ORAY RANCH VILLAGE 14 & PA 16/19 EASTERN SLOPES DRAINAGE AREA BYPASSING WQ BASINS

```
>>>>TRAVELTIME THRU SUBAREA
ELEVATION DATA: UPSTREAM(FEET) = 1350.00 DOWNSTREAM(FEET) = 960.
CHANNEL LENGTH THRU SUBAREA(FEET) = 1665.00 CHANNEL SLOPE = 0.2342
               RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
                                                                                                       CHANNEL LENGTH THRU SUBAREA(FEET) = 1655.00 CHANNEL SLOPE = 0.2342
NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
CHANNEL FLOW THRU SUBAREA(CFS) = 38.12
FLOW VELOCITY(FEET/SEC) = 11.33 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAYEL TIME (MIN.) = 2.45 TC (MIN.) = 13.15
LONGEST FLOWPATH FROM NODE 910.00 TO NODE 913.00 = 2794.00 FEET.
               Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT 2003,1985,1981 HYDROLOGY MANUAL
            (c) Copyright 1982-2015 Advanced Engineering Software (aes)
                 Ver. 22.0 Release Date: 07/01/2015 License ID 1239
                                   Analysis prepared by:
                                                                                                    *******************
                                                                                                       FLOW PROCESS FROM NODE 912.00 TO NODE 913.00 IS CODE = 81
                        HUnsaker & Associates San Diego, Inc.
                                   9707 Waples Street
San Diego CA 92121
                                                                                                        >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                        100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.377
 SPECIFIED(SUBAREA):
                                                                                                       VILLAGE 14 OFFSITE fLOWS
                                                                                                                                                                                   100.71
   TILE NAME: R:\1235\HYD\CALCS\AES\SRP\V140S.DAT
  TIME/DATE OF STUDY: 10:47 10/17/2016
                                                                                               USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
                                                                                                      FLOW PROCESS FROM NODE 913.00 TO NODE 914.00 IS CODE = 52
                                                                                                        >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA<
  2003 SAN DIEGO MANUAL CRITERIA
  HISER SPECIFIED STORM EVENT(YEAR) = 100 00
                                                                                                     _____
                                                                                                       ELEVATION DATA: UPSTREAM(FEET) = 960.00 DOWNSTREAM(FEET) = 740.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 2094.00 CHANNEL SLOPE = 0.1051
   6-HOUR DURATION PRECIPITATION (INCHES)
  SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00
                                                                                                       CHANNEL LENGTH THRU SUBAREA(FEET) = 2044.00 CHANNEL SLOPE = 0.1051
NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
CHANNEL FLOW THRU SUBAREA(CFS) = 100.71
FLOW VELOCITY(FEET/SEC) = 15.04 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 2.32 TC(MIN.) = 15.47
LONGEST FLOWPATH FROM NODE 910.00 TO NODE 914.00 = 4888.00 FEET.
  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
  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

(FT) (FT) (FT) (T) (T) (T) (T) (T) (T) (T)

**EXAMPLE OF THE PROCEDURE OF THE PROCEDURE FOR CONFLUENCE ANALYSIS
                                                                                                                                                               914.00 IS CODE =
                                                                                                       FLOW PROCESS FROM NODE 913.00 TO NODE
                              0.020/0.020/0.020
                                                                   2.00 0.0312 0.125 0.0150
       16.0
                    8.0
                                                        0.50
                          0.020/0.020/0.020 0.50
0.020/0.020/0.020 0.50
                                                                 1.50 0.0312 0.125 0.0130
                                                                                                       >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                       .-----
  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
                                                                                                        100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.941
                                                                                                       TOU YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.941
*USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
     1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) -
                                                                 (Top-of-Curb)
   2. (Depth)*(Velocity) Constraint = 6.0 (F
*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
                                                    6.0 (FT*FT/S)
                                                                                                       SUBAREA AREA(ACRES) = 42.28 SUBAREA RUNOFF(CFS) = 58.32 TOTAL AREA(ACRES) = 108.0 TOTAL RUNOFF(CFS) = 149.
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
                                                                                                                                                                                   149.02
                                                                                                      TC(MIN.) =
......
