.32       7.904
    2      196.26     6.28       6.826

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     196.26   Tc(MIN.) =    6.28
TOTAL AREA(ACRES) =       29.4
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    948.00 =    2208.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    948.00 TO NODE    949.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
REPRESENTATIVE SLOPE =  0.0050
FLOW LENGTH(FEET) =    31.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  63.0 INCH PIPE IS  49.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  10.75
ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     196.26
PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   6.32
LONGEST FLOWPATH FROM NODE    932.00 TO NODE    949.00 =    2239.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     949.00 TO NODE     949.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.32
  RAINFALL INTENSITY(INCH/HR) =   6.79
  TOTAL STREAM AREA(ACRES) =    29.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    196.26

****************************************************************************
  FLOW PROCESS FROM NODE     922.00 TO NODE     923.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   469.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    509.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.491
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    52.79
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     24.07
  TOTAL AREA(ACRES) =      3.50   TOTAL RUNOFF(CFS) =     24.07

****************************************************************************
  FLOW PROCESS FROM NODE     923.00 TO NODE     949.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    88.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.47
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.07
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   3.72
  LONGEST FLOWPATH FROM NODE    922.00 TO NODE    949.00 =     557.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     949.00 TO NODE     949.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.72
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     3.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.07

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1       196.26     6.32        6.792        29.40
     2        24.07     3.72        7.904         3.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
     1       192.72     3.72        7.904
     2       216.94     6.32        6.792

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     216.94   Tc(MIN.) =    6.32
  TOTAL AREA(ACRES) =       32.9
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    949.00 =    2239.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     949.00 TO NODE     950.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  66.0 INCH PIPE IS  50.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.07
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     216.94
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   6.69
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    950.00 =    2479.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     950.00 TO NODE     950.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.69
  RAINFALL INTENSITY(INCH/HR) =   6.55
  TOTAL STREAM AREA(ACRES) =    32.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    216.94

****************************************************************************
  FLOW PROCESS FROM NODE     924.00 TO NODE     925.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   336.00
  UPSTREAM ELEVATION(FEET) =    512.00
  DOWNSTREAM ELEVATION(FEET) =    508.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.073
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.90
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     13.75
  TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =     13.75

****************************************************************************
  FLOW PROCESS FROM NODE     925.00 TO NODE     950.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   105.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.60
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =      13.75
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   3.39
  LONGEST FLOWPATH FROM NODE    924.00 TO NODE    950.00 =     441.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    950.00 TO NODE    950.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.39
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     2.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.75

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      216.94     6.69        6.553         32.90
     2       13.75     3.39        7.904          2.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      193.62     3.39       7.904
     2      228.34     6.69       6.553

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     228.34   Tc(MIN.) =    6.69
  TOTAL AREA(ACRES) =       34.9
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    950.00 =    2479.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    950.00 TO NODE    951.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    56.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  66.0 INCH PIPE IS  53.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.10
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     228.34
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   6.77
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    951.00 =    2535.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    951.00 TO NODE    951.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.77
  RAINFALL INTENSITY(INCH/HR) =   6.50
  TOTAL STREAM AREA(ACRES) =    34.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    228.34

****************************************************************************
  FLOW PROCESS FROM NODE    926.00 TO NODE    927.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   516.00
  UPSTREAM ELEVATION(FEET) =    508.00
  DOWNSTREAM ELEVATION(FEET) =    505.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.564
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.63
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     24.07
  TOTAL AREA(ACRES) =      3.50   TOTAL RUNOFF(CFS) =     24.07

****************************************************************************
  FLOW PROCESS FROM NODE    927.00 TO NODE    951.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   103.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.47
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.07
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   3.83
  LONGEST FLOWPATH FROM NODE    926.00 TO NODE    951.00 =     619.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    951.00 TO NODE    951.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.83
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     3.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.07

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      228.34     6.77        6.501         34.90
     2       24.07     3.83        7.904          3.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      211.87     3.83       7.904
     2      248.14     6.77       6.501

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     248.14   Tc(MIN.) =    6.77
  TOTAL AREA(ACRES) =       38.4
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    951.00 =    2535.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    951.00 TO NODE    952.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   310.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  69.0 INCH PIPE IS  53.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.42
  ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     248.14
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =   7.22
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    952.00 =    2845.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    952.00 TO NODE    952.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.22
  RAINFALL INTENSITY(INCH/HR) =   6.24
  TOTAL STREAM AREA(ACRES) =    38.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    248.14

****************************************************************************
  FLOW PROCESS FROM NODE    930.00 TO NODE    931.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   700.00
  UPSTREAM ELEVATION(FEET) =    506.00
  DOWNSTREAM ELEVATION(FEET) =    502.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.578
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    51.43
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.904
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =     30.26
  TOTAL AREA(ACRES) =      4.40   TOTAL RUNOFF(CFS) =     30.26

****************************************************************************
  FLOW PROCESS FROM NODE    931.00 TO NODE    952.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.86
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      30.26
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   3.94
  LONGEST FLOWPATH FROM NODE    930.00 TO NODE    952.00 =     850.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    952.00 TO NODE    952.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   3.94
  RAINFALL INTENSITY(INCH/HR) =   7.90
  TOTAL STREAM AREA(ACRES) =     4.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     30.26

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1      248.14     7.22        6.235         38.40
     2       30.26     3.94        7.904          4.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
     1      226.00     3.94        7.904
     2      272.01     7.22        6.235

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     272.01   Tc(MIN.) =    7.22
  TOTAL AREA(ACRES) =       42.8
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    952.00 =    2845.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    952.00 TO NODE    953.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =    42.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  55.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.73
  ESTIMATED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     272.01
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   7.28
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    953.00 =    2887.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    953.00 TO NODE    953.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1      272.01     7.28        6.202         42.80
  LONGEST FLOWPATH FROM NODE    932.00 TO NODE    953.00 =    2887.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
     1      140.57     6.53        6.657         27.90
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    953.00 =    3246.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
     1      384.32     6.53        6.657
     2      402.97     7.28        6.202

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     402.97   Tc(MIN.) =    7.28
  TOTAL AREA(ACRES) =       70.7

****************************************************************************
  FLOW PROCESS FROM NODE    953.00 TO NODE    999.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    486.00  DOWNSTREAM(FEET) =    484.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   165.00   CHANNEL SLOPE =  0.0121
  CHANNEL FLOW THRU SUBAREA(CFS) =     402.97
  FLOW VELOCITY(FEET/SEC) =   8.05 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
```

```
  TRAVEL TIME(MIN.) =   0.34   Tc(MIN.) =   7.62
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE    999.00 =    3411.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    999.00 TO NODE    999.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.021
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8522
  SUBAREA AREA(ACRES) =     2.50   SUBAREA RUNOFF(CFS) =     5.27
  TOTAL AREA(ACRES) =        73.2   TOTAL RUNOFF(CFS) =     402.97
  TC(MIN.) =   7.62
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE    999.00 TO NODE   1013.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  84.0 INCH PIPE IS  63.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.97
  ESTIMATED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     402.97
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   7.78
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1013.00 =    3531.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1010.00 TO NODE   1010.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  34.20   RAIN INTENSITY(INCH/HOUR) =  2.29
  TOTAL AREA(ACRES) =    625.90   TOTAL RUNOFF(CFS) =    514.50

****************************************************************************
  FLOW PROCESS FROM NODE   1010.00 TO NODE   1011.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    528.00  DOWNSTREAM(FEET) =    524.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   180.00   CHANNEL SLOPE =  0.0222
  CHANNEL FLOW THRU SUBAREA(CFS) =     514.50
  FLOW VELOCITY(FEET/SEC) =  11.78 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.25   Tc(MIN.) =  34.45
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1011.00 =    3711.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1011.00 TO NODE   1011.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.276
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3594
  SUBAREA AREA(ACRES) =     1.20   SUBAREA RUNOFF(CFS) =     0.96
  TOTAL AREA(ACRES) =       627.1   TOTAL RUNOFF(CFS) =     514.50
  TC(MIN.) =  34.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE   1011.00 TO NODE   1012.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  REPRESENTATIVE SLOPE =  0.0050
  FLOW LENGTH(FEET) =   167.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  90.0 INCH PIPE IS  71.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.65
  ESTIMATED PIPE DIAMETER(INCH) =  90.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     514.50
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  34.66
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1012.00 =    3878.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1012.00 TO NODE   1013.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    518.00  DOWNSTREAM(FEET) =    486.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3050.00   CHANNEL SLOPE =  0.0105
  CHANNEL FLOW THRU SUBAREA(CFS) =     514.50
  FLOW VELOCITY(FEET/SEC) =   8.09 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   6.28   Tc(MIN.) =  40.94
  LONGEST FLOWPATH FROM NODE    446.00 TO NODE   1013.00 =    6928.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1013.00 TO NODE   1013.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.036
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3593
  SUBAREA AREA(ACRES) =    11.20   SUBAREA RUNOFF(CFS) =     7.98
  TOTAL AREA(ACRES) =       638.3   TOTAL RUNOFF(CFS) =     514.50
  TC(MIN.) =  40.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.00 IS CODE =  13
----------------------------------------------------------------------------
  >>>>>CLEAR THE MAIN-STREAM MEMORY<<<<<
============================================================================
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        0.0  TC(MIN.) =       5.00
  PEAK FLOW RATE(CFS)   =       1.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Kimley-Horn
and Associates, Inc.

Appendix C ~ Detention Analysis Results

10 YR EAST DETENTION BASIN

ATIONAL METHOD HYDROGRAPH PROGRAM
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RUN DATE 6/22/2009
HYDROGRAPH FILE NAME Text1
IME OF CONCENTRATION 8 MIN.
HOUR RAINFALL 1.9 INCHES
ASIN AREA 73.2 ACRES
RUNOFF COEFFICIENT 0.87
EAK DISCHARGE 249.4 CFS

IME (MIN) = 0	DISCHARGE (CFS) = 0
IME (MIN) = 8	DISCHARGE (CFS) = 7.2
IME (MIN) = 16	DISCHARGE (CFS) = 7.3
IME (MIN) = 24	DISCHARGE (CFS) = 7.6
IME (MIN) = 32	DISCHARGE (CFS) = 7.7
IME (MIN) = 40	DISCHARGE (CFS) = 7.9
IME (MIN) = 48	DISCHARGE (CFS) = 8.1
IME (MIN) = 56	DISCHARGE (CFS) = 8.4
IME (MIN) = 64	DISCHARGE (CFS) = 8.5
IME (MIN) = 72	DISCHARGE (CFS) = 8.9
IME (MIN) = 80	DISCHARGE (CFS) = 9
IME (MIN) = 88	DISCHARGE (CFS) = 9.4
IME (MIN) = 96	DISCHARGE (CFS) = 9.6
IME (MIN) = 104	DISCHARGE (CFS) = 10.1
IME (MIN) = 112	DISCHARGE (CFS) = 10.3
IME (MIN) = 120	DISCHARGE (CFS) = 10.9
IME (MIN) = 128	DISCHARGE (CFS) = 11.2
IME (MIN) = 136	DISCHARGE (CFS) = 11.9
IME (MIN) = 144	DISCHARGE (CFS) = 12.3
IME (MIN) = 152	DISCHARGE (CFS) = 13.2
IME (MIN) = 160	DISCHARGE (CFS) = 13.7
IME (MIN) = 168	DISCHARGE (CFS) = 14.9
IME (MIN) = 176	DISCHARGE (CFS) = 15.6
IME (MIN) = 184	DISCHARGE (CFS) = 17.3
IME (MIN) = 192	DISCHARGE (CFS) = 18.3
IME (MIN) = 200	DISCHARGE (CFS) = 21
IME (MIN) = 208	DISCHARGE (CFS) = 22.8
IME (MIN) = 216	DISCHARGE (CFS) = 27.9
IME (MIN) = 224	DISCHARGE (CFS) = 31.7
IME (MIN) = 232	DISCHARGE (CFS) = 46.6
IME (MIN) = 240	DISCHARGE (CFS) = 51.7
IME (MIN) = 248	DISCHARGE (CFS) = 249.4
IME (MIN) = 256	DISCHARGE (CFS) = 37.4
IME (MIN) = 264	DISCHARGE (CFS) = 25
IME (MIN) = 272	DISCHARGE (CFS) = 19.6
IME (MIN) = 280	DISCHARGE (CFS) = 16.4
IME (MIN) = 288	DISCHARGE (CFS) = 14.3
IME (MIN) = 296	DISCHARGE (CFS) = 12.7
IME (MIN) = 304	DISCHARGE (CFS) = 11.6
IME (MIN) = 312	DISCHARGE (CFS) = 10.6
IME (MIN) = 320	DISCHARGE (CFS) = 9.9
IME (MIN) = 328	DISCHARGE (CFS) = 9.2
IME (MIN) = 336	DISCHARGE (CFS) = 8.7
IME (MIN) = 344	DISCHARGE (CFS) = 8.2
IME (MIN) = 352	DISCHARGE (CFS) = 7.8
IME (MIN) = 360	DISCHARGE (CFS) = 7.4
IME (MIN) = 368	DISCHARGE (CFS) = 0

50 YR EAST DETENTION BASIN

ATIONAL METHOD HYDROGRAPH PROGRAM
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UN DATE 6/22/2009
YDROGRAPH FILE NAME Text1
IME OF CONCENTRATION 8 MIN.
HOUR RAINFALL 2.8 INCHES
ASIN AREA 73.2 ACRES
UNOFF COEFFICIENT 0.87
EAK DISCHARGE 374.8 CFS

IME (MIN) = 0	DISCHARGE (CFS) = 0
IME (MIN) = 8	DISCHARGE (CFS) = 10.6
IME (MIN) = 16	DISCHARGE (CFS) = 10.8
IME (MIN) = 24	DISCHARGE (CFS) = 11.1
IME (MIN) = 32	DISCHARGE (CFS) = 11.3
IME (MIN) = 40	DISCHARGE (CFS) = 11.7
IME (MIN) = 48	DISCHARGE (CFS) = 11.9
IME (MIN) = 56	DISCHARGE (CFS) = 12.3
IME (MIN) = 64	DISCHARGE (CFS) = 12.5
IME (MIN) = 72	DISCHARGE (CFS) = 13
IME (MIN) = 80	DISCHARGE (CFS) = 13.3
IME (MIN) = 88	DISCHARGE (CFS) = 13.9
IME (MIN) = 96	DISCHARGE (CFS) = 14.2
IME (MIN) = 104	DISCHARGE (CFS) = 14.9
IME (MIN) = 112	DISCHARGE (CFS) = 15.3
IME (MIN) = 120	DISCHARGE (CFS) = 16.1
IME (MIN) = 128	DISCHARGE (CFS) = 16.5
IME (MIN) = 136	DISCHARGE (CFS) = 17.6
IME (MIN) = 144	DISCHARGE (CFS) = 18.1
IME (MIN) = 152	DISCHARGE (CFS) = 19.4
IME (MIN) = 160	DISCHARGE (CFS) = 20.2
IME (MIN) = 168	DISCHARGE (CFS) = 22
IME (MIN) = 176	DISCHARGE (CFS) = 23
IME (MIN) = 184	DISCHARGE (CFS) = 25.5
IME (MIN) = 192	DISCHARGE (CFS) = 27
IME (MIN) = 200	DISCHARGE (CFS) = 31
IME (MIN) = 208	DISCHARGE (CFS) = 33.6
IME (MIN) = 216	DISCHARGE (CFS) = 41.1
IME (MIN) = 224	DISCHARGE (CFS) = 46.8
IME (MIN) = 232	DISCHARGE (CFS) = 68.7
IME (MIN) = 240	DISCHARGE (CFS) = 68.9
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IME (MIN) = 296	DISCHARGE (CFS) = 18.8
IME (MIN) = 304	DISCHARGE (CFS) = 17
IME (MIN) = 312	DISCHARGE (CFS) = 15.7
IME (MIN) = 320	DISCHARGE (CFS) = 14.5
IME (MIN) = 328	DISCHARGE (CFS) = 13.6
IME (MIN) = 336	DISCHARGE (CFS) = 12.8
IME (MIN) = 344	DISCHARGE (CFS) = 12.1
IME (MIN) = 352	DISCHARGE (CFS) = 11.5
IME (MIN) = 360	DISCHARGE (CFS) = 11
IME (MIN) = 368	DISCHARGE (CFS) = 0

100 YR EAST DETENTION BASIN

ATIONAL METHOD HYDROGRAPH PROGRAM
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RUN DATE 6/22/2009
YDROGRAPH FILE NAME Text1
IME OF CONCENTRATION 8 MIN.
HOUR RAINFALL 3 INCHES
ASIN AREA 73.2 ACRES
UNOFF COEFFICIENT 0.87
EAK DISCHARGE 403 CFS

IME (MIN) = 0	DISCHARGE (CFS) = 0
IME (MIN) = 8	DISCHARGE (CFS) = 11.4
IME (MIN) = 16	DISCHARGE (CFS) = 11.6
IME (MIN) = 24	DISCHARGE (CFS) = 11.9
IME (MIN) = 32	DISCHARGE (CFS) = 12.1
IME (MIN) = 40	DISCHARGE (CFS) = 12.5
IME (MIN) = 48	DISCHARGE (CFS) = 12.7
IME (MIN) = 56	DISCHARGE (CFS) = 13.2
IME (MIN) = 64	DISCHARGE (CFS) = 13.4
IME (MIN) = 72	DISCHARGE (CFS) = 14
IME (MIN) = 80	DISCHARGE (CFS) = 14.3
IME (MIN) = 88	DISCHARGE (CFS) = 14.9
IME (MIN) = 96	DISCHARGE (CFS) = 15.2
IME (MIN) = 104	DISCHARGE (CFS) = 15.9
IME (MIN) = 112	DISCHARGE (CFS) = 16.3
ME (MIN) = 120	DISCHARGE (CFS) = 17.2
ME (MIN) = 128	DISCHARGE (CFS) = 17.7
ME (MIN) = 136	DISCHARGE (CFS) = 18.8
IME (MIN) = 144	DISCHARGE (CFS) = 19.4
ME (MIN) = 152	DISCHARGE (CFS) = 20.8
ME (MIN) = 160	DISCHARGE (CFS) = 21.6
ME (MIN) = 168	DISCHARGE (CFS) = 23.5
IME (MIN) = 176	DISCHARGE (CFS) = 24.6
IME (MIN) = 184	DISCHARGE (CFS) = 27.3
ME (MIN) = 192	DISCHARGE (CFS) = 29
ME (MIN) = 200	DISCHARGE (CFS) = 33.2
ME (MIN) = 208	DISCHARGE (CFS) = 36
IME (MIN) = 216	DISCHARGE (CFS) = 44
ME (MIN) = 224	DISCHARGE (CFS) = 50.1
ME (MIN) = 232	DISCHARGE (CFS) = 73.6
ME (MIN) = 240	DISCHARGE (CFS) = 72.4
IME (MIN) = 248	DISCHARGE (CFS) = 403
IME (MIN) = 256	DISCHARGE (CFS) = 59
ME (MIN) = 264	DISCHARGE (CFS) = 39.5
ME (MIN) = 272	DISCHARGE (CFS) = 30.9
IME (MIN) = 280	DISCHARGE (CFS) = 25.9
IME (MIN) = 288	DISCHARGE (CFS) = 22.5
ME (MIN) = 296	DISCHARGE (CFS) = 20.1
ME (MIN) = 304	DISCHARGE (CFS) = 18.2
ME (MIN) = 312	DISCHARGE (CFS) = 16.8
IME (MIN) = 320	DISCHARGE (CFS) = 15.6
ME (MIN) = 328	DISCHARGE (CFS) = 14.6
ME (MIN) = 336	DISCHARGE (CFS) = 13.7
ME (MIN) = 344	DISCHARGE (CFS) = 13
IME (MIN) = 352	DISCHARGE (CFS) = 12.3
IME (MIN) = 360	DISCHARGE (CFS) = 11.8
ME (MIN) = 368	DISCHARGE (CFS) = 0

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	Manual	249.40	8	248	436,416	----	------	------	East Basin
2	Reservoir	1.10	8	368	436,271	1	494.21	422,157	<no description>