                                                                                                                        15.47
  FLOW PROCESS FROM NODE 910.00 TO NODE 911.00 IS CODE = 21
                                                                                                  __ ***************************
                                                                                                       FLOW PROCESS FROM NODE 914.00 TO NODE 914.00 IS CODE = 1
   >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  *USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                                       >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
                                                                                                     ______
  URBAN NEWLY GRADED AREAS KONDYF COEFFIC

S.C.S. CURVE NUMBER (AMC II) = 0

INITIAL SUBAREA FLOW-LENGTH(FEET) = 1

UPSTREAM ELEVATION(FEET) = 1850.00

DOWNSTREAM ELEVATION(FEET) = 1840.00

ELEVATION DIFFERENCE(FEET) = 10.00
                                             0 ) = 100.00
                                                                                                       TOTAL NUMBER OF STREAMS = 2
                                                                                                      TOTAL NUMBER OF STREAMS = 2
CONPLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 15.47
RAINFALL INTENSITY(INCH/HR) = 3.94
TOTAL STREAM AREA (ACRES) = 108.03
PEAK FLOW RATE(CFS) AT CONFLUENCE = 149.02
   ELEVATION DIFFERENCE(FEET)
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                        6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION! 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
                                                                                                     ......
  SUBAREA RUNOFF(CFS) = 0.67
TOTAL AREA(ACRES) = 0.27 TOTAL RUNOFF(CFS) =
                                                                                                      FLOW PROCESS FROM NODE 914.10 TO NODE 914.20 IS CODE = 21
                                                                                                        >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS <
  FLOW PROCESS FROM NODE 911.00 TO NODE 912.00 IS CODE = 53
                                                                                                        *USER SPECIFIED(SUBAREA):
                                                                                                       URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
  >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<
                                                                                                       S.C.S. CURVE NUMBER (AMC II) =
                                                                                                       UPSTREAM ELEVATION(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 760.00
DOWNSTREAM ELEVATION(FEET) = 750.00
ELEVATION DIFFERENCE(FEET) = 10.00
                                                                                                                                                  0
   >>>>TRAVELTIME THRU SUBAREA
  ELEVATION DATA: UPSTREAM(FEET) = 1840.00 DOWNSTREAM(FEET) = 1350.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 1029.00 CHANNEL SLOPE = 0.4762 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
                                                                                                       ELEVATION DIFFERENCE(FEET) = 10.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                                                            6.267
  CHANNEL FLOW THRU SUBAREA(CFS) = 0.67
FLOW VELOCITY(FECT/SEC) = 3.86 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 4.44
TC(MIN.) = 10.70
LONGEST FLOWPATH FROM NODE 910.00 TO NODE 912.00 = 1129.00 FEET.
                                                                                                       WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN To CALCULATION! 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
                                                                                                       SUBAREA RUNOFF(CFS) = 0.17
TOTAL AREA(ACRES) = 0.07 TOTAL RUNOFF(CFS) =
                                                                                                       FLOW PROCESS FROM NODE 914.20 TO NODE 914.00 IS CODE = 31
  FLOW PROCESS FROM NODE 911.00 TO NODE 912.00 IS CODE = 81
                                                                                                       >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<><<=
ELEVATION DATA: UPSTREAM(FEET) = 750.00 DOWNSTREAM(FEET) = 730.00
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.999
                                                                                                       ELEVATION DATA: UPSTREAM(FEET) = 750.00 I
FLOW LENGTH(FEET) = 705.00 MANNING'S N =
   *USER SPECIFIED(SUBAREA):
  *USBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                                       FLOW LENGTH(FEET) = 705.00 MANNING'S N = 0.0
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                       DEPTH OF FLOW IN 18.0 INCH PIPE IS 1.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.11