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Jun 23 2009, 3:28 PM

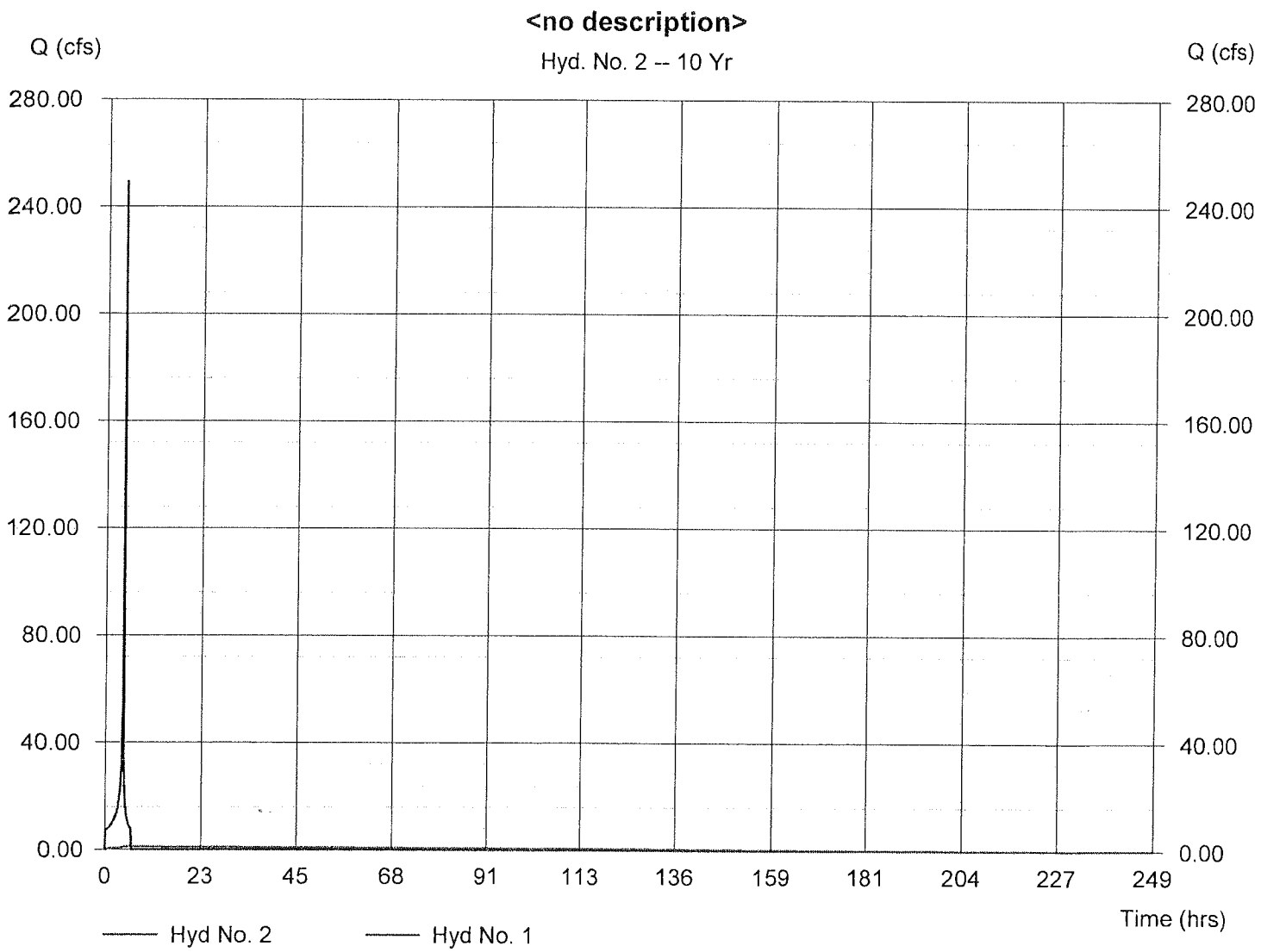
Hyd. No. 2

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 1.10 cfs
Storm frequency	= 10 yrs	Time interval	= 8 min
Inflow hyd. No.	= 1	Max. Elevation	= 494.21 ft
Reservoir name	= Basin B (S.E. corner)	Max. Storage	= 422,157 cuft

Storage Indication method used.

Hydrograph Volume = 436,271 cuft



Pond Report

Hydraflow Hydrographs by Intelisolve

Tuesday, Jun 23 2009, 3:28 PM

Pond No. 2 - Basin B (S.E. corner)

Pond Data

Pond storage is based on known values

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	483.30	00	0	0
1.00	484.30	00	26,498	26,498
2.00	485.30	00	32,886	59,384
3.00	486.30	00	34,482	93,866
4.00	487.30	00	35,402	129,268
5.00	488.30	00	38,067	167,335
6.00	489.30	00	38,691	206,026
7.00	490.30	00	40,916	246,942
8.00	491.30	00	42,493	289,435
9.00	492.30	00	43,502	332,937
10.00	493.30	00	46,332	379,269
11.00	494.30	00	47,039	426,308
12.00	495.30	00	49,426	475,735
13.00	496.30	00	51,106	526,840
14.00	497.30	00	52,267	579,107
15.00	498.30	00	55,323	634,430
16.00	499.30	00	56,233	690,663
17.00	500.30	00	57,845	748,508
18.00	501.30	00	58,922	807,430
19.00	502.30	00	59,100	866,530

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 24.00	3.60	0.00	0.00
Span (in)	= 24.00	3.60	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 483.30	483.31	0.00	0.00
Length (ft)	= 80.00	0.50	0.00	0.00
Slope (%)	= 0.50	0.50	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

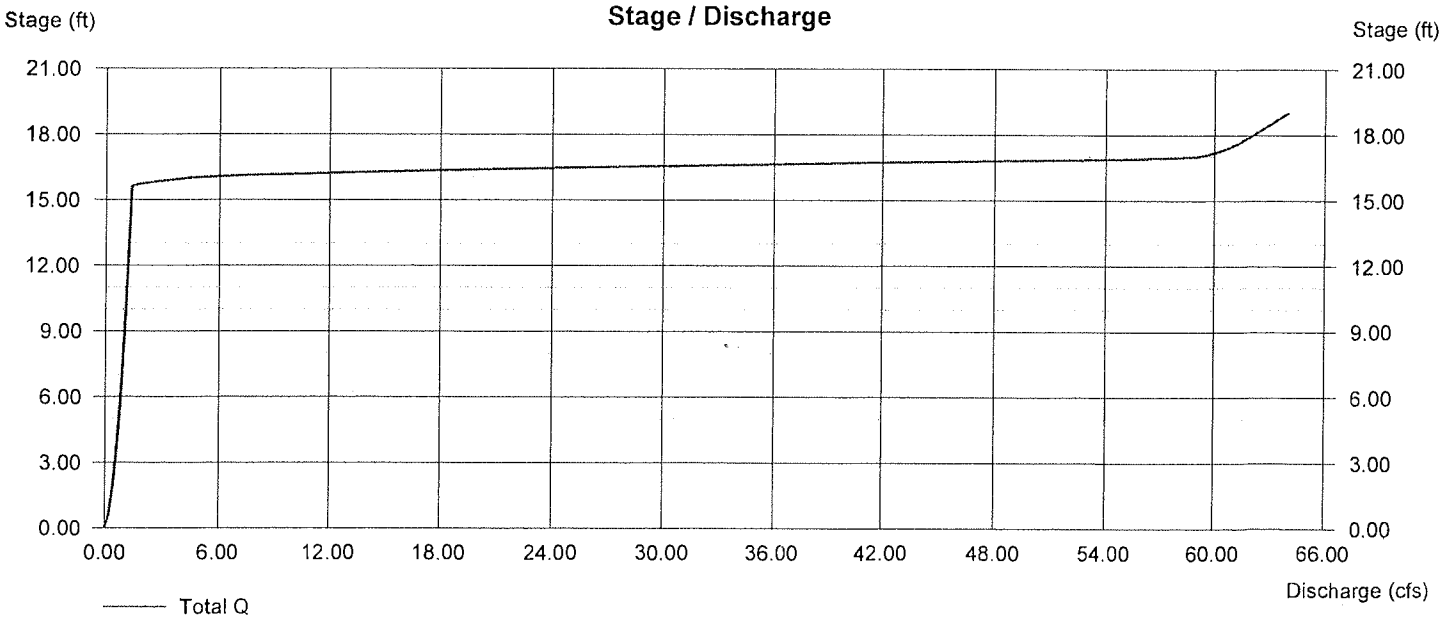
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.56	3.96	0.00	0.00
Crest El. (ft)	= 499.30	498.91	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Riser	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfiltration = 0.000 in/hr (Wet area) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control. Weir riser checked for orifice conditions.

Stage / Discharge



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	Manual	375.00	8	248	643,248	----	------	------	East Basin
2	Reservoir	1.29	8	368	643,103	1	498.15	626,268	<no description>

rograph Plot

Hydrographs by Intelisolve

Tuesday, Jun 23 2009, 3:28 PM

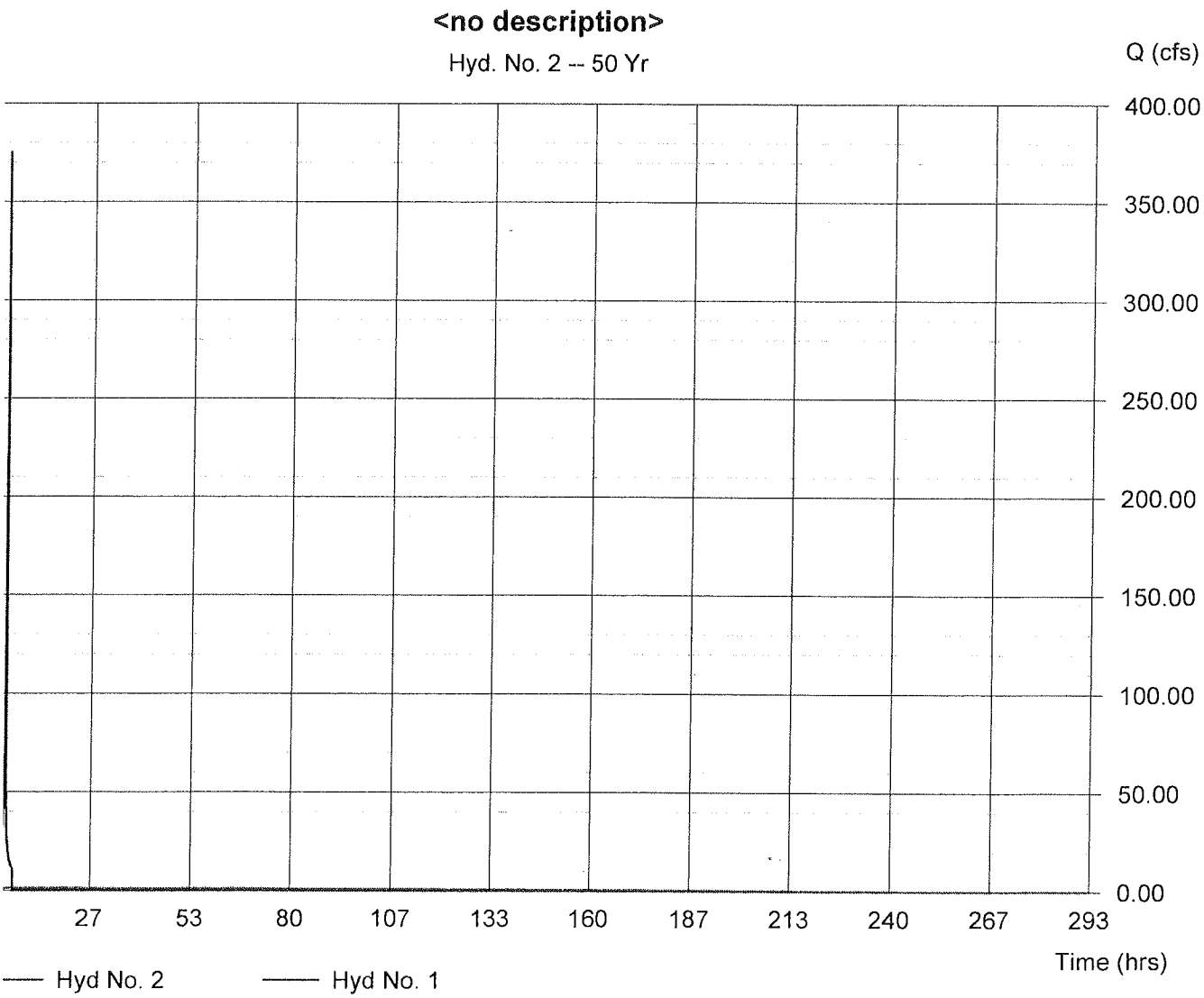
No. 2

scription>

graph type	= Reservoir	Peak discharge	= 1.29 cfs
frequency	= 50 yrs	Time interval	= 8 min
hyd. No.	= 1	Max. Elevation	= 498.15 ft
oir name	= Basin B (S.E. corner)	Max. Storage	= 626,268 cuft

dication method used.

Hydrograph Volume = 643,103 cuft



Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, Jun 23 2009, 3:28 PM

Pond No. 2 - Basin B (S.E. corner)

Pond Data

Pond storage is based on known values

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	483.30	00	0	0
1.00	484.30	00	26,498	26,498
2.00	485.30	00	32,886	59,384
3.00	486.30	00	34,482	93,866
4.00	487.30	00	35,402	129,268
5.00	488.30	00	38,067	167,335
6.00	489.30	00	38,691	206,026
7.00	490.30	00	40,916	246,942
8.00	491.30	00	42,493	289,435
9.00	492.30	00	43,502	332,937
10.00	493.30	00	46,332	379,269
11.00	494.30	00	47,039	426,308
12.00	495.30	00	49,426	475,735
13.00	496.30	00	51,106	526,840
14.00	497.30	00	52,267	579,107
15.00	498.30	00	55,323	634,430
16.00	499.30	00	56,233	690,663
17.00	500.30	00	57,845	748,508
18.00	501.30	00	58,922	807,430
19.00	502.30	00	59,100	866,530

Culvert / Orifice Structures

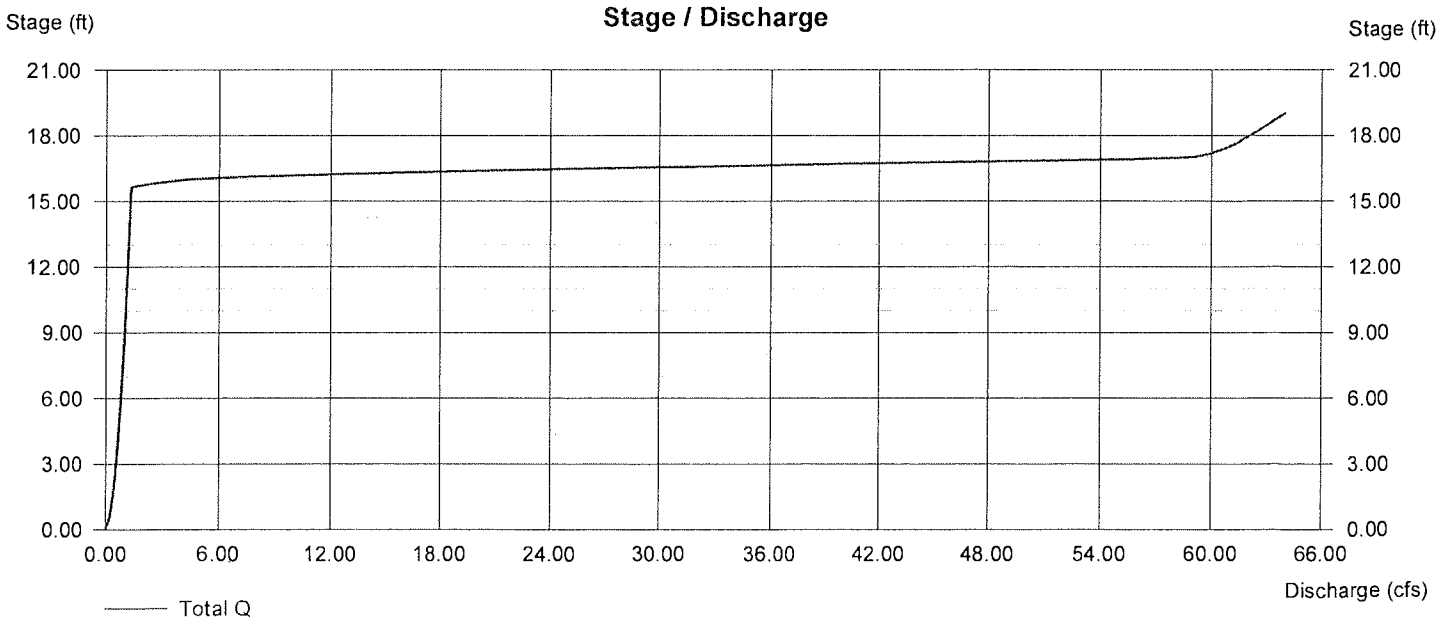
	[A]	[B]	[C]	[D]
Rise (in)	= 24.00	3.60	0.00	0.00
Span (in)	= 24.00	3.60	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 483.30	483.31	0.00	0.00
Length (ft)	= 80.00	0.50	0.00	0.00
Slope (%)	= 0.50	0.50	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.56	3.96	0.00	0.00
Crest El. (ft)	= 499.30	498.91	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Riser	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfiltration = 0.000 in/hr (Wet area) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control. Weir riser checked for orifice conditions.



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	Manual	403.10	8	248	689,040	----	------	------	East Basin
2	Reservoir	1.53	8	368	688,896	1	498.96	671,456	<no description>

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Jun 23 2009, 3:28 PM

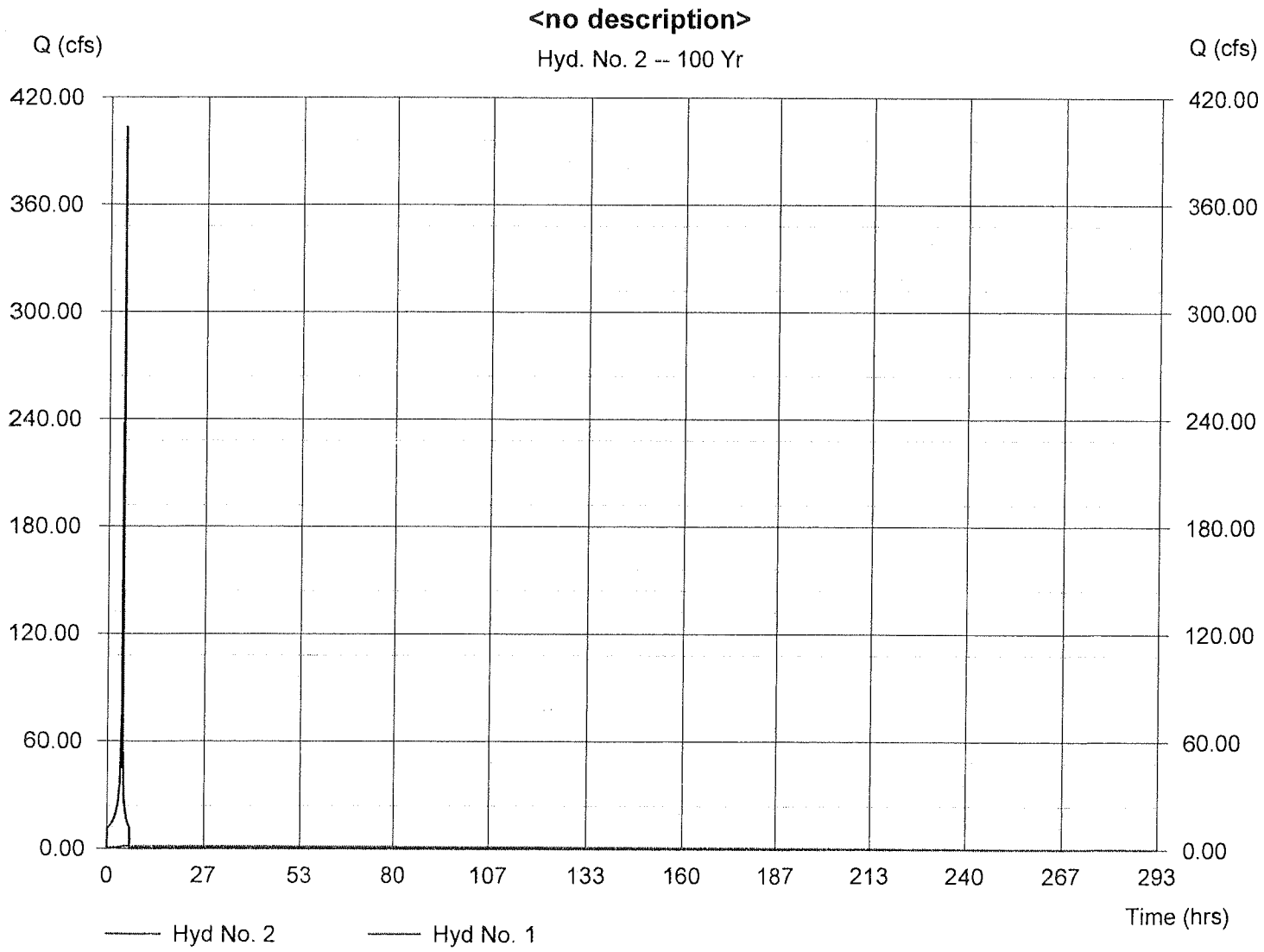
Hyd. No. 2

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 1.53 cfs
Storm frequency	= 100 yrs	Time interval	= 8 min
Inflow hyd. No.	= 1	Max. Elevation	= 498.96 ft
Reservoir name	= Basin B (S.E. corner)	Max. Storage	= 671,456 cuft

Storage Indication method used.

Hydrograph Volume = 688,896 cuft



Pond Report

Hydraflow Hydrographs by Intelisolve

Tuesday, Jun 23 2009, 3:28 PM

Pond No. 2 - Basin B (S.E. corner)

Pond Data

Pond storage is based on known values

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	483.30	00	0	0
1.00	484.30	00	26,498	26,498
2.00	485.30	00	32,886	59,384
3.00	486.30	00	34,482	93,866
4.00	487.30	00	35,402	129,268
5.00	488.30	00	38,067	167,335
6.00	489.30	00	38,691	206,026
7.00	490.30	00	40,916	246,942
8.00	491.30	00	42,493	289,435
9.00	492.30	00	43,502	332,937
10.00	493.30	00	46,332	379,269
11.00	494.30	00	47,039	426,308
12.00	495.30	00	49,426	475,735
13.00	496.30	00	51,106	526,840
14.00	497.30	00	52,267	579,107
15.00	498.30	00	55,323	634,430
16.00	499.30	00	56,233	690,663
17.00	500.30	00	57,845	748,508
18.00	501.30	00	58,922	807,430
19.00	502.30	00	59,100	866,530

Culvert / Orifice Structures

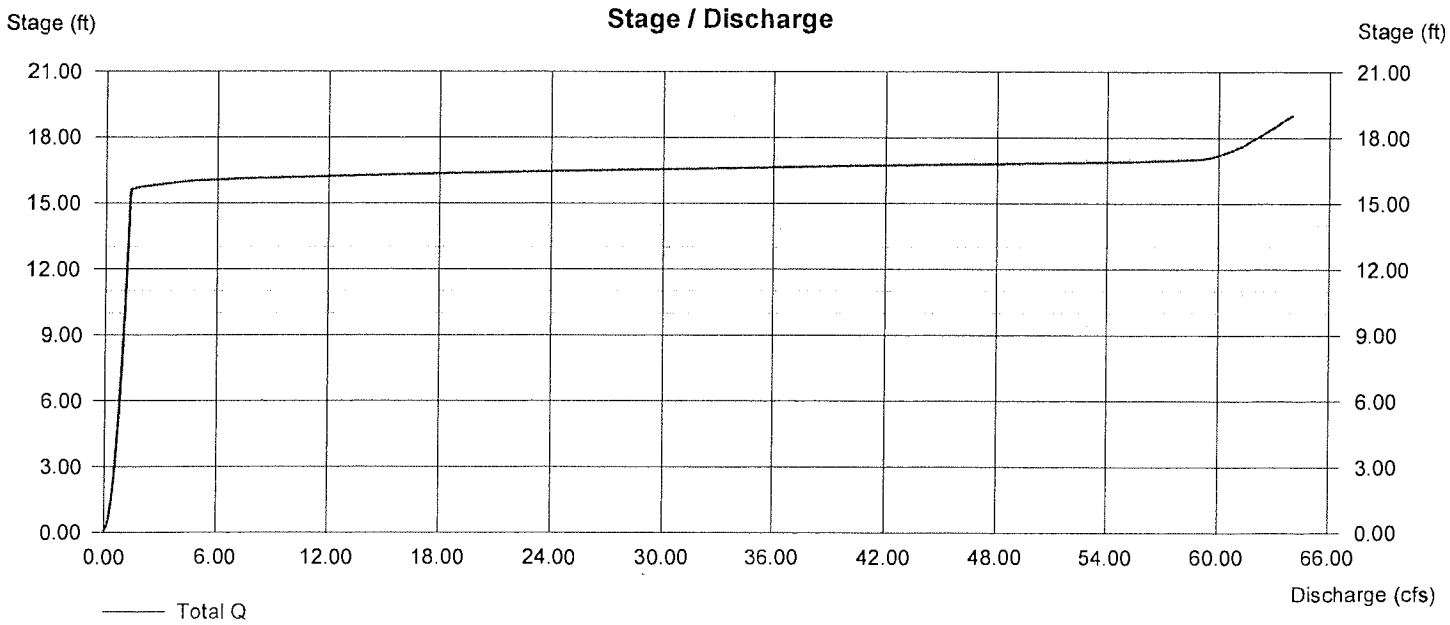
	[A]	[B]	[C]	[D]
Rise (in)	= 24.00	3.60	0.00	0.00
Span (in)	= 24.00	3.60	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 483.30	483.31	0.00	0.00
Length (ft)	= 80.00	0.50	0.00	0.00
Slope (%)	= 0.50	0.50	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.56	3.96	0.00	0.00
Crest El. (ft)	= 499.30	498.91	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Riser	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

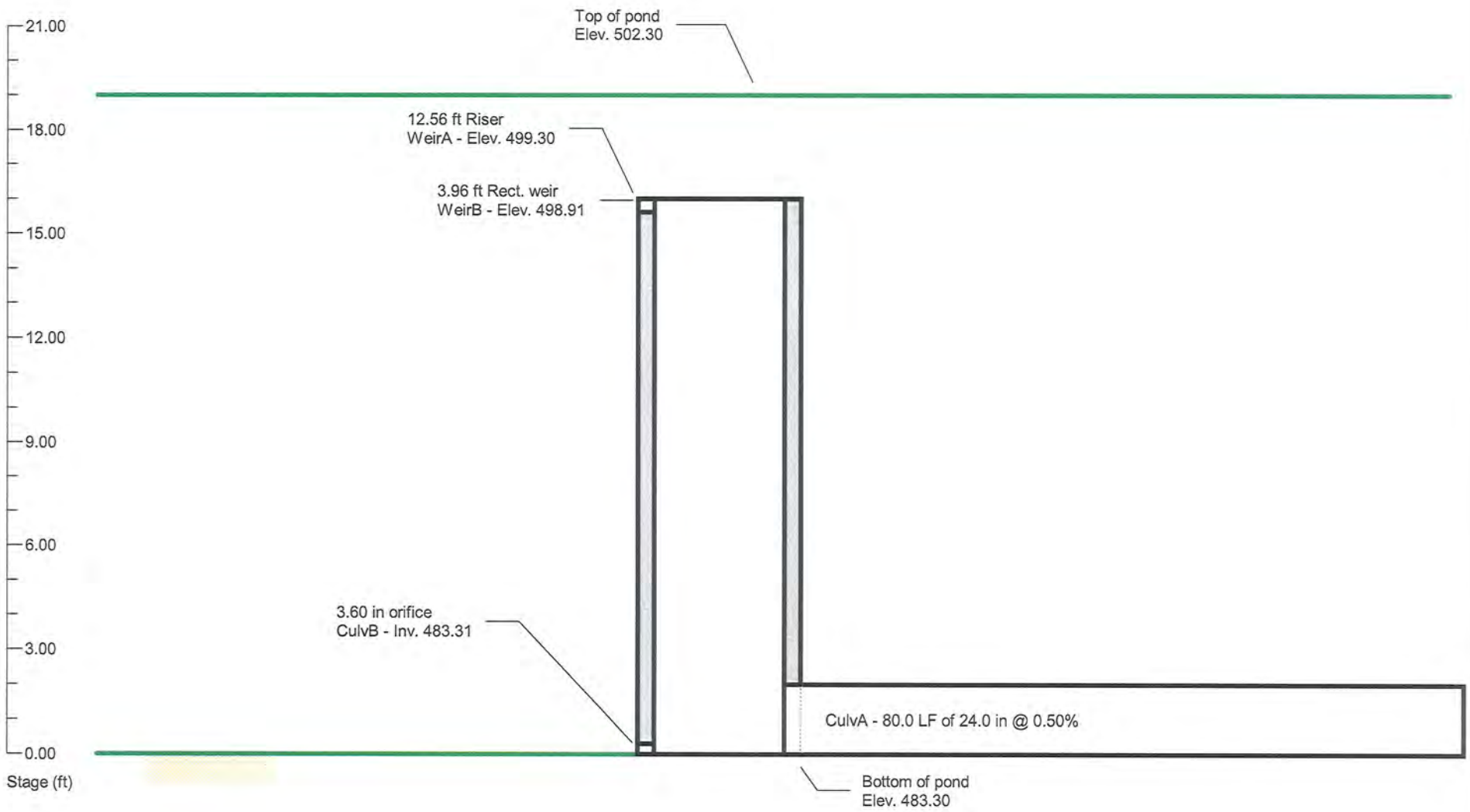
Exfiltration = 0.000 in/hr (Wet area) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control. Weir riser checked for orifice conditions.



Pond No. 2 - Basin B (S.E. corner)

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066



Section
NTS

100-yr
50-yr
10-yr

Inflow hydrograph = 1. Manual - East Basin

Project: 529000-OBP-East.gpw

Wednesday, Jan 27, 2010

Pond Report

Hydraflow Hydrographs by Intelisolve

Tuesday, Jun 23 2009, 3:40 PM

Pond No. 1 - Basin A (S.W. corner)

Pond Data

Pond storage is based on known values

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	495.02	00	0	0
1.00	496.02	00	91,970	91,970
2.00	497.02	00	139,690	231,660
3.00	498.02	00	142,287	373,947
4.00	499.02	00	150,123	524,070
5.00	500.02	00	151,470	675,540
6.00	501.02	00	157,334	832,874
7.00	502.02	00	161,806	994,680
8.00	503.02	00	165,294	1,159,974
9.00	504.02	00	169,233	1,329,207
10.00	505.02	00	169,239	1,498,446

Culvert / Orifice Structures

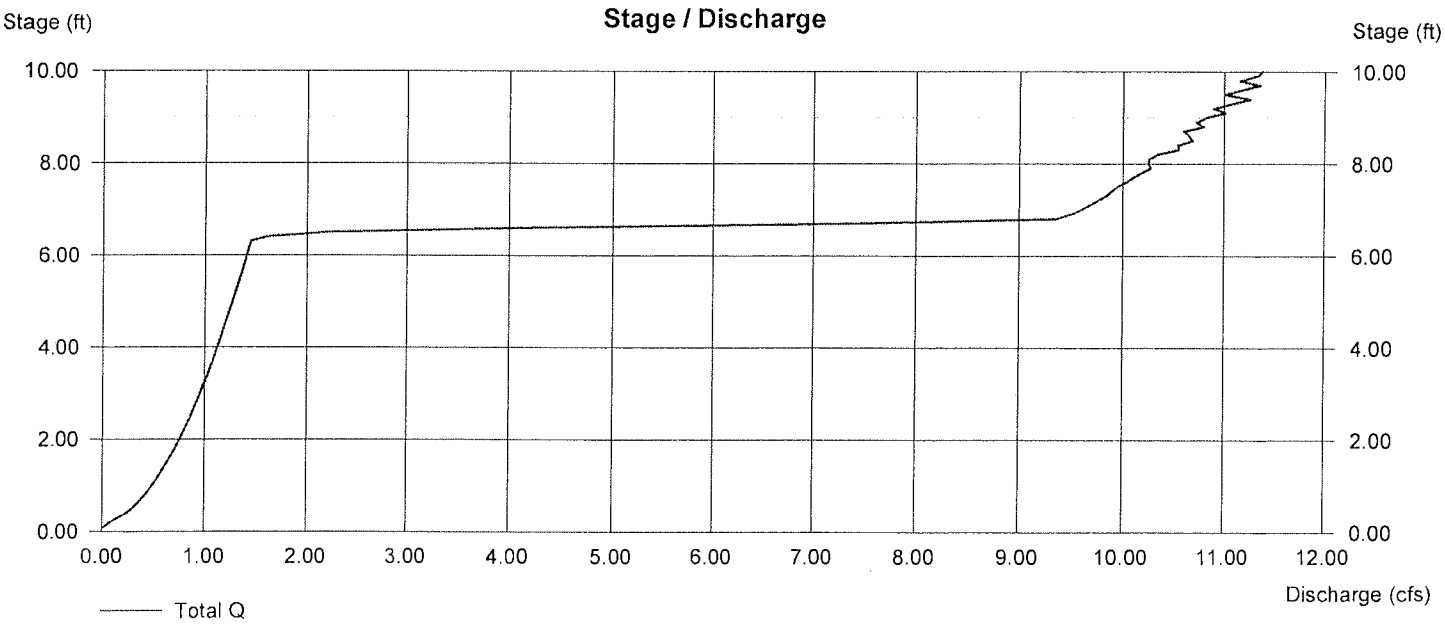
	[A]	[B]	[C]	[D]
Rise (in)	= 12.00	4.80	0.00	0.00
Span (in)	= 12.00	4.80	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 495.02	495.03	0.00	0.00
Length (ft)	= 40.00	0.50	0.00	0.00
Slope (%)	= 1.00	0.50	0.00	0.00
N-Value	= .013	.013	.013	.000
Orif. Coeff.	= 0.60	0.60	0.60	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.56	3.96	0.00	0.00
Crest El. (ft)	= 501.52	501.37	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	0.00
Weir Type	= Riser	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfiltration = 0.000 in/hr (Wet area) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control. Weir riser checked for orifice conditions.



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Jun 23 2009, 3:40 PM

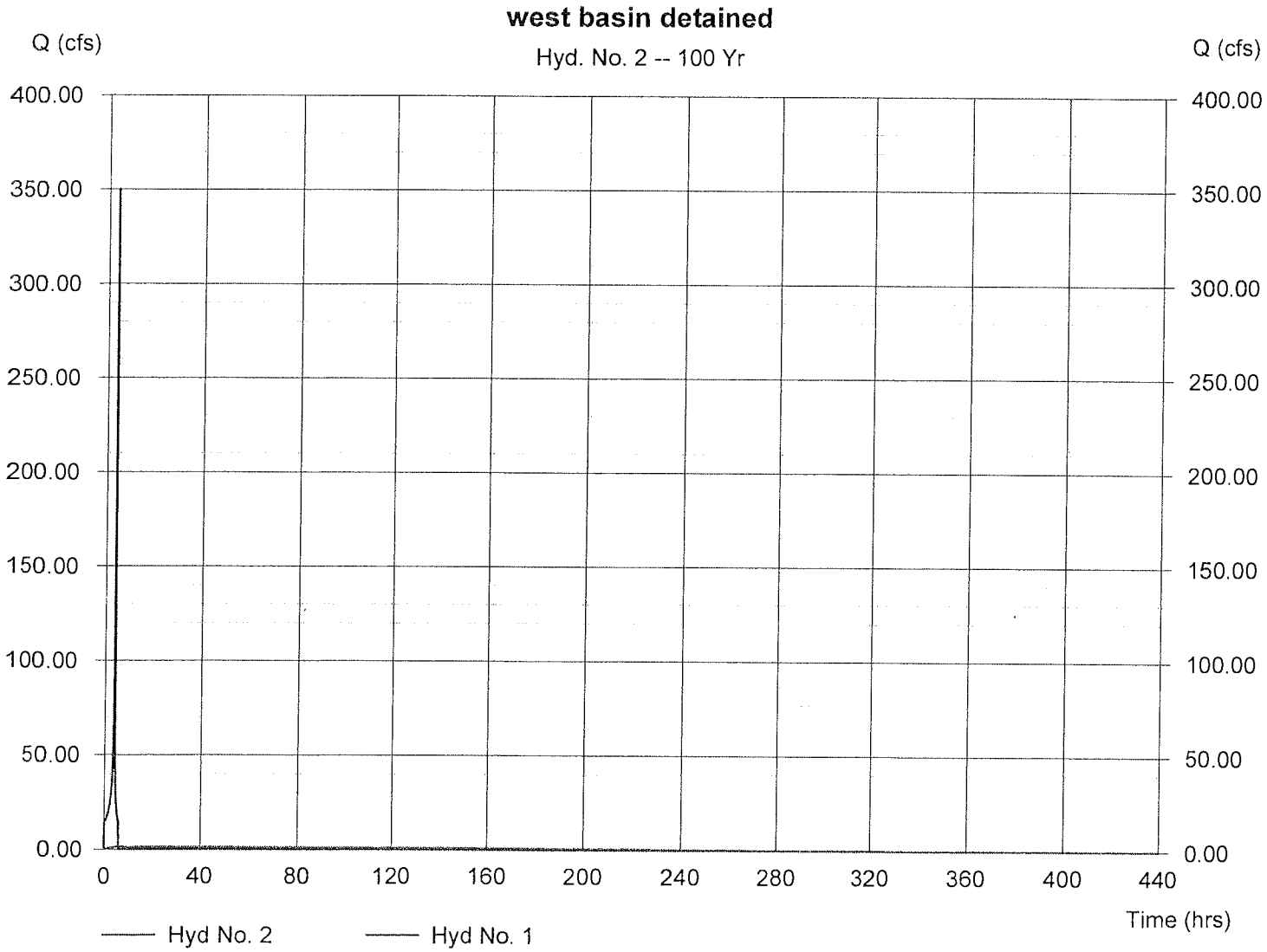
Hyd. No. 2

west basin detained

Hydrograph type	= Reservoir	Peak discharge	= 1.41 cfs
Storm frequency	= 100 yrs	Time interval	= 12 min
Inflow hyd. No.	= 1	Max. Elevation	= 501.11 ft
Reservoir name	= Basin A (S.W. corner)	Max. Storage	= 847,387 cuft

Storage Indication method used.

Hydrograph Volume = 863,234 cuft



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	Manual	350.00	12	252	865,152	----	-------	-------	west basin
2	Reservoir	1.41	12	372	863,234	1	501.11	847,387	west basin detained

529000-OBP-West.gpw | Return Period: 100 Year | Tuesday, Jun 23 2009, 3:40 PM

Pond Report

Hydraflow Hydrographs by Intelisolve

Tuesday, Jun 23 2009, 3:40 PM

Pond No. 1 - Basin A (S.W. corner)

Pond Data

Pond storage is based on known values

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	495.02	00	0	0
1.00	496.02	00	91,970	91,970
2.00	497.02	00	139,690	231,660
3.00	498.02	00	142,287	373,947
4.00	499.02	00	150,123	524,070
5.00	500.02	00	151,470	675,540
6.00	501.02	00	157,334	832,874
7.00	502.02	00	161,806	994,680
8.00	503.02	00	165,294	1,159,974
9.00	504.02	00	169,233	1,329,207
10.00	505.02	00	169,239	1,498,446

Culvert / Orifice Structures

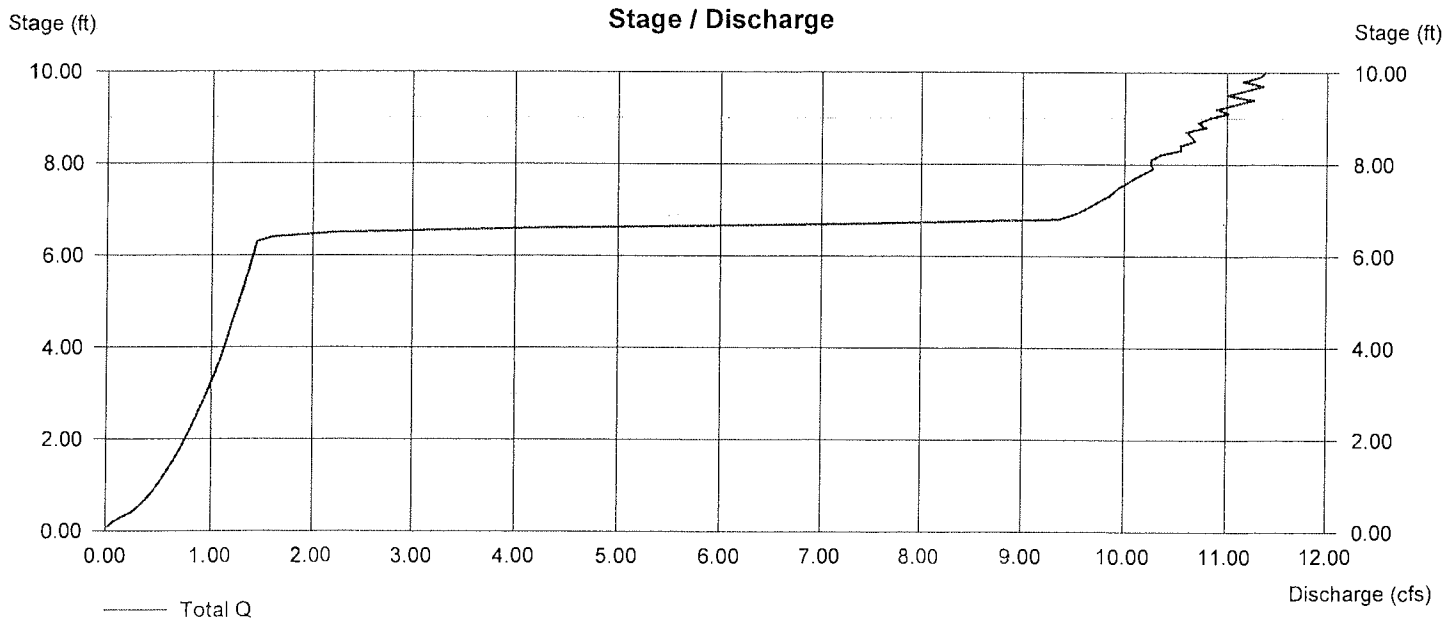
	[A]	[B]	[C]	[D]
Rise (in)	= 12.00	4.80	0.00	0.00
Span (in)	= 12.00	4.80	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 495.02	495.03	0.00	0.00
Length (ft)	= 40.00	0.50	0.00	0.00
Slope (%)	= 1.00	0.50	0.00	0.00
N-Value	= .013	.013	.013	.000
Orif. Coeff.	= 0.60	0.60	0.60	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.56	3.96	0.00	0.00
Crest El. (ft)	= 501.52	501.37	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	0.00
Weir Type	= Riser	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfiltration = 0.000 in/hr (Wet area) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control. Weir riser checked for orifice conditions.