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
  SUBAREA AREA(ACRES) = 21.52
                                   11.52 SUBAREA RUNOFF(CFS) = 37.65
21.8 TOTAL RUNOFF(CFS) = 38.1
                                                                             38.12
  TOTAL AREA(ACRES) =
    TC(MIN.) =
  FLOW PROCESS FROM NODE 912.00 TO NODE 913.00 IS CODE = 52
                                                                                                                                                                                      805.00 FEET.
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
                                                                                                       FLOW PROCESS FROM NODE 914.20 TO NODE 914.00 IS CODE = 81
```

```
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.209
  *USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                           *USER SPECIFIED(SUBAREA):
                                                                                           URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) = 1.76
SUBAREA REA(ACRES) = 3.21
TOTAL AREA(ACRES) = 1.8
TOTAL RUNOFF(CFS) = 3.3
                                                                                           S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500

SUBAREA AREA(ACRES) = 11.69

SUBAREA RUNOFF(CFS) = 14.59

TOTAL AREA(ACRES) = 12.0

TOTAL RUNOFF(CFS) = 14.59
                                                                      3.34
                                                                                                                                                              14.92
  TC(MIN.) =
 FLOW PROCESS FROM NODE 914.00 TO NODE 914.00 IS CODE = 1
                                                                                          FLOW PROCESS FROM NODE 918.00 TO NODE 919.00 IS CODE = 52
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIDENCE<
                                                                                           >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
     >>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                            >>>>TRAVELTIME THRU SUBAREA
ELEVATION DATA: UPSTREAM(FEET) = 1240.00 DOWNSTREAM(FEET) = 985.
CHANNEL LENGTH THRU SUBAREA(FEET) = 1112.00 CHANNEL SLOPE = 0.2293
  TOTAL NUMBER OF STREAMS =
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  TIME OF CONCENTRATION(MIN.) = 10.04
RAINFALL INTENSITY(INCH/HR) = 5.21
TOTAL STREAM AREA(ACRES) = 1.83
                                                                                           NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
                                                                                           NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION CHANNEL FLOW THRU SUBAREA(CFS) = 14.92 FLOW VELOCITY(FRET/SEC) = 8.76 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME(MIN.) = 2.11 TC(MIN.) = 20.19 LONGEST FLOWPATH FROM NODE 916.00 TO NODE 919.00 = 3234.00 FEET.
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                3.34
  ** CONFIDENCE DATA **
            RUNOFF
(CFS)
  STREAM
                                       INTENSITY
                                                         AREA
                           (MIN.)
                                                                                           FLOW PROCESS FROM NODE 918.00 TO NODE 919.00 IS CODE =
                                     (INCH/HOUR)
              149.02
                          15.47
                                         3.941
                                                        108.03
               3.34
                        10.04
                                         5.209
                                                                                           >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                            100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.320
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                           *USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
  ** PEAK FLOW RATE TABLE **
                                                                                           S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
              RUNOFF
                            ТС
                                      TMTFMSTTV
  STREAM
                (CFS)
                          (MIN.)
                                                                                           AREA AREA (ACRES) = 19.69 SUBAREA RUNOFF(CFS) = 22.88
TOTAL AREA(ACRES) = 31.7 TOTAL RUNOFF(CFS) = 36.
  NUMBER
                                    (INCH/HOUR)
                                   5.209
3.941
                                                                                           TOTAL AREA(ACRES) = TC(MIN.) = 20.19
                                                                                                                                                              36.77
               100.03
                          10.04
              151.54 15.47
  COMPUTED CONFIDENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) = 151.54 Tc(MIN.) = TOTAL AREA(ACRES) = 109.9
                                                                                           FLOW PROCESS FROM NODE 919.00 TO NODE 920.00 IS CODE = 52
                                                         15.47
  LONGEST FLOWPATH FROM NODE 910.00 TO NODE 914.00 = 4888.00 FEET.
                                                                                           >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
LONGEST FLOWPATH FROM NODE 910.00 TO NODE 914.00 = 4888.00 FEET. >>>>CUMPULE MATURAL VALLEY CHANNEL F
>>>>TRAVELTIME THRU SUBAREA<
 FLOW PROCESS FROM NODE 914.00 TO NODE 933.00 IS CODE = 31
                                                                                           ELEVATION DATA: UPSTREAM(FEET) = 985.00 DOWNSTREAM(FEET) = 755.CHANNEL LENGTH THRU SUBAREA(FEET) = 1299.00 CHANNEL SLOPE = 0.1771
                                                                                           NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION CHANNEL FLOW THRU SUBAREA(CFS) = 36.77
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                           NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION CHANNEL FLOW THRU SUBAREA(CFS) = 36.77 FLOW VELOCITY(FEET/SEC) = 11.21 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME(MIN.) = 1.93 Tc(MIN.) = 22.12 LONGEST FLOWPATH FROM NODE 916.00 TO NODE 920.00 = 4533.00 FEET.