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Jun 23 2009, 3:40 PM

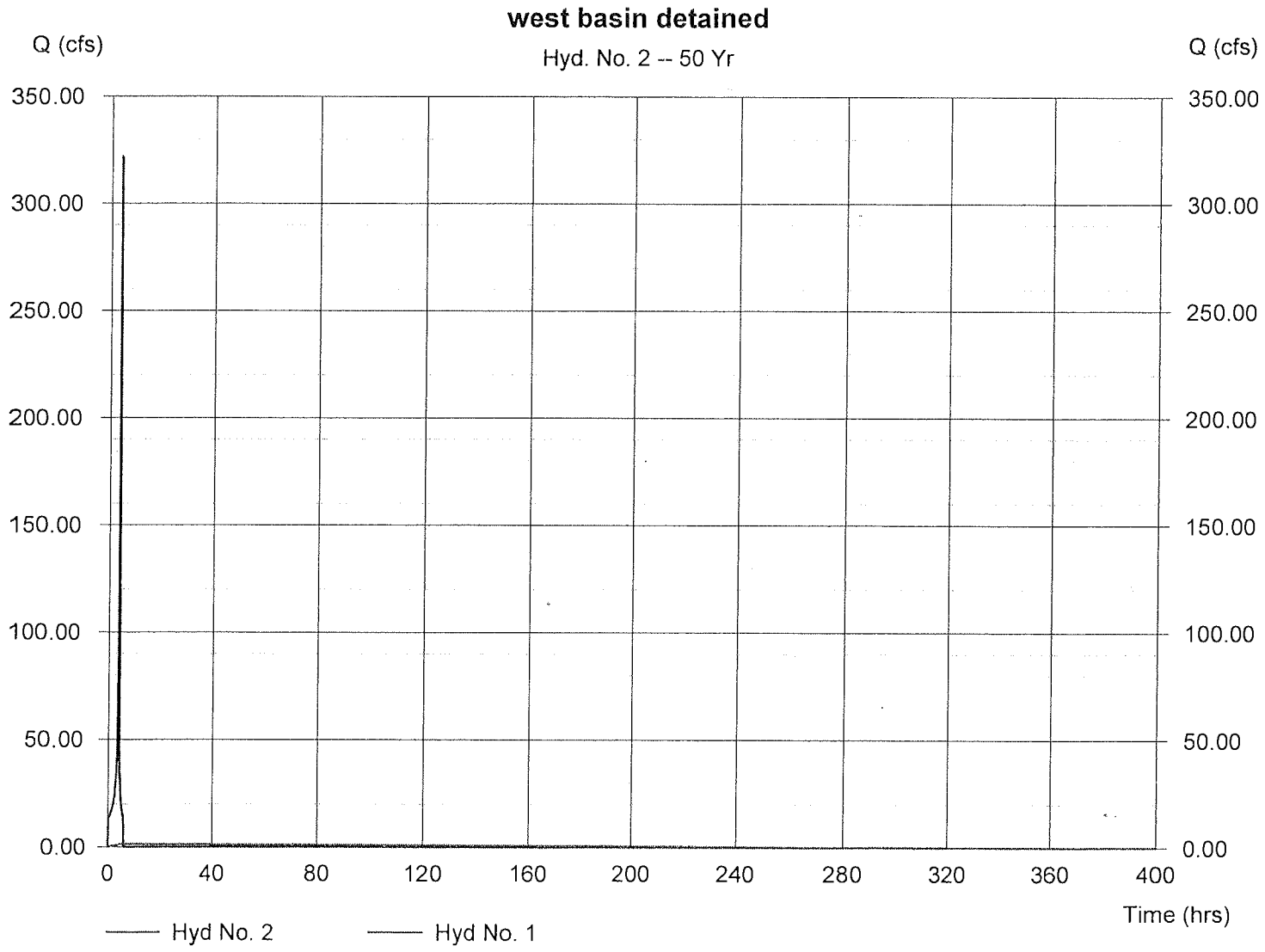
Hyd. No. 2

west basin detained

Hydrograph type	= Reservoir	Peak discharge	= 1.37 cfs
Storm frequency	= 50 yrs	Time interval	= 12 min
Inflow hyd. No.	= 1	Max. Elevation	= 500.75 ft
Reservoir name	= Basin A (S.W. corner)	Max. Storage	= 790,330 cuft

Storage Indication method used.

Hydrograph Volume = 805,719 cuft



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	Manual	321.80	12	252	807,480	----	------	-------	west basin
2	Reservoir	1.37	12	372	805,719	1	500.75	790,330	west basin detained

Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, Jun 23 2009, 3:40 PM

Pond No. 1 - Basin A (S.W. corner)

Pond Data

Pond storage is based on known values

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	495.02	00	0	0
1.00	496.02	00	91,970	91,970
2.00	497.02	00	139,690	231,660
3.00	498.02	00	142,287	373,947
4.00	499.02	00	150,123	524,070
5.00	500.02	00	151,470	675,540
6.00	501.02	00	157,334	832,874
7.00	502.02	00	161,806	994,680
8.00	503.02	00	165,294	1,159,974
9.00	504.02	00	169,233	1,329,207
10.00	505.02	00	169,239	1,498,446

Culvert / Orifice Structures

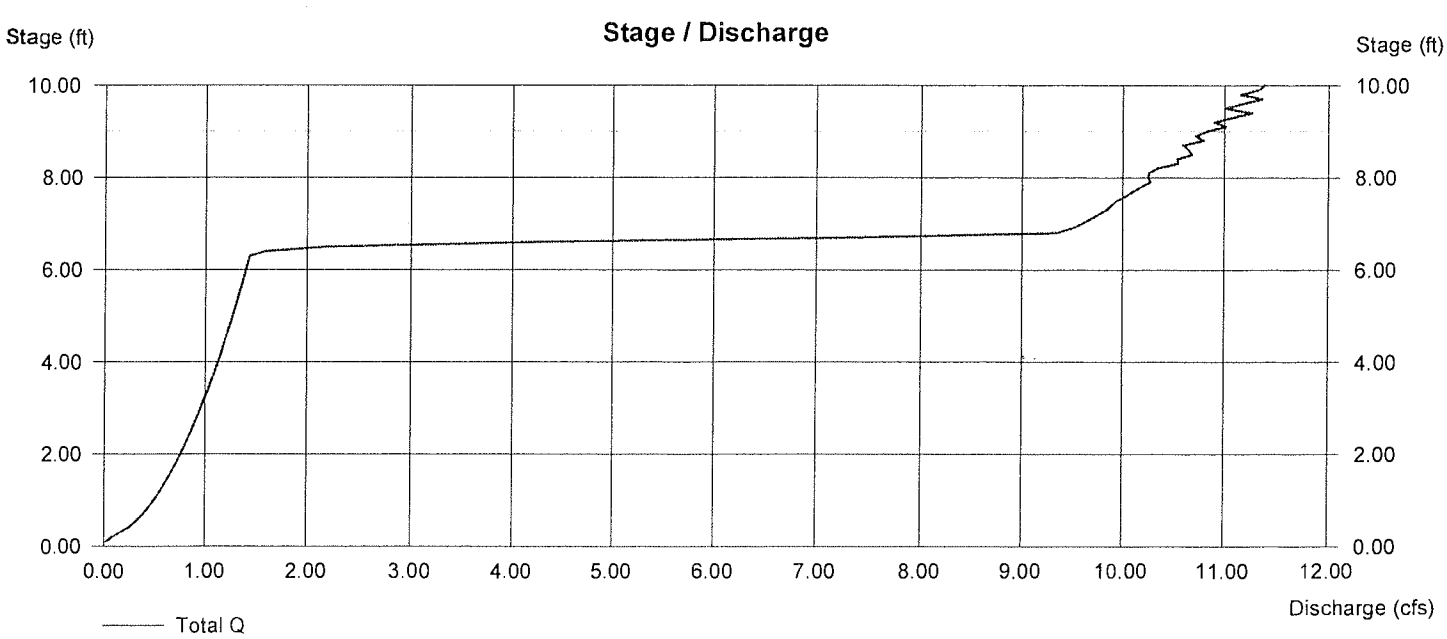
	[A]	[B]	[C]	[D]
Rise (in)	= 12.00	4.80	0.00	0.00
Span (in)	= 12.00	4.80	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 495.02	495.03	0.00	0.00
Length (ft)	= 40.00	0.50	0.00	0.00
Slope (%)	= 1.00	0.50	0.00	0.00
N-Value	= .013	.013	.013	.000
Orif. Coeff.	= 0.60	0.60	0.60	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.56	3.96	0.00	0.00
Crest El. (ft)	= 501.52	501.37	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	0.00
Weir Type	= Riser	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfiltration = 0.000 in/hr (Wet area) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control. Weir riser checked for orifice conditions.



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Jun 23 2009, 3:40 PM

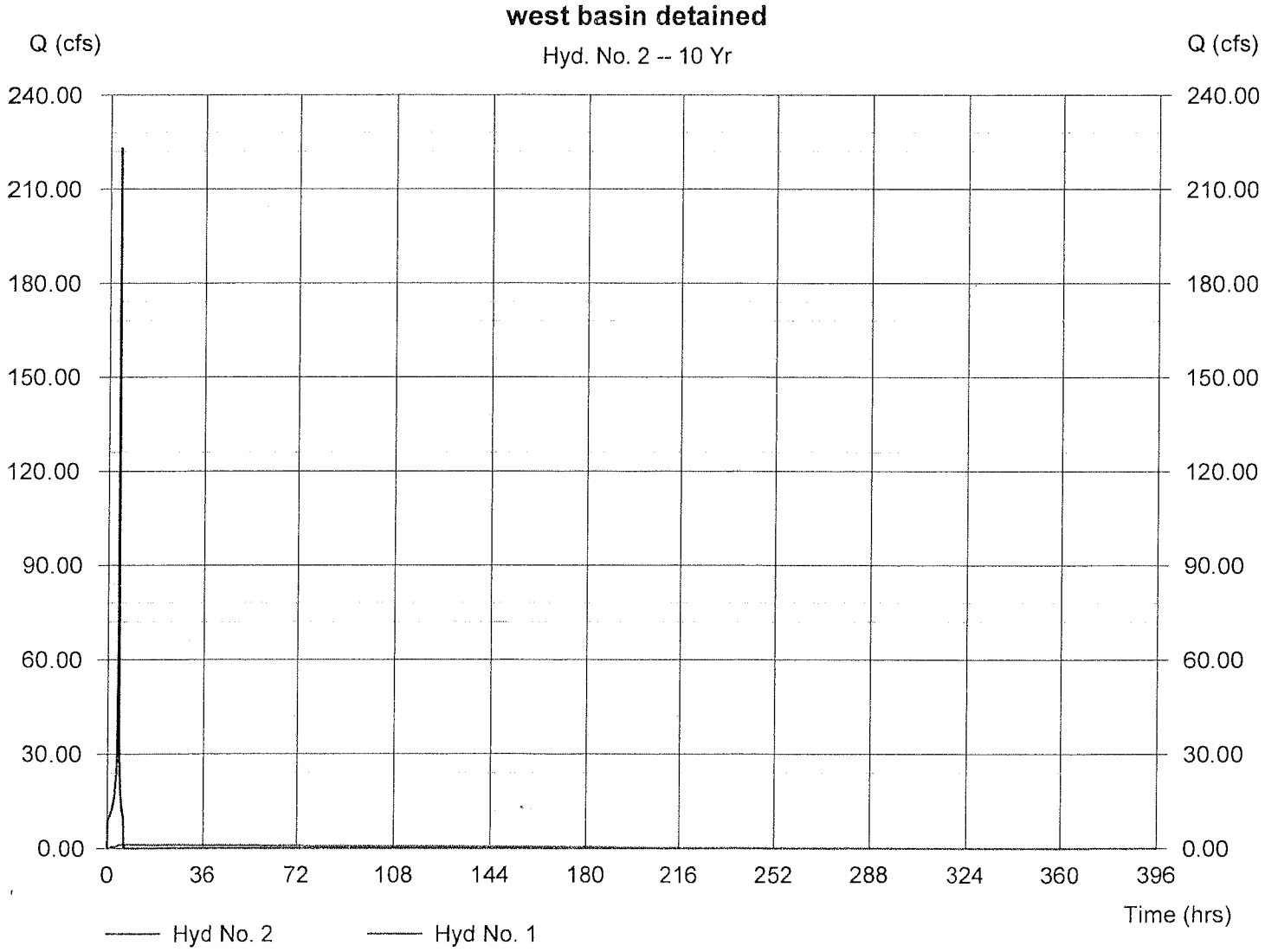
Hyd. No. 2

west basin detained

Hydrograph type	= Reservoir	Peak discharge	= 1.13 cfs
Storm frequency	= 10 yrs	Time interval	= 12 min
Inflow hyd. No.	= 1	Max. Elevation	= 499.08 ft
Reservoir name	= Basin A (S.W. corner)	Max. Storage	= 533,882 cuft

Storage Indication method used.

Hydrograph Volume = 546,696 cuft



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	Manual	223.00	12	252	547,848	----	------	------	west basin
2	Reservoir	1.13	12	372	546,696	1	499.08	533,882	west basin detained

529000-OBP-West.gpw | Return Period: 10 Year | Tuesday, Jun 23 2009, 3:40 PM

100 YR WEST DETENTION BASIN

ATIONAL METHOD HYDROGRAPH PROGRAM
OPYRIGHT 1992, 2001 RICK ENGINEERING COMPANY

UN DATE 6/22/2009
YDROGRAPH FILE NAME Text1
ME OF CONCENTRATION 12 MIN.
HOUR RAINFALL 3 INCHES
ASIN AREA 91.9 ACRES
UNOFF COEFFICIENT 0.87
EAK DISCHARGE 350 CFS

ME (MIN) = 0	DISCHARGE (CFS) = 0
ME (MIN) = 12	DISCHARGE (CFS) = 14.4
ME (MIN) = 24	DISCHARGE (CFS) = 14.7
ME (MIN) = 36	DISCHARGE (CFS) = 15.4
ME (MIN) = 48	DISCHARGE (CFS) = 15.8
ME (MIN) = 60	DISCHARGE (CFS) = 16.6
ME (MIN) = 72	DISCHARGE (CFS) = 17.1
ME (MIN) = 84	DISCHARGE (CFS) = 18.2
ME (MIN) = 96	DISCHARGE (CFS) = 18.8
ME (MIN) = 108	DISCHARGE (CFS) = 20.1
ME (MIN) = 120	DISCHARGE (CFS) = 20.9
ME (MIN) = 132	DISCHARGE (CFS) = 22.7
ME (MIN) = 144	DISCHARGE (CFS) = 23.8
ME (MIN) = 156	DISCHARGE (CFS) = 26.4
ME (MIN) = 168	DISCHARGE (CFS) = 28
ME (MIN) = 180	DISCHARGE (CFS) = 32.1
ME (MIN) = 192	DISCHARGE (CFS) = 34.8
ME (MIN) = 204	DISCHARGE (CFS) = 42.5
ME (MIN) = 216	DISCHARGE (CFS) = 48.5
ME (MIN) = 228	DISCHARGE (CFS) = 71.1
ME (MIN) = 240	DISCHARGE (CFS) = 109.5
ME (MIN) = 252	DISCHARGE (CFS) = 350
ME (MIN) = 264	DISCHARGE (CFS) = 57.1
ME (MIN) = 276	DISCHARGE (CFS) = 38.2
ME (MIN) = 288	DISCHARGE (CFS) = 29.9
ME (MIN) = 300	DISCHARGE (CFS) = 25
ME (MIN) = 312	DISCHARGE (CFS) = 21.8
ME (MIN) = 324	DISCHARGE (CFS) = 19.4
ME (MIN) = 336	DISCHARGE (CFS) = 17.6
ME (MIN) = 348	DISCHARGE (CFS) = 16.2
ME (MIN) = 360	DISCHARGE (CFS) = 15
ME (MIN) = 372	DISCHARGE (CFS) = 0

RATIONAL METHOD HYDROGRAPH PROGRAM
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50 YR WEST DETENTION BASIN

RUN DATE 6/22/2009
HYDROGRAPH FILE NAME Text1
TIME OF CONCENTRATION 12 MIN.
6 HOUR RAINFALL 2.8 INCHES
BASIN AREA 91.9 ACRES
RUNOFF COEFFICIENT 0.87
PEAK DISCHARGE 321.8 CFS

TIME (MIN) = 0	DISCHARGE (CFS) = 0
TIME (MIN) = 12	DISCHARGE (CFS) = 13.4
TIME (MIN) = 24	DISCHARGE (CFS) = 13.7
TIME (MIN) = 36	DISCHARGE (CFS) = 14.4
TIME (MIN) = 48	DISCHARGE (CFS) = 14.7
TIME (MIN) = 60	DISCHARGE (CFS) = 15.5
TIME (MIN) = 72	DISCHARGE (CFS) = 16
TIME (MIN) = 84	DISCHARGE (CFS) = 17
TIME (MIN) = 96	DISCHARGE (CFS) = 17.5
TIME (MIN) = 108	DISCHARGE (CFS) = 18.8
TIME (MIN) = 120	DISCHARGE (CFS) = 19.5
TIME (MIN) = 132	DISCHARGE (CFS) = 21.2
TIME (MIN) = 144	DISCHARGE (CFS) = 22.2
TIME (MIN) = 156	DISCHARGE (CFS) = 24.6
TIME (MIN) = 168	DISCHARGE (CFS) = 26.1
TIME (MIN) = 180	DISCHARGE (CFS) = 30
TIME (MIN) = 192	DISCHARGE (CFS) = 32.5
TIME (MIN) = 204	DISCHARGE (CFS) = 39.7
TIME (MIN) = 216	DISCHARGE (CFS) = 45.2
TIME (MIN) = 228	DISCHARGE (CFS) = 66.4
TIME (MIN) = 240	DISCHARGE (CFS) = 107.1
TIME (MIN) = 252	DISCHARGE (CFS) = 321.8
TIME (MIN) = 264	DISCHARGE (CFS) = 53.3
TIME (MIN) = 276	DISCHARGE (CFS) = 35.6
TIME (MIN) = 288	DISCHARGE (CFS) = 27.9
TIME (MIN) = 300	DISCHARGE (CFS) = 23.4
TIME (MIN) = 312	DISCHARGE (CFS) = 20.3
TIME (MIN) = 324	DISCHARGE (CFS) = 18.1
TIME (MIN) = 336	DISCHARGE (CFS) = 16.5
TIME (MIN) = 348	DISCHARGE (CFS) = 15.1
TIME (MIN) = 360	DISCHARGE (CFS) = 14
TIME (MIN) = 372	DISCHARGE (CFS) = 0