                                                                                           FLOW PROCESS FROM NODE 919.00 TO NODE 920.00 IS CODE = 81
                                                                                           >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
  LONGEST FLOWPATH FROM NODE 910.00 TO NODE 933.00 = 5388.00 FEET. ==
                                                                                            100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.130
                                                                                           *HISER SPECIFIED (SHEAREA):
                                                                                           'OSER SPECIFIED(SUBAREA).
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
 FLOW PROCESS FROM NODE 933.00 TO NODE 933.00 IS CODE = 10
 >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
                                                                                           SUBAREA AREA(ACRES) = 37.07 SUBAREA RUNOFF(CFS) = 40.61
TOTAL AREA(ACRES) = 68.7 TOTAL RUNOFF(CFS) = 75.
                                                                                                        22.12
                                                                                          TC(MIN.) =
  FLOW PROCESS FROM NODE 916.00 TO NODE 917.00 IS CODE = 21
                                                                                           FLOW PROCESS FROM NODE 920.00 TO NODE 927.00 IS CODE = 31
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                           _____
                                                                                           >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  *USER SPECIFIED(SUBAREA):
  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
                                                                                           >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                        0) = 100.00
                                                                                                         -----
                                                                                           ELEVATION DATA: UPSTREAM(FEET) = 750.00 DOWNSTREAM(FEET) = 745.00 FLOW LENGTH(FEET) = 167.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 33.0 INCH PIPE IS 23.2 INCHES
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 1765.00
DOWNSTREAM ELEVATION(FEET) = 1765.00
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) = 7.061
SUBAREA RONOFF(CFS) = 0.67
TOTAL AREA(ACRES) = 0.27 TOTAL RUNOFF(CFS) = 0.67
                                                                                           PIPE-FLOW VELOCITY(FEET/SEC.) = 16.84
ESTIMATED PIPE DIAMETER(INCH) = 33.00
                                                                                           PIPE TRAVEL TIME(MIN.) = (LONGEST BY CIT
                                                                                          PIPE-FLOW(CFS) =
                                                                                           FLOW PROCESS FROM NODE 917.00 TO NODE 918.00 IS CODE = 53
                                                                                           >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
  >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<
                                                                                           -----
 >>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1765.00 DOWNSTREAM(FEET) = 1240.0
CHANNEL LENGTH THRU SUBAREA(FEET) = 2022.00 CHANNEL SLOPE = 0.2596
                                                                                           TOTAL NUMBER OF STREAMS = 2
                                                                                           CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                           TIME OF CONCENTRATION(MIN.) = 22.29
RAINFALL INTENSITY(INCH/HR) = 3.11
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
                                                                                           TOTAL STREAM AREA(ACRES) =
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                        922.00 TO NODE
                                                                                                                                             923.00 IS CODE = 21
FLOW PROCESS FROM NODE 917.00 TO NODE 918.00 IS CODE = 81
```

```
*USER SPECIFIED(SUBAREA):
                                                                                                                 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
                                                                                                                 ELEVATION DATA: UPSTREAM(FEET) = 750.00 DOWNSTREAM(FEET) = 745.00 FLOW LENGTH(FEET) = 167.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 36.0 INCH PIPE IS 26.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 17.93
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
  UPSTREAM ELEVATION(FEET) = 1750.00

DOWNSTREAM ELEVATION(FEET) = 1740.00

ELEVATION DIFFERENCE(FEET) = 10.00
                                                 10.00
  ELEVATION DIFFERENCE(FEE1) = 10.00
SUBARRA OVERLAND INME OF FLOW (MIN.) = 6.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
                                                                                                                 ESTIMATED FIFE DIAMETER(INCH) - 30.00 AND CO. 1712
PIPE-FLOW(CFS) = 97.97
PIPE TRAVEL TIME(MIN.) = 0.16 TC(MIN.) = 16.26
LONGEST FLOWPATH FROM NODE 922.00 TO NODE 927.00 = 4012.00 FEET.
  SUBAREA RUNOFF(CFS) = 0.59
TOTAL AREA(ACRES) = 0.24 TOTAL RUNOFF(CFS) =
                                                                                                                FLOW PROCESS FROM NODE 927.00 TO NODE 927.00 IS CODE = 1
******************
                                                                                                                 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
  FLOW PROCESS FROM NODE 923.00 TO NODE 924.00 IS CODE = 53
                                                                                                              >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
  >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<
  >>>>TRAVELTIME THRU SUBAREA<
                                                                                                                 TOTAL NUMBER OF STREAMS =
                                                                                                                 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 16.26
RAINFALL INTENSITY(INCH/HR) = 3.82
                           _____
  ELEVATION DATA: UPSTREAM(FEET) = 1740.00 DOWNSTREAM(FEET) = 1330.0
CHANNEL LENGTH THRU SUBAREA(FEET) = 1080.00 CHANNEL SLOPE = 0.3796
  CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION CHANNEL FLOW THRU SUBAREA(CFS) = 0.59
                                                                                                                 TOTAL STREAM AREA(ACRES) = 72.86
PEAK FLOW RATE(CFS) AT CONFLUENCE =
  CHANNEL FLOW THRU SUBAREA(CFS) = 0.59

FLOW VELOCITY(FEET/SEC) = 3.45 (PER LAGFCD/RCFC&WCD HYDROLOGY MANUAL)

TRAVEL TIME(MIN.) = 5.22 Tc(MIN.) = 11.48

LONGEST FLOWPATH FROM NODE 922.00 TO NODE 924.00 = 1180.00 FEET.
                                                                                                                 ** CONFILIENCE DATA **
                                                                                                                 STREAM
                                                                                                                                                               INTENSITY
                                                                                                                             RUNOFF
(CFS)
                                                                                                                                                (MIN.)
                                                                                                                 NUMBER
                                                                                                                                                            (INCH/HOUR)
                                                                                                                                                                                   (ACRE)
                                                                                                                                 75.28 22.29 3.115
97.97 16.26 3.818
  FLOW PROCESS FROM NODE 923.00 TO NODE 924.00 IS CODE = 81
                                                                                                                                                                                      72.86
                                                                                                                RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR 2 STREAMS.
     >>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.777
          SPECIFIED(SUBAREA):
                                                                                                                 ** PEAK FLOW RATE TABLE **
 *USER SPECIFIED(SUBAREA):

URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500

SUBAREA AREA(ACRES) = 12.01 SUBAREA RUNOFF(CFS) = 20.08

TOTAL AREA(ACRES) = 12.2 TOTAL RUNOFF(CFS) = 20.4
                                                                                                                 STREAM RUNOFF TC
NUMBER (CFS) (MIN.)
1 152.87 16.26
                                                                                                                                                              INTENSITY
                                                                                                                                                            ( TNCH/HOUR )
                                                                                                                                155.20
                                                                                                                                              22.29
  TC(MIN.) =
                                                                                                                 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                    11.48
                                                                                                                PEAK FLOW RATE(CFS) = 155.20 Tc(MIN.) = 22.29 TOTAL AREA(ACRES) = 141.6 LONGEST FLOWPATH FROM NODE 916.00 TO NODE 927.00 = 4700.00 FEET.
*******************
  FLOW PROCESS FROM NODE 924.00 TO NODE 925.00 IS CODE = 52
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA
                                                                                                                                                                              928.00 IS CODE = 31
                                                                                                                 FLOW PROCESS FROM NODE 927.00 TO NODE
                           -----
  ELEVATION DATA: UPSTREAM(FEET) = 1330.00 DOWNSTREAM(FEET) = 1080.0
CHANNEL LENGTH THRU SUBARBA(FEET) = 982.00 CHANNEL SLOPE = 0.2546
                                                                                                                 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
  CHANNEL LENGTH THRU SUBAREA(FEET) = 982.00 CHANNEL SLOPE = 0.2546
NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
CHANNEL FLOW THRU SUBAREA(CFS) = 20.48
FLOW VELOCITY(FEET/SEC) = 9.54 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.72 TC(MIN.) = 13.20
LONGEST FLOWPATH FROM NODE 922.00 TO NODE 925.00 = 2162.00 FEET.
                                                                                                              >>>> USING COMPUTER-ESTIMATED FIFEDIZE (NOA-FIGEDOXICE)

ELEVATION DATA: UPSTREAM(FEET) = 745.00 DOWNSTREAM
                                                                                                                 ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                                                                                              DOWNSTREAM(FEET) =
                                                                                                                ELEVATION DAIA. OPSIREAM(FEEI) = 745.00 DOWNSIREAM(FEEI) = FLOW LENGTH(FEET) = 321.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 45.0 INCH PIPE IS 31.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 18.85
ESTIMATED PIPE DIAMETER(INCH) = 45.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 155.20
                                                                                                                ESTIMATED PIPE DIAMELER(LEGH) - .... ...