ATIONAL METHOD HYDROGRAPH PROGRAM
OPYRIGHT 1992, 2001 RICK ENGINEERING COMPANY

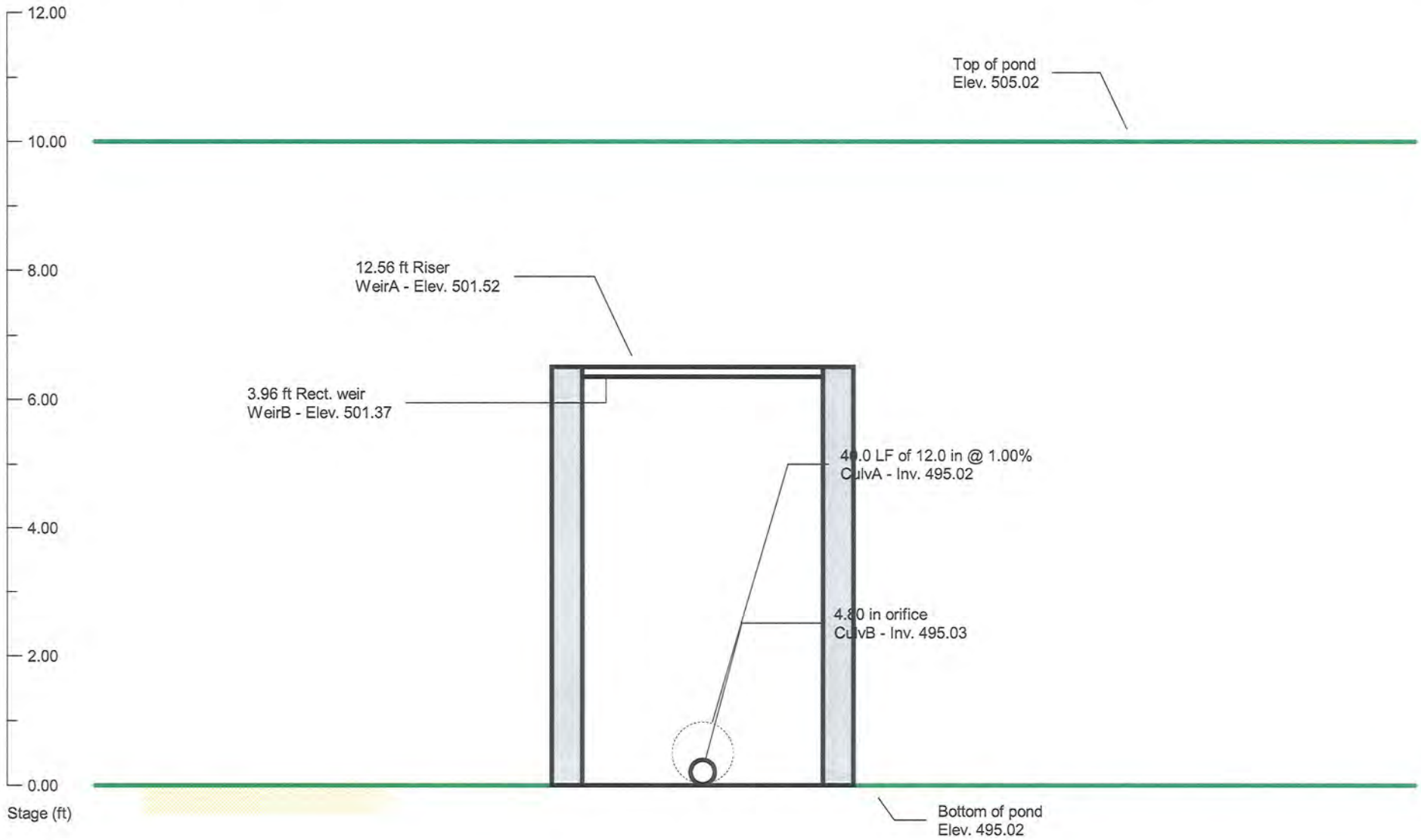
10 YR WEST DETENTION BASIN

UN DATE 6/22/2009
YDROGRAPH FILE NAME Text1
ME OF CONCENTRATION 12 MIN.
HOUR RAINFALL 1.9 INCHES
ASIN AREA 91.9 ACRES
UNOFF COEFFICIENT 0.87
EAK DISCHARGE 223 CFS

ME (MIN) = 0	DISCHARGE (CFS) = 0
ME (MIN) = 12	DISCHARGE (CFS) = 9.1
ME (MIN) = 24	DISCHARGE (CFS) = 9.3
ME (MIN) = 36	DISCHARGE (CFS) = 9.8
ME (MIN) = 48	DISCHARGE (CFS) = 10
ME (MIN) = 60	DISCHARGE (CFS) = 10.5
ME (MIN) = 72	DISCHARGE (CFS) = 10.8
ME (MIN) = 84	DISCHARGE (CFS) = 11.5
ME (MIN) = 96	DISCHARGE (CFS) = 11.9
ME (MIN) = 108	DISCHARGE (CFS) = 12.8
ME (MIN) = 120	DISCHARGE (CFS) = 13.2
ME (MIN) = 132	DISCHARGE (CFS) = 14.4
ME (MIN) = 144	DISCHARGE (CFS) = 15.1
ME (MIN) = 156	DISCHARGE (CFS) = 16.7
ME (MIN) = 168	DISCHARGE (CFS) = 17.7
ME (MIN) = 180	DISCHARGE (CFS) = 20.3
ME (MIN) = 192	DISCHARGE (CFS) = 22
ME (MIN) = 204	DISCHARGE (CFS) = 26.9
ME (MIN) = 216	DISCHARGE (CFS) = 30.7
ME (MIN) = 228	DISCHARGE (CFS) = 45.1
ME (MIN) = 240	DISCHARGE (CFS) = 68
ME (MIN) = 252	DISCHARGE (CFS) = 223
ME (MIN) = 264	DISCHARGE (CFS) = 36.1
ME (MIN) = 276	DISCHARGE (CFS) = 24.2
ME (MIN) = 288	DISCHARGE (CFS) = 18.9
ME (MIN) = 300	DISCHARGE (CFS) = 15.8
ME (MIN) = 312	DISCHARGE (CFS) = 13.8
ME (MIN) = 324	DISCHARGE (CFS) = 12.3
ME (MIN) = 336	DISCHARGE (CFS) = 11.2
ME (MIN) = 348	DISCHARGE (CFS) = 10.3
ME (MIN) = 360	DISCHARGE (CFS) = 9.5
ME (MIN) = 372	DISCHARGE (CFS) = 0

Pond No. 1 - Basin A (S.W. corner)

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066



Front View

NTS - Looking Downstream

100-yr

50-yr

10-yr

Inflow hydrograph = 1. Manual - west basin

Project: 529000-OBP-West.gpw

Wednesday, Jan 27, 2010

Kimley-Horn
and Associates, Inc.

Appendix D ~ 100-Year Headwater Calculations

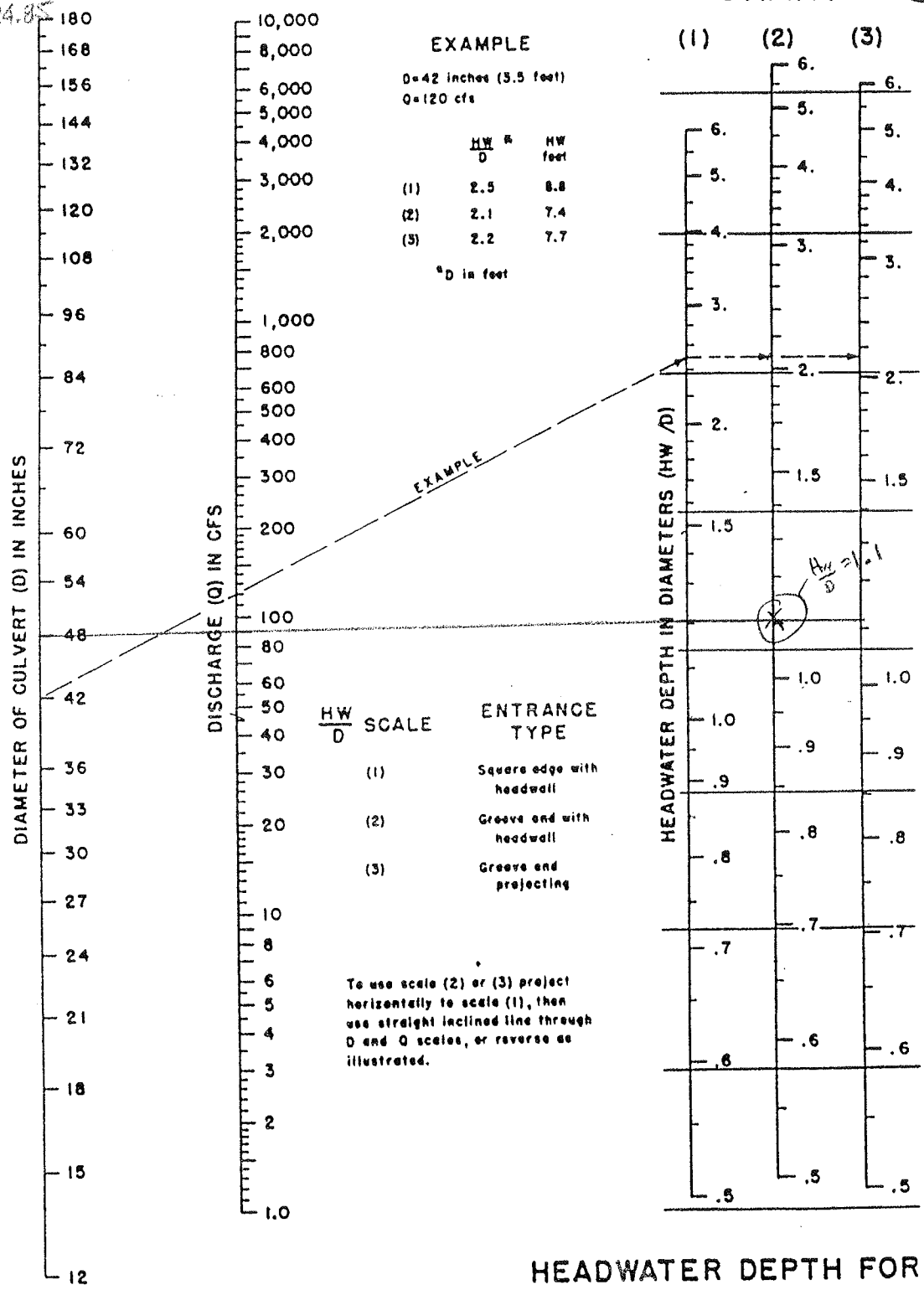
NODE 602

48" RCP

Q_{100} = 87.1 CFS.

FL = 524.85

CHART 1



HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

HEADWATER SCALES 2&3
REVISED MAY 1964

BUREAU OF PUBLIC ROADS JAN. 1963

$\frac{HW}{D}$ = 1.1

H = 4.4'

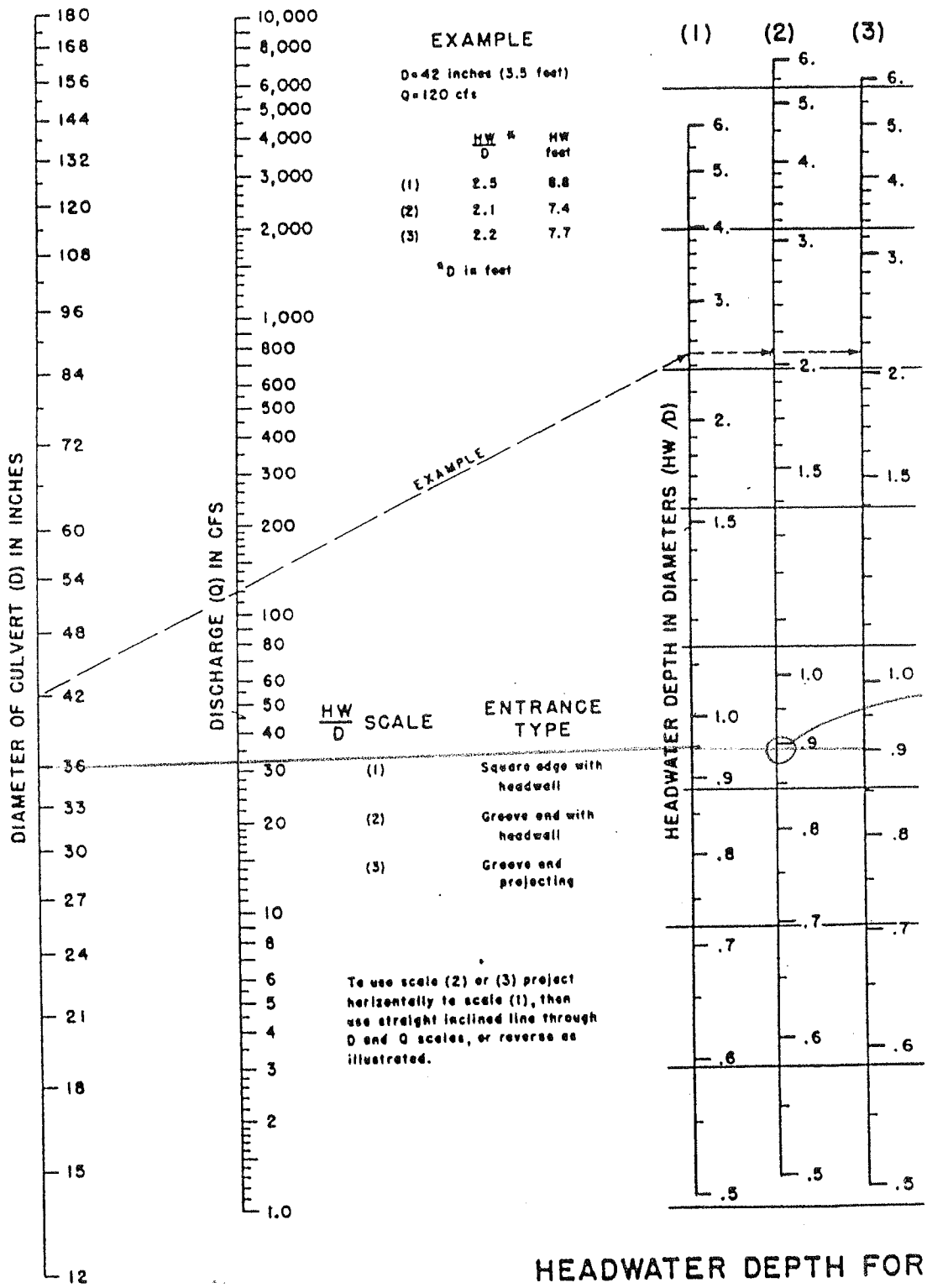
Note 402

Q = 48.4 cfs

HW = 518

36 [illegible]

CHART 1



HEADWATER SCALES 2&3
REVISED MAY 1964

BUREAU OF PUBLIC ROADS JAN. 1963

HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

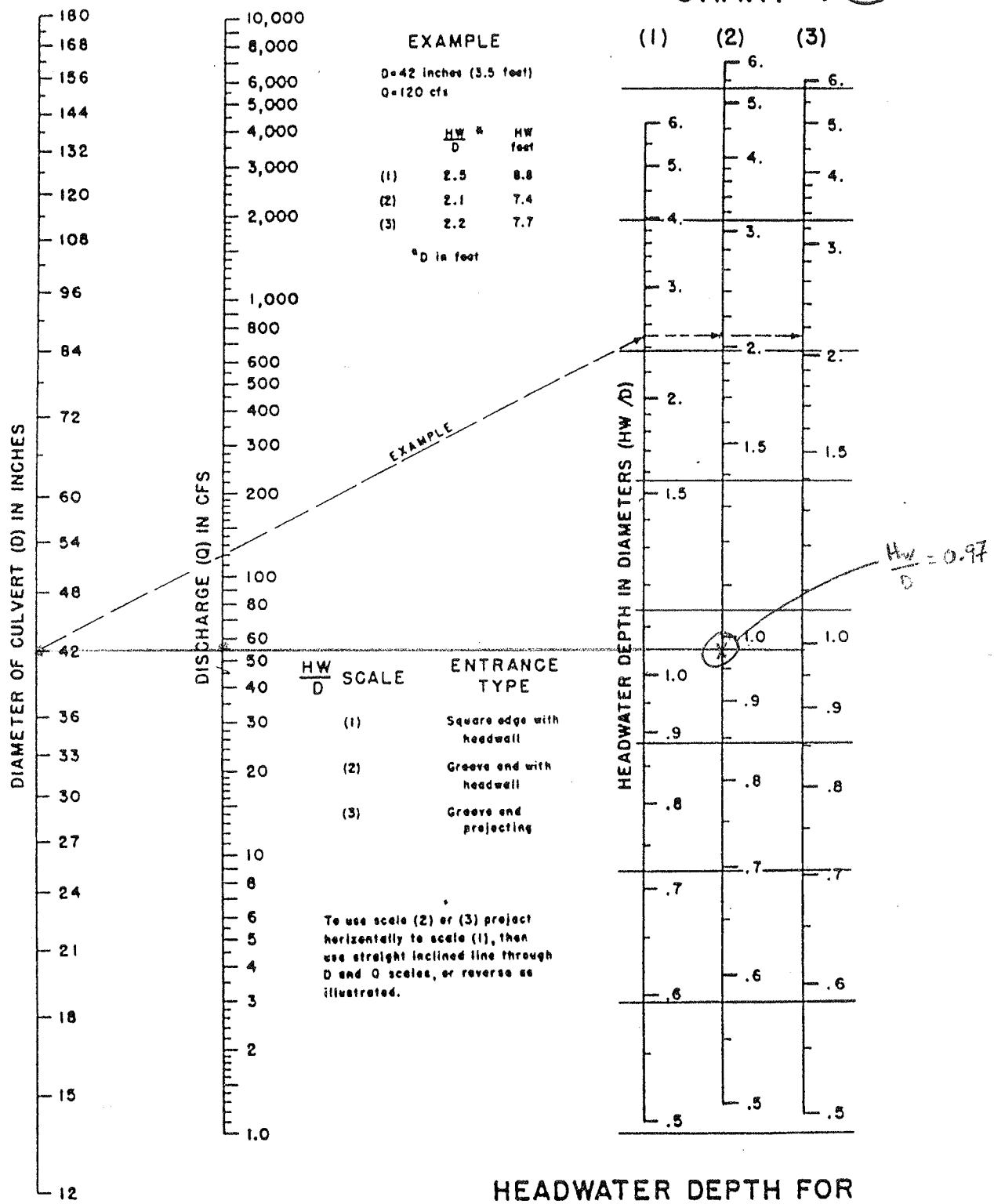
Hw/D = 0.88

Hw = 2.64

518 + 2.64 = 520.6

Node 117
Q = 58.3 cfs
42" RCP
FL 520.0

CHART 1



HEADWATER SCALES 2&3
REVISED MAY 1964

BUREAU OF PUBLIC ROADS JAN. 1963

HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

HW/D = 0.97
HW = 3.4

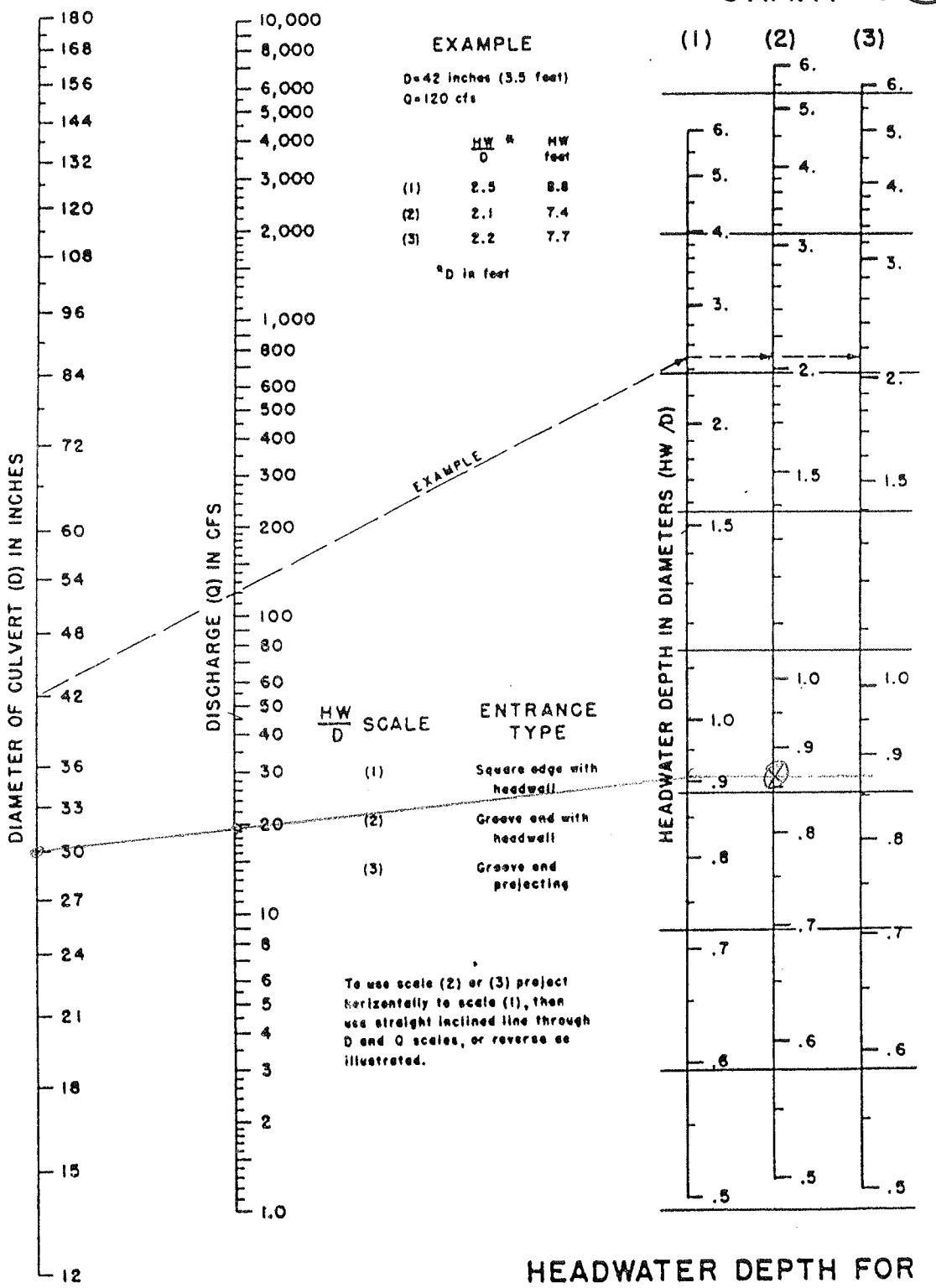
NODE 122

Q_{100} = 19.2 CFS

30" RCP

FL 551.0

CHART 1



HEADWATER SCALES 2&3
REVISED MAY 1964

BUREAU OF PUBLIC ROADS JAN. 1963

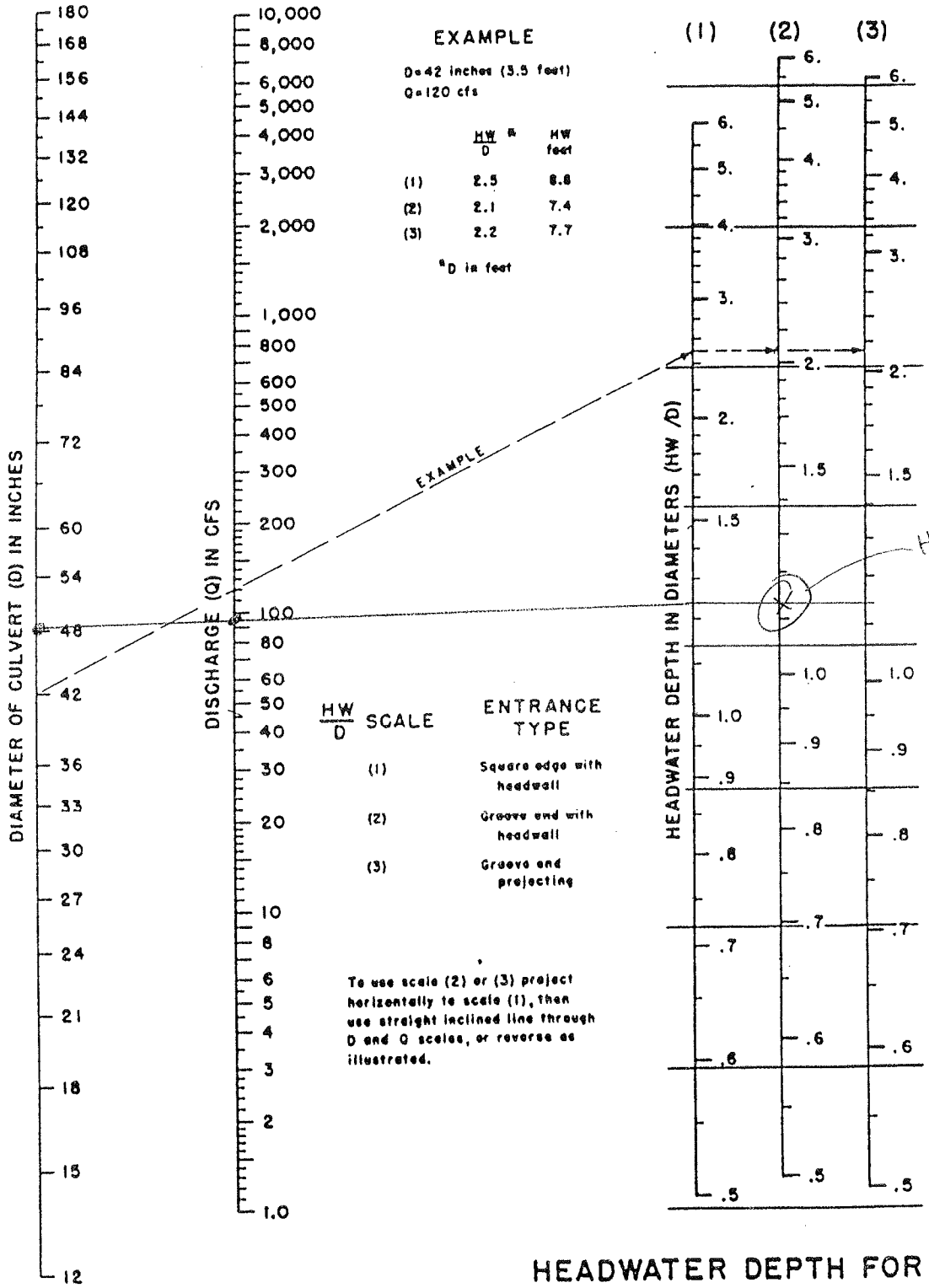
HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

$\frac{HW}{D}$ = 0.86

HW = 9.8'

302
3x. 1CFS
FL 540.5
48" 500

CHART 1



HEADWATER SCALES 2&3
REVISED MAY 1964

BUREAU OF PUBLIC ROADS JAN. 1963

HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

Hw = 4.6
Hw ELEV = 545.1

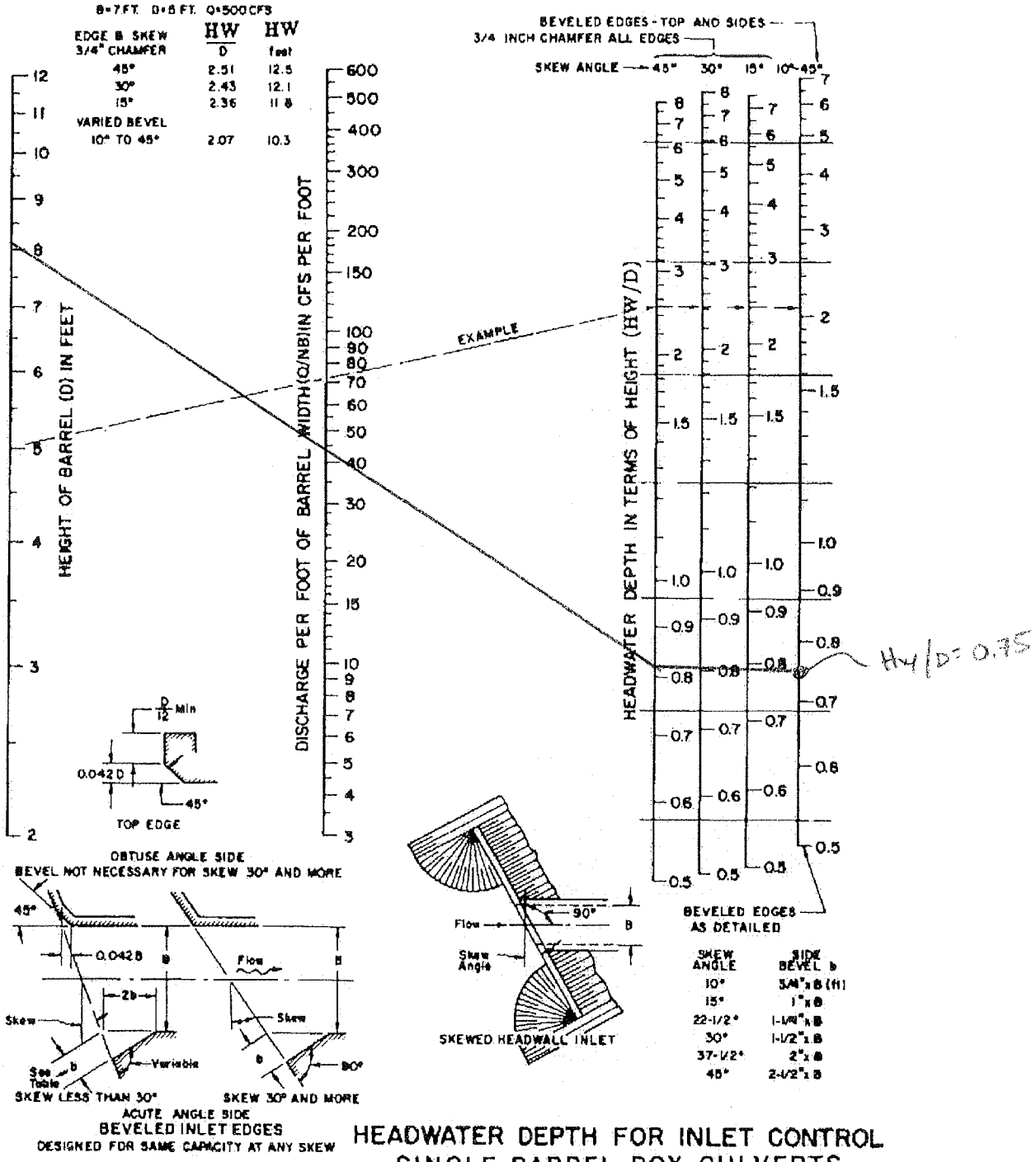
NODE 1011

Q_{100} = 514.50 CFS

12' x 8' BOX CULVERT

FL 522 EXAMPLE

CHART 11B



FEDERAL HIGHWAY ADMINISTRATION
MAY 1973

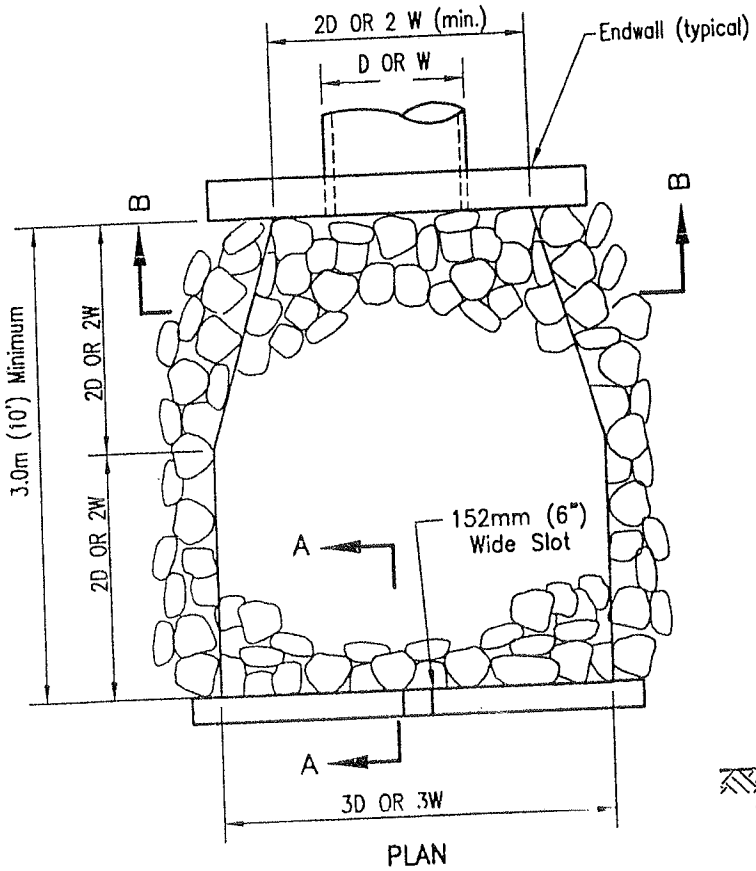
HEADWATER DEPTH FOR INLET CONTROL
SINGLE BARREL BOX CULVERTS
SKEWED HEADWALLS
CHAMFERED OR BEVELED INLET EDGES

Hw = 6

Hw ELEV = 528.0

Kimley-Horn
and Associates, Inc.

Appendix E ~ Preliminary Rip Rap Size



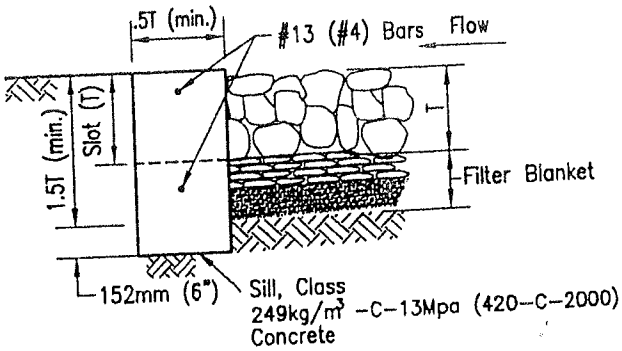
PLAN

Design Velocity m/sec (ft/sec)*	Rock Classification	T (min)
1.8–3 (6–10)	No. 2 Backing	320mm (1.1ft)
3–3.7 (10–12)	220 kg (1/4 ton)	823mm (2.7ft)
3.7–4.3 (12–14)	450 kg (1/2 ton)	1.1m (3.5ft)
4.3–4.9 (14–16)	900 kg (1 ton)	1.3m (4.4ft)
4.9–5.5 (16–18)	1.8 tonne (2 ton)	1.6m (5.4ft)

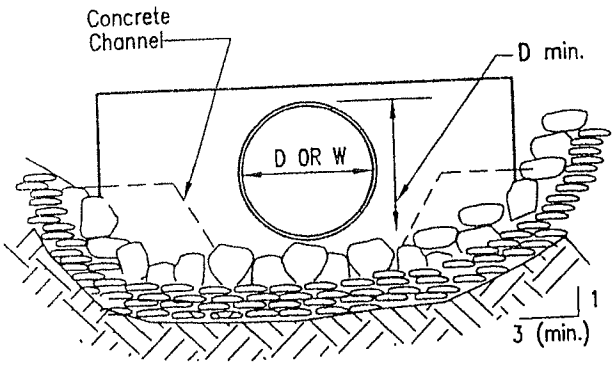
*over 5.5 mps (18 fps) requires special design

D = Pipe Diameter

W = Bottom Width of Channel



SECTION A–A



SECTION B–B

NOTES

1. Plans shall specify:
   A) Rock Class and thickness (T).
   B) Filter material, number of layers and thickness.
2. Rip rap shall be either quarry stone or broken concrete (if shown on the plans.) Cobbles are not acceptable.
3. Rip rap shall be placed over filter blanket which may be either granular material or filter fabric (woven filter slit film fabric shall not be used).
4. See Regional Supplement Amendments for selection of filter blanket.
5. Rip rap energy dissipators shall be designated as either Type 1 or Type 2. Type 1 shall be with concrete sill; Type 2 shall be without sill.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Add Rip Rap		S. Brady	04/06

SAN DIEGO REGIONAL STANDARD DRAWING

RIP RAP

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 04/27/2006

Chairperson R.C.E. 19246 Date

DRAWING D-40

Table 7-1 Rock Size for Riprap Aprons at Storm Drain Outlets

Outlet Velocity (ft/s)	Rock Classification	Size of Stone, d_{50} (ft) [(a)]
6-10	No. 2 Backing	0.7
→ 10-12	¼ Ton	1.8
12-14	½ Ton	2.3
14-16	1 Ton	2.9
16-18	2 Ton	3.6

[(a)] *Assumes specific weight of 165 lb/ft³. The designer shall take care to apply a unit weight that is applicable to the type of riprap specified for the project, and adjust their calculations if necessary.*

FROM PG 7-2 OF SAN DIEGO COUNTY DRAINAGE DESIGN MANUAL

NODE 953

Q_{100} = 272 CFS

V_{100} = 12 FPS

72" RCP

∴ ¼ TON RIP RAP

Table 7-1 Rock Size for Riprap Aprons at Storm Drain Outlets

Outlet Velocity (ft/s)	Rock Classification	Size of Stone, d_{50} (ft) [(a)]
6-10	No. 2 Backing	0.7
10-12	¼ Ton	1.8
12-14	½ Ton	2.3
14-16	1 Ton	2.9
16-18	2 Ton	3.6

[(a)] *Assumes specific weight of 165 lb/ft^3. The designer shall take care to apply a unit weight that is applicable to the type of riprap specified for the project, and adjust their calculations if necessary.*

FROM PG 7-2 OF SAN DIEGO COUNTY DRAINAGE DESIGN MANUAL

NODE 205

Q_{100} = 199 CFS

V_{100} = 11 FPS

66" RCP

∴ 1/4 TON RIP RAP

Table 7-1 Rock Size for Riprap Aprons at Storm Drain Outlets

Outlet Velocity (ft/s)	Rock Classification	Size of Stone, d_{50} (ft) [(a)]
6-10	No. 2 Backing	0.7
→ 10-12	¼ Ton	1.8
12-14	½ Ton	2.3
14-16	1 Ton	2.9
16-18	2 Ton	3.6

[(a)] *Assumes specific weight of 165 lb/ft³. The designer shall take care to apply a unit weight that is applicable to the type of riprap specified for the project, and adjust their calculations if necessary.*

FROM PG 7-2 OF SAN DIEGO COUNTY DRAINAGE DESIGN MANUAL

NODE 625

Q_{100} = 141 CFS

V_{100} = 10.3 FPS

60" RCP

∴ 1/4 TON RIP RAP

Table 7-1 Rock Size for Riprap Aprons at Storm Drain Outlets

Outlet Velocity (ft/s)	Rock Classification	Size of Stone, d_{50} (ft) [(a)]
6-10	No. 2 Backing	0.7
→ 10-12	¼ Ton	1.8
12-14	½ Ton	2.3
14-16	1 Ton	2.9
16-18	2 Ton	3.6

[(a)] *Assumes specific weight of 165 lb/ft³. The designer shall take care to apply a unit weight that is applicable to the type of riprap specified for the project, and adjust their calculations if necessary.*

FROM PG 7-2 OF SAN DIEGO COUNTY DRAINAGE DESIGN MANUAL

NODE 513

Q_{100} = 224.9 CFS

V_{100} = 11.5 FPS

66" RCP

∴ 1/4 TON RIP RAP

Table 7-1 Rock Size for Riprap Aprons at Storm Drain Outlets

Outlet Velocity (ft/s)	Rock Classification	Size of Stone, d_{50} (ft) [a]
→ 6-10	No. 2 Backing	0.7
10-12	¼ Ton	1.8
12-14	½ Ton	2.3
14-16	1 Ton	2.9
16-18	2 Ton	3.6

[a] *Assumes specific weight of 165 lb/ft³. The designer shall take care to apply a unit weight that is applicable to the type of riprap specified for the project, and adjust their calculations if necessary.*

FROM PG 7-2 OF SAN DIEGO COUNTY DRAINAGE DESIGN MANUAL

NODE 323

Q_{100} = 86 CFS

V_{100} = 9.1 FPS

48" RCP

∴ NO. 2 BACKING

Table 7-1 Rock Size for Riprap Aprons at Storm Drain Outlets

Outlet Velocity (ft/s)	Rock Classification	Size of Stone, d_{50} (ft) [a]
→ 6-10	No. 2 Backing	0.7
10-12	¼ Ton	1.8
12-14	½ Ton	2.3
14-16	1 Ton	2.9
16-18	2 Ton	3.6

[a] *Assumes specific weight of 165 lb/ft³. The designer shall take care to apply a unit weight that is applicable to the type of riprap specified for the project, and adjust their calculations if necessary.*

FROM PG 7-2 OF SAN DIEGO COUNTY DRAINAGE DESIGN MANUAL

NODE 118

Q_{100} = 58.7 CFS

V_{100} = 8.3 FPS

42" RCP

∴ NO. 2 BACKING

Table 7-1 Rock Size for Riprap Aprons at Storm Drain Outlets

Outlet Velocity (ft/s)	Rock Classification	Size of Stone, d_{50} (ft) [(a)]
→ 6-10	No. 2 Backing	0.7
10-12	¼ Ton	1.8
12-14	½ Ton	2.3
14-16	1 Ton	2.9
16-18	2 Ton	3.6

[(a)] *Assumes specific weight of 165 lb/ft³. The designer shall take care to apply a unit weight that is applicable to the type of riprap specified for the project, and adjust their calculations if necessary.*