PIPE-FLOW(CFS) = 155.20

PIPE TRAVEL TIME(MIN.) = 0.28  Tc(MIN.) = 22.57

LONGEST FLOWPATH FROM NODE 916.00 TO NODE 928.00 = 5021.00 FEET.
  FLOW PROCESS FROM NODE 924.00 TO NODE 925.00 IS CODE = 81
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                               ............
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.367
                                                                                                                FLOW PROCESS FROM NODE 928.00 TO NODE 928.00 IS CODE = 10
          SPECIFIED(SUBAREA)
  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                                                 >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
  UNDAIN NEBEL GRADED ARRAS RONOFF COEFFICIENT - .3300

S.C.S. CURVE NUMBER (AMC II) = 0

ARRA-AVERAGE RUNOFF COEFFICIENT = 0.3500

SUBARRA ARRA(ACRES) = 26.68 SUBARRA RUNOFF(CFS) = 40.78

TOTAL ARRA(ACRES) = 38.9 TOTAL RUNOFF(CFS) = 59.5
  TOTAL AREA(ACRES) = TC(MIN.) = 13.20
                                                                                 59.50
                                                                                                                FLOW PROCESS FROM NODE 932.10 TO NODE 932.20 IS CODE = 21
                                                                                                                 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
******************
  FLOW PROCESS FROM NODE 925.00 TO NODE 926.00 IS CODE = 53
                                                                                                                 *USER SPECIFIED(SUBAREA):
                                                                                                                 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                                                                                                0 = 100.00
                                                                                                                 S.C.S. CURVE NUMBER (AMC II) =
INITIAL SUBAREA FLOW-LENGTH(FEET)
  >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA<
                                                                                                                UPSTREAM ELEVATION(FEET) = 780.00

DOWNSTREAM ELEVATION(FEET) = 770.0

ELEVATION DIFFERENCE(FEET) = 10.0
  -----
  ELEVATION DATA: UPSTREAM(FEET) = 1080.00 DOWNSTREAM(FEET) = 750.0 CHANNEL LENGTH THRU SUBAREA(FEET) = 1683.00 CHANNEL SLOPE = 0.1961 CHANNEL FLOW THRU SUBAREA(CFS) = 59.50
                                                                                                                                                                10.00
  CHANNEL FLOW THRU SUBAREA(CFS) = 59.50 (CHANNEL SLOPE - 0.1701 CHANNEL FLOW THRU SUBAREA(CFS) = 59.57 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME(MIN.) = 2.90 TC(MIN.) = 16.10 LONGEST FLOWPATH FROM NODE 922.00 TO NODE 926.00 = 3845.00 FEET.
                                                                                                                 SUBARRA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
                                                                                                                SUBAREA RUNOFF(CFS) = 0.40

TOTAL AREA(ACRES) = 0.16 TOTAL RUNOFF(CFS) = 0.40
                                                                                                            ***************
  FLOW PROCESS FROM NODE 925.00 TO NODE 926.00 IS CODE = 81
                                                                                                           -- FLOW PROCESS FROM NODE
                                                                                                                                                     932.20 TO NODE
                                                                                                                                                                               932.30 IS CODE = 31
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                                 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.842
   *USER SPECIFIED(SUBAREA):
                                                                                                              ______
  *USBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                                                 ELEVATION DATA: UPSTREAM(FEET) = 770.00 DOWNSTREAM(FEET) = 750.00
                                                                                                                                                             MANNING'S N =
                                                                                                                 FLOW LENGTH(FEET) = 302.00 MANNING'S N = 0.0
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                                                                                                   0.013
                                                                                                                ESTIMATED PIPE DIAMETER (INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 1.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.44
ESTIMATED PIPE DIAMETER (INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.40
PIPE TRAVEL TIME(MIN.) = 0.93 TC(MIN.) = 7.19
  SUBAREA AREA(ACRES) = 33.93
                                       3.93 SUBAREA RUNOFF(CFS) = 45.62
72.9 TOTAL RUNOFF(CFS) = 97.9
                                                                                    97.97
  TOTAL AREA(ACRES) =
  TC(MIN.) =
                    16.10
                                                                                                                PIPE-FLOW(CFS) = U.40
PIPE TRAVEL TIME(MIN.) = 0.93 Tc(MIN.) = 7.19
LONGEST FLOWPATH FROM NODE 932.10 TO NODE 932.30 = 402.00 FEET.
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
```

```
FLOW PROCESS FROM NODE
                               932.20 TO NODE
                                                                                                                                                                666.00 FEET.
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.460
                                                                                          FLOW PROCESS FROM NODE 932.50 TO NODE 932.50 IS CODE = 1
   USER SPECIFIED(SUBAREA):
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                           >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIDENCE<
                                                                                           >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
  SUBAREA AREA(ACRES) = 0.59 SUBAREA RUNOFF(CFS) = 1.33
TOTAL AREA(ACRES) = 0.8 TOTAL RUNOFF(CFS) = 1.
                                                                                           TOTAL NUMBER OF STREAMS = 2
                                                                                           TOTAL NUMBER OF SIREAMS = 2 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 9.04
RAINFALL INTENSITY(INCH/HR) = 5.57
  TOTAL AREA(ACRES)
TC(MIN.) = 7.1
                 7.19
                                                                                           TOTAL STREAM AREA(ACRES) = 2.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =
**********
 FLOW PROCESS FROM NODE 932.30 TO NODE 932.50 IS CODE = 31
                                                                                                                                           5.21
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                            ** CONFLUENCE DATA **
                                                                                                                                 INTENSITY
                                                                                                                                                  AREA
                                                                                           STREAM RUNOFF
                                                                                                                    (MIN.) (INCH/HOUR)
8.08 5.992
9.04 5.574
                                                                                                        (CFS)
1.70
 -----
                                                                                           NUMBER
                                                                                                                                                 (ACRE)
                                           750.00 DOWNSTREAM(FEET) = 740.00
  ELEVATION DATA: UPSTREAM(FEET) =
 ELEVATION DATA: UPSTREAM(FEET) = 750.00 DOWNSTREA FLOW LENGTH(FEET) = 337.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000 DEPTH OF FLOW IN 18.0 INCH PIPE IS 3.8 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 6.31 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPE-FLOW(CFS) = 1.70 PIPE TRAVEL TIME(MIN.) = 0.89 TC(MIN.) = 8.0
                                                                                                          5.21
                                                                                                                                                     2.60
                                                                                           RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                           CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                  NUMBER OF PIPES = 1
                                                                                           ** PEAK FLOW RATE TABLE **
                                                        8.08
                                                                                           STREAM RUNOFF
NUMBER (CFS)
                                                                                                                      Tc
                                                                                                                                INTENSITY
                                                                                                                   (MIN.)
  LONGEST FLOWPATH FROM NODE 932.10 TO NODE 932.50 = 739.00 FEET.
                                                                                                                     8.08
                                                                                            1 2
                                                                                                          6.35
                                                                                                                              5.992
5.574
6.79 9.04
 FLOW PROCESS FROM NODE 932.50 TO NODE 932.50 IS CODE = 1
                                                                                           COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                           PEAK FLOW RATE(CFS) = 6.79 Tc(MIN.) = TOTAL AREA(ACRES) = 3.3
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                           LONGEST FLOWPATH FROM NODE 932.10 TO NODE 932.50 =
  TOTAL NUMBER OF STREAMS =
                                                                                                                                                                739.00 FEET.
  CONFIDENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
  CONFLUENCE VALUES USED FOR INDEPENDENT
TIME OF CONCENTRATION(MIN.) = 8.08
RAINFALL INTENSITY(INCH/HR) = 5.99
TOTAL STREAM AREA(ACRES) = 0.75
                                                                                         .....
                                                                                          FLOW PROCESS FROM NODE 932.50 TO NODE 928.00 IS CODE = 31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                            >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
                                                                                           >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
.....
                                                                                             LEVATION DATA: UPSTREAM(FEET) = 745.00 DOWNSTREAM(FEET) = 740.00
 FLOW PROCESS FROM NODE 930.00 TO NODE 931.00 IS CODE = 21
                                                                                           ELEVATION DATA