FROM PG 7-2 OF SAN DIEGO COUNTY DRAINAGE DESIGN MANUAL

NODE 123

Q_{100} = 19.2 CFS

V_{100} = 6.3 FPS

38" RCP

∴ NO. 2 BACKING

Table 7-1 Rock Size for Riprap Aprons at Storm Drain Outlets

Outlet Velocity (ft/s)	Rock Classification	Size of Stone, d_{50} (ft) [a]
→ 6-10	No. 2 Backing	0.7
10-12	¼ Ton	1.8
12-14	½ Ton	2.3
14-16	1 Ton	2.9
16-18	2 Ton	3.6

[a] *Assumes specific weight of 165 lb/ft³. The designer shall take care to apply a unit weight that is applicable to the type of riprap specified for the project, and adjust their calculations if necessary.*

FROM PG 7-2 OF SAN DIEGO COUNTY DRAINAGE DESIGN MANUAL

NODE 998 OUTLET

Q_{100} = 1.4 CFS FROM HYDRAFLOW DETENTION ANALYSIS

V_{100} = 3.2 CFS

24" RCP

∴ NO. 2 BACKING

Table 7-1 Rock Size for Riprap Aprons at Storm Drain Outlets

Outlet Velocity (ft/s)	Rock Classification	Size of Stone, d_{50} (ft) [(a)]
6-10	No. 2 Backing	0.7
10-12	¼ Ton	1.8
12-14	½ Ton	2.3
14-16	1 Ton	2.9
16-18	2 Ton	3.6

[(a)] *Assumes specific weight of 165 lb/ft³. The designer shall take care to apply a unit weight that is applicable to the type of riprap specified for the project, and adjust their calculations if necessary.*

FROM PG 7-2 OF SAN DIEGO COUNTY DRAINAGE DESIGN MANUAL

NODE 1013 OUTLET FROM DETENTION BASIN

Q_{100} = 1.5 CFS FROM HYDROGRAPH DETENTION BASIN ANALYSIS

V_{100} = 3.2 CFS

24" RCP

∴ NO. 2 BACKING

Table 7-1: Rock Size for Riprap Aprons at Storm Drain Outlets

Outlet Velocity (ft/s)	Rock Classification	Size of Stone, d_{50} (ft) [(a)]
6-10	No. 2 Backing	0.7
10-12	¼ Ton	1.8
12-14	½ Ton	2.3
14-16	1 Ton	2.9
→ 16-18	2 Ton	3.6

[(a)] *Assumes specific weight of 165 lb/ft³. The designer shall take care to apply a unit weight that is applicable to the type of riprap specified for the project, and adjust their calculations if necessary.*

FROM PG 7-2 OF SAN DIEGO COUNTY DRAINAGE DESIGN MANUAL

NOTE

Q_{100} 514.5

V_{100} 16.7

12' x 3' B-X

∴ 2 TON

Velocity and Discharge Comparison Table Predevelopment vs. Postdevelopment					
	Western portion		Eastern portion		
	Velocity	Discharge	Velocity	Discharge	
	ft/s	c fs	ft/s	cfs	
Pre-development	11.81	56.8	9.86	50.6	
	5.2	1.4	8.05	1.5	(site discharge)
Post- development	10.76	199.02	8.09	514.5	(Offsite discharge)

Appendix F ~ Channel Calculations

N

1" = 200'

2/11/10

Worksheet for XS-1

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03100	ft/ft
Discharge	515.00	ft^3/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	532.00
0+34	532.00
0+52	526.00
0+82	526.00
1+00	532.00
1+20	532.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 532.00)	(1+20, 532.00)	0.045

Results

Normal Depth	1.84	ft
Elevation Range	526.00 to 532.00 ft	
Flow Area	65.51	ft^2
Wetted Perimeter	41.66	ft
Top Width	41.06	ft
Normal Depth	1.84	ft
Critical Depth	1.95	ft
Critical Slope	0.02533	ft/ft
Velocity	7.86	ft/s
Velocity Head	0.96	ft
Specific Energy	2.80	ft
Froude Number	1.10	

Worksheet for XS-1

Results

Flow Type	Supercritical

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.84	ft
Critical Depth	1.95	ft
Channel Slope	0.03100	ft/ft
Critical Slope	0.02533	ft/ft

Worksheet for XS-2

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Discharge	515.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	520.00
0+30	510.00
0+60	510.00
0+90	520.00
0+95	520.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 520.00)	(0+95, 520.00)	0.100

Results

Normal Depth	4.78	ft
Elevation Range	510.00 to 520.00 ft	
Flow Area	211.89	ft²
Wetted Perimeter	60.23	ft
Top Width	58.67	ft
Normal Depth	4.78	ft
Critical Depth	1.95	ft
Critical Slope	0.12509	ft/ft
Velocity	2.43	ft/s
Velocity Head	0.09	ft
Specific Energy	4.87	ft
Froude Number	0.23	
Flow Type	Subcritical	

Worksheet for XS-2

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.78	ft
Critical Depth	1.95	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.12509	ft/ft

Worksheet for XS-3

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Discharge	515.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	518.00
0+25	516.00
0+34	514.00
0+42	512.00
0+54	508.00
0+90	508.00
1+15	516.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 518.00)	(1+15, 516.00)	0.100

Results

Normal Depth	4.41	ft
Elevation Range	508.00 to 518.00 ft	
Flow Area	218.16	ft²
Wetted Perimeter	64.78	ft
Top Width	63.39	ft
Normal Depth	4.41	ft
Critical Depth	1.76	ft
Critical Slope	0.12776	ft/ft
Velocity	2.36	ft/s
Velocity Head	0.09	ft
Specific Energy	4.49	ft

Worksheet for XS-3

Results

Froude Number	0.22	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.41	ft
Critical Depth	1.76	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.12776	ft/ft

Worksheet for XS-4

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Discharge	515.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	510.00
0+20	504.00
0+50	504.00
0+66	510.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 510.00)	(0+66, 510.00)	0.100

Results

Normal Depth		4.78	ft
Elevation Range	504.00 to 510.00 ft		
Flow Area		211.92	ft²
Wetted Perimeter		60.25	ft
Top Width		58.68	ft
Normal Depth		4.78	ft
Critical Depth		1.95	ft
Critical Slope		0.12512	ft/ft
Velocity		2.43	ft/s
Velocity Head		0.09	ft
Specific Energy		4.87	ft
Froude Number		0.23	
Flow Type	Subcritical		

Worksheet for XS-4

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.78	ft
Critical Depth	1.95	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.12512	ft/ft

Worksheet for XS-4

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Discharge	515.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	510.00
0+20	504.00
0+50	504.00
0+66	510.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 510.00)	(0+66, 510.00)	0.100

Results

Normal Depth		4.78	ft
Elevation Range	504.00 to 510.00 ft		
Flow Area		211.92	ft²
Wetted Perimeter		60.25	ft
Top Width		58.68	ft
Normal Depth		4.78	ft
Critical Depth		1.95	ft
Critical Slope		0.12512	ft/ft
Velocity		2.43	ft/s
Velocity Head		0.09	ft
Specific Energy		4.87	ft
Froude Number		0.23	
Flow Type	Subcritical		

Worksheet for XS-4

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.78	ft
Critical Depth	1.95	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.12512	ft/ft

Worksheet for XS-5

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.05000	ft/ft
Discharge	515.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	512.00
0+50	496.00
0+80	496.00
1+20	506.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 512.00)	(1+20, 506.00)	0.045

Results

Normal Depth	1.59	ft
Elevation Range	496.00 to 512.00 ft	
Flow Area	56.83	ft²
Wetted Perimeter	41.79	ft
Top Width	41.35	ft
Normal Depth	1.59	ft
Critical Depth	1.93	ft
Critical Slope	0.02550	ft/ft
Velocity	9.06	ft/s
Velocity Head	1.28	ft
Specific Energy	2.87	ft
Froude Number	1.36	
Flow Type	Supercritical	

Worksheet for XS-5

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.59	ft
Critical Depth	1.93	ft
Channel Slope	0.05000	ft/ft
Critical Slope	0.02550	ft/ft

Worksheet for XS-6

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00600	ft/ft
Discharge	515.00	ft^3/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	494.00
0+30	484.00
1+44	484.00
1+98	500.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 494.00)	(1+98, 500.00)	0.045

Results

Normal Depth	1.40	ft
Elevation Range	484.00 to 500.00 ft	
Flow Area	165.49	ft^2
Wetted Perimeter	123.34	ft
Top Width	122.91	ft
Normal Depth	1.40	ft
Critical Depth	0.85	ft
Critical Slope	0.03145	ft/ft
Velocity	3.11	ft/s
Velocity Head	0.15	ft
Specific Energy	1.55	ft
Froude Number	0.47	
Flow Type	Subcritical	

Worksheet for XS-6

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.40	ft
Critical Depth	0.85	ft
Channel Slope	0.00600	ft/ft
Critical Slope	0.03145	ft/ft

Worksheet for XS-7

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00600	ft/ft
Discharge	515.00	ft^3/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	490.00
0+98	484.00
1+33	482.00
2+50	482.00
2+70	490.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 490.00)	(2+70, 490.00)	0.045

Results

Normal Depth		1.35	ft
Elevation Range	482.00 to 490.00 ft		
Flow Area		176.23	ft^2
Wetted Perimeter		144.31	ft
Top Width		144.01	ft
Normal Depth		1.35	ft
Critical Depth		0.82	ft
Critical Slope		0.03221	ft/ft
Velocity		2.92	ft/s
Velocity Head		0.13	ft
Specific Energy		1.48	ft
Froude Number		0.47	
Flow Type	Subcritical		

Worksheet for XS-7

GVF Input Data

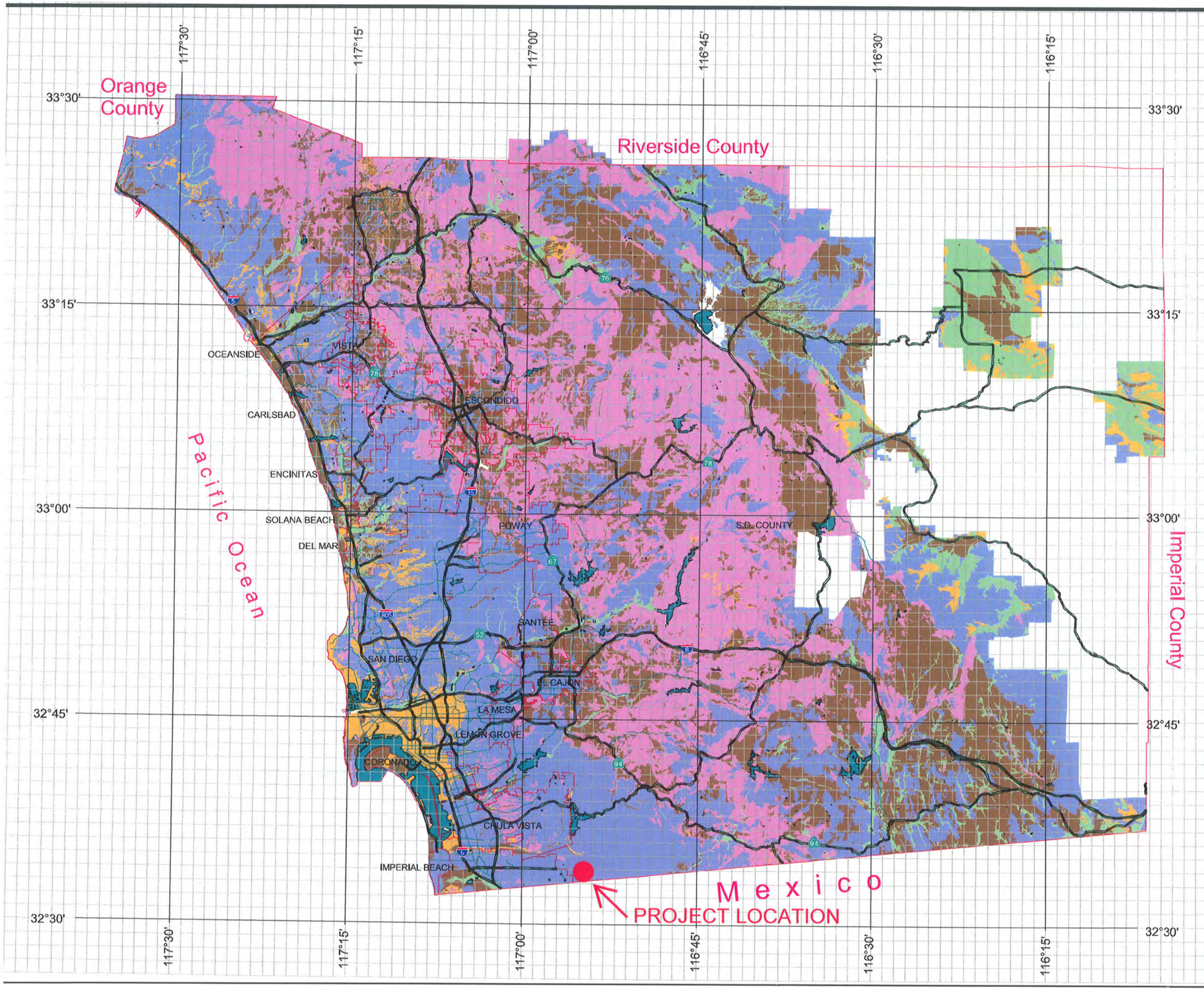
Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.35	ft
Critical Depth	0.82	ft
Channel Slope	0.00600	ft/ft
Critical Slope	0.03221	ft/ft

County of San Diego Hydrology Manual

Soil Hydrologic Groups



Legend

Soil Groups

- Group A
- Group B
- Group C
- Group D
- Undetermined
- Data Unavailable

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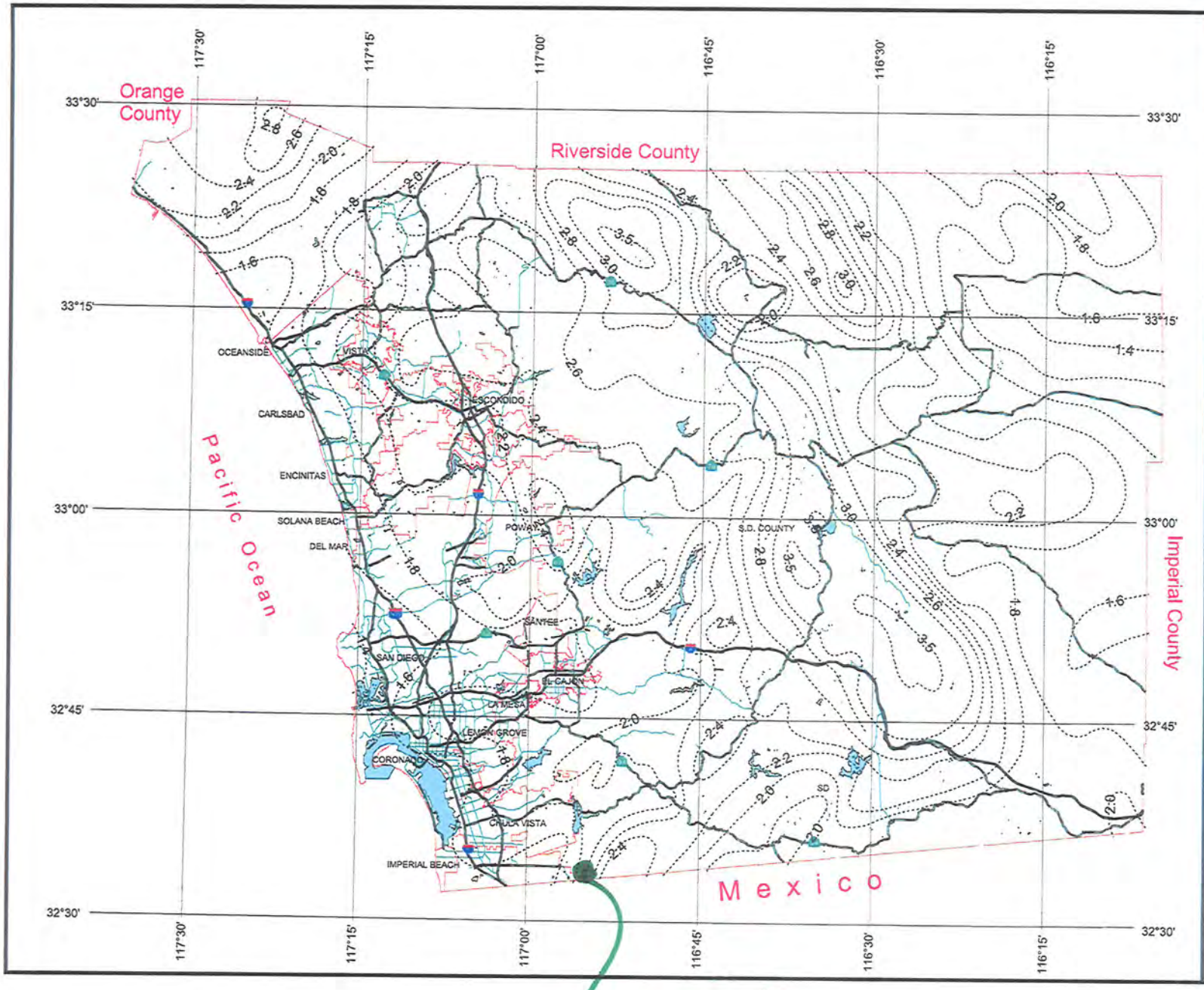
N W E S

3 0 3 Miles

Table 3-1
RUNOFF COEFFICIENTS FOR URBAN AREAS

Land Use		Runoff Coefficient "C"				
			Soil Type			
NRCS Elements	County Elements	% IMPER.	A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.20	0.25	0.30	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.60
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.58	0.60	0.63
High Density Residential (HDR)	Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0.77	0.78	0.79
Commercial/Industrial (G. Com)	General Commercial	85	0.80	0.80	0.81	0.82
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (Limited I.)	Limited Industrial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

*The values associated with 0% impervious may be used for direct calculation of the runoff coefficient as described in Section 3.1.2 (representing the pervious runoff coefficient, Cp, for the soil type), or for areas that will remain undisturbed in perpetuity. Justification must be given that the area will remain natural forever (e.g., the area is located in Cleveland National Forest).
DU/A = dwelling units per acre
NRCS = National Resources Conservation Service



Project Location

County of San Diego Hydrology Manual

Rainfall Isopluvials

10 Year Rainfall Event - 6 Hours

Isopluvial (inches)

$P_6 = 1.9$

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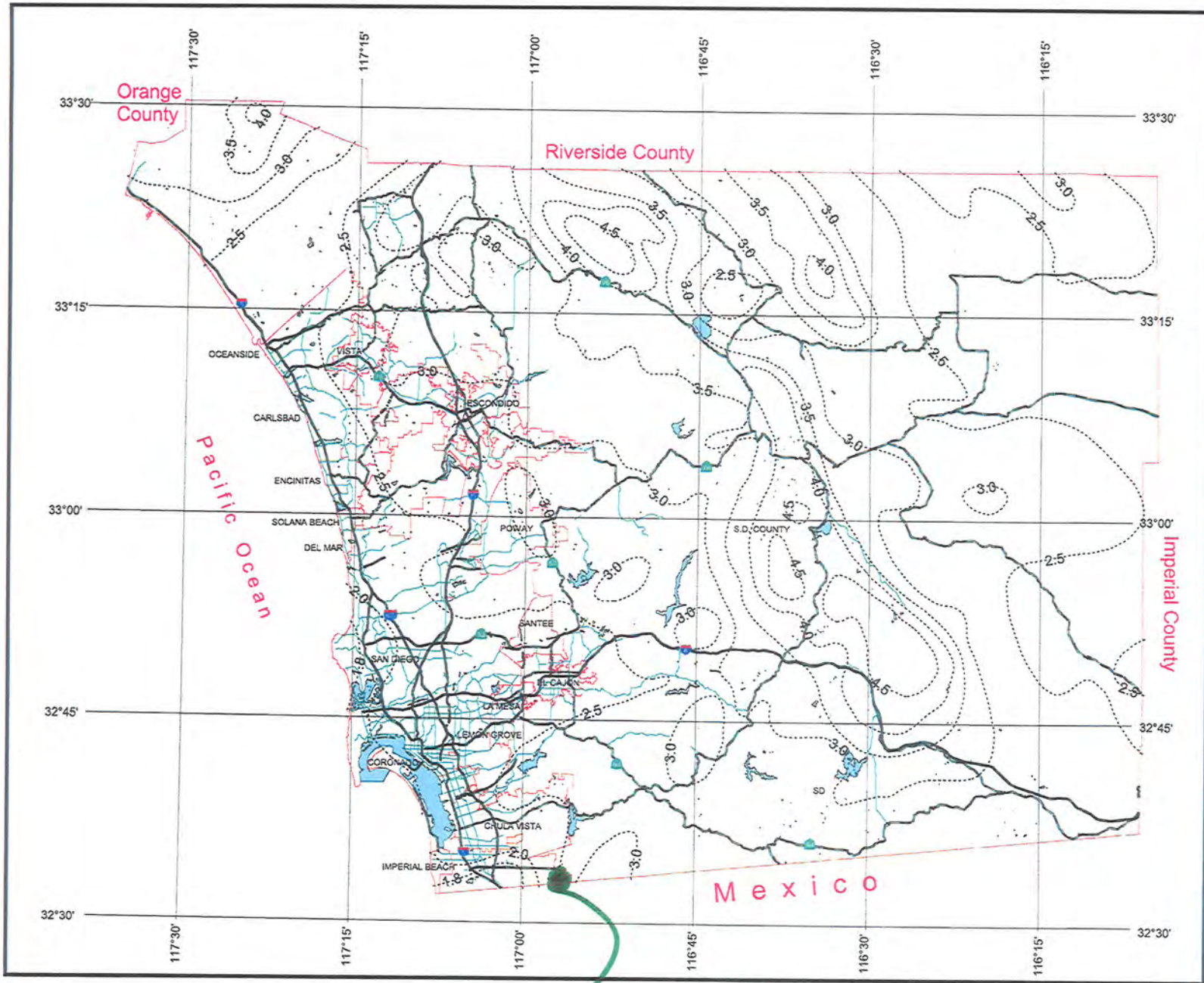
N W E S

3 0 3 Miles



Project Location

County of San Diego Hydrology Manual

Rainfall Isopluvials

50 Year Rainfall Event - 6 Hours

Isopluvial (inches)

$P_6 = 2.8$

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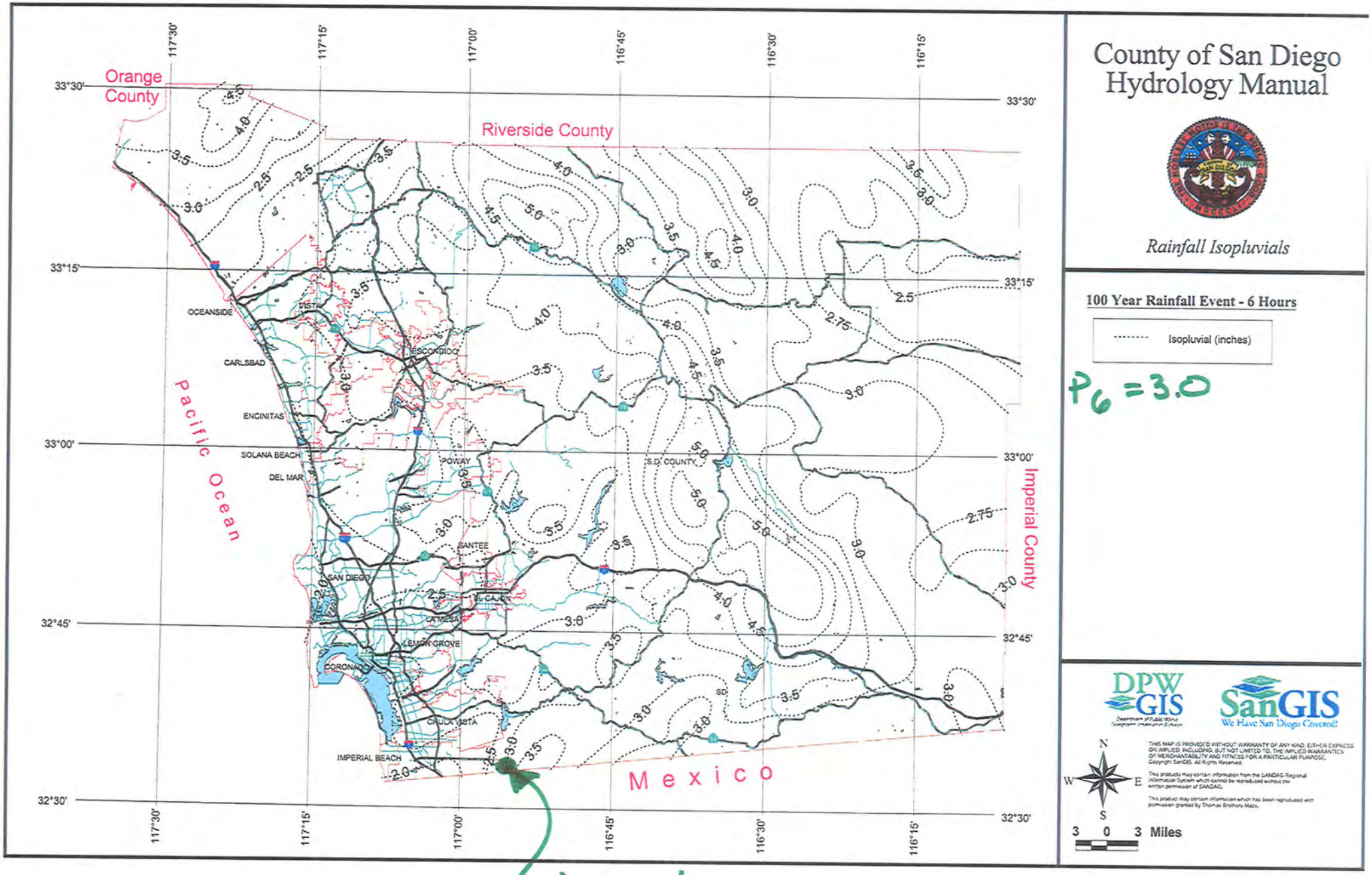
N W E S

3 0 3 Miles


County of San Diego
Hydrology Manual
Rainfall Isopluvials
100 Year Rainfall Event - 6 Hours
Isopluvial (inches)
Orange County
Riverside County
Imperial County
Pacific Ocean
Mexico
OCEANSIDE
CARLSBAD
ENCINITAS
SOLANA BEACH
DEL MAR
ESCONDIDO
POWAY
SANTEE
SAN DIEGO
EL CAJON
LA MESA
LEMON GROVE
CORONADO
CHULA VISTA
IMPERIAL BEACH
S.D. COUNTY
33°30'
33°15'
33°00'
32°45'
32°30'
117°30'
117°15'
117°00'
116°45'
116°30'
116°15'
DPW GIS
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N
S
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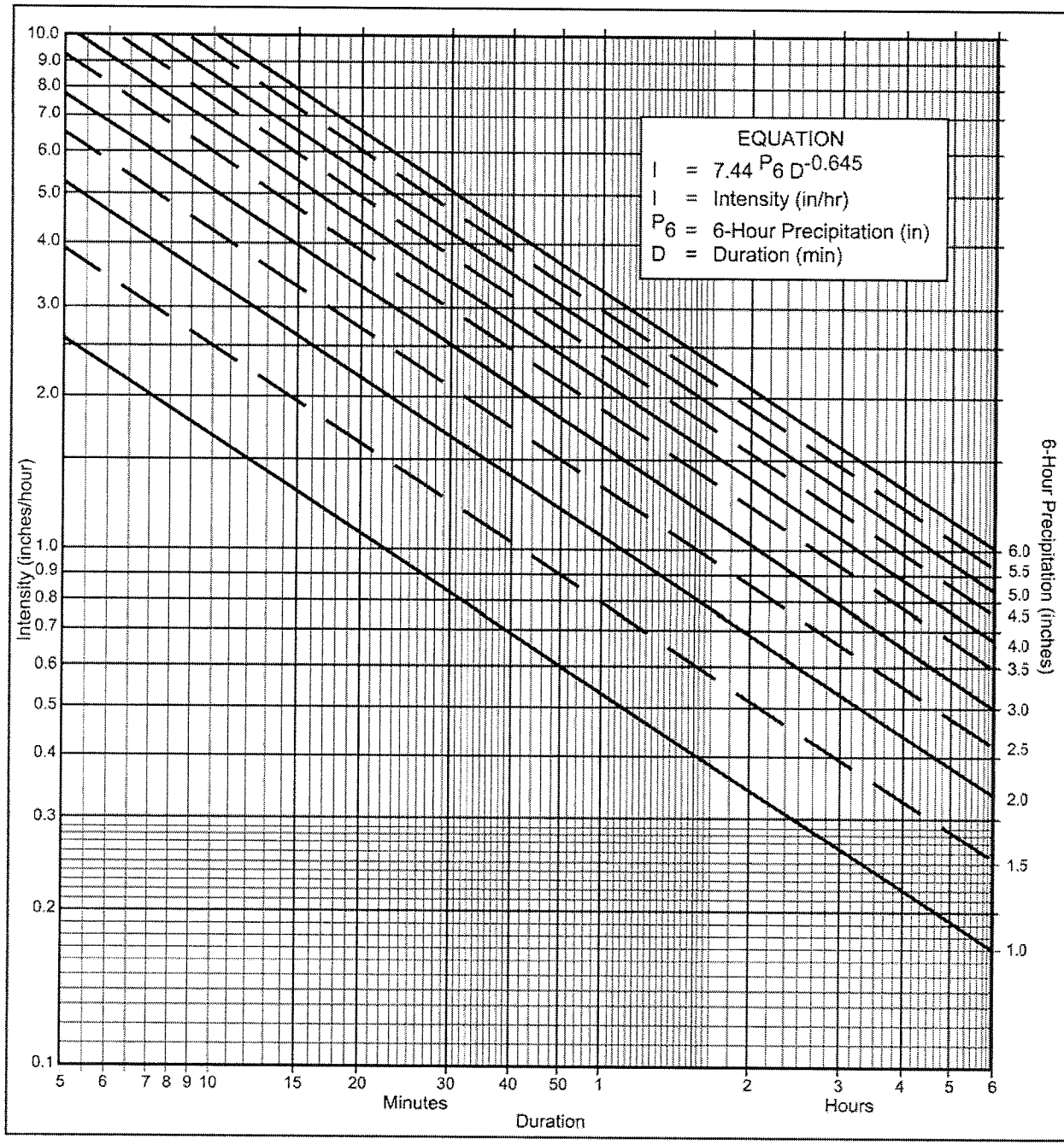
W
3 0 3 Miles
Project Location

$P_6 = 3.0$



Directions for Application:

(1) From precipitation maps determine 6 hr and 24 hr amounts for the selected frequency. These maps are included in the County Hydrology Manual (10, 50, and 100 yr maps included in the Design and Procedure Manual).

(2) Adjust 6 hr precipitation (if necessary) so that it is within the range of 45% to 65% of the 24 hr precipitation (not applicaple to Desert).

(3) Plot 6 hr precipitation on the right side of the chart.

(4) Draw a line through the point parallel to the plotted lines.

(5) This line is the intensity-duration curve for the location being analyzed.

Application Form:

(a) Selected frequency 100 year

(b) P_6 = _____ in., P_{24} = _____, $\frac{P_6}{P_{24}}$ = _____ %(2)

(c) Adjusted P_6(2) = 3.0 in.

(d) t_x = -- min.

(e) I = -- in./hr.

Note: This chart replaces the Intensity-Duration-Frequency curves used since 1965.

P6 / Duration	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
5	2.63	3.95	5.27	6.59	7.90	9.22	10.54	11.86	13.17	14.49	15.81
7	2.12	3.18	4.24	5.30	6.36	7.42	8.48	9.54	10.60	11.66	12.72
10	1.68	2.53	3.37	4.21	5.05	5.90	6.74	7.58	8.42	9.27	10.11
15	1.30	1.95	2.59	3.24	3.89	4.54	5.19	5.84	6.49	7.13	7.78
20	1.08	1.62	2.15	2.69	3.23	3.77	4.31	4.85	5.39	5.93	6.46
25	0.93	1.40	1.87	2.33	2.80	3.27	3.73	4.20	4.67	5.13	5.60
30	0.83	1.24	1.66	2.07	2.49	2.90	3.32	3.73	4.15	4.56	4.98
40	0.69	1.03	1.38	1.72	2.07	2.41	2.76	3.10	3.45	3.79	4.13
50	0.60	0.90	1.19	1.49	1.79	2.09	2.39	2.69	2.98	3.28	3.58
60	0.53	0.80	1.06	1.33	1.59	1.86	2.12	2.39	2.65	2.92	3.18
90	0.41	0.61	0.82	1.02	1.23	1.43	1.63	1.84	2.04	2.25	2.45
120	0.34	0.51	0.68	0.85	1.02	1.19	1.36	1.53	1.70	1.87	2.04
150	0.29	0.44	0.59	0.73	0.88	1.03	1.18	1.32	1.47	1.62	1.76
180	0.26	0.39	0.52	0.65	0.78	0.91	1.04	1.18	1.31	1.44	1.57
240	0.22	0.33	0.43	0.54	0.65	0.76	0.87	0.98	1.08	1.19	1.30
300	0.19	0.28	0.38	0.47	0.56	0.66	0.75	0.85	0.94	1.03	1.13
360	0.17	0.25	0.33	0.42	0.50	0.58	0.67	0.75	0.84	0.92	1.00

Intensity-Duration Design Chart - Template

FIGURE

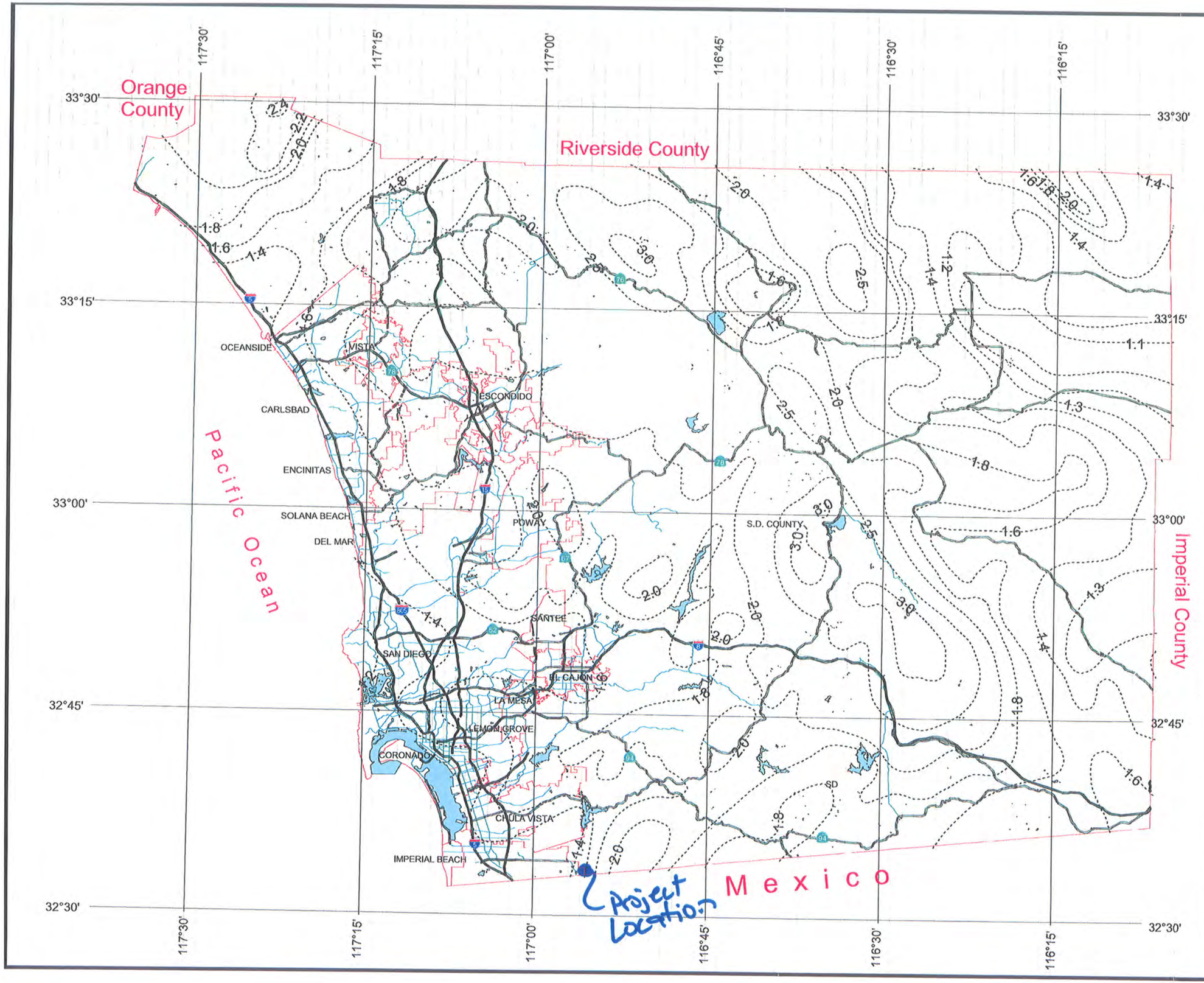
3-1

County of San Diego Hydrology Manual

Rainfall Isopluvials

5 Year Rainfall Event - 6 Hours

Isopluvial (inches)



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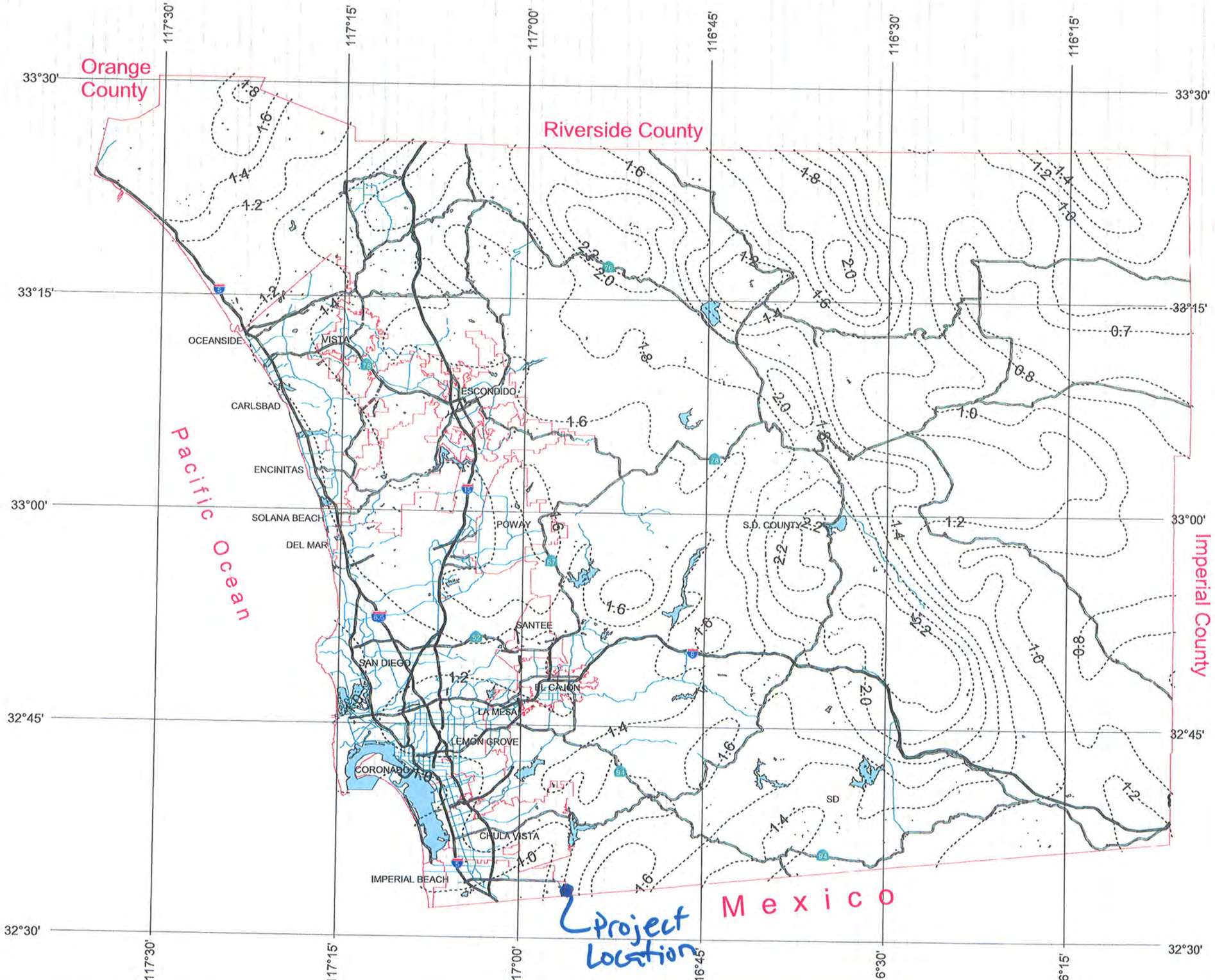
County of San Diego Hydrology Manual

Rainfall Isopluvials

2 Year Rainfall Event - 6 Hours

Isopluvial (inches)



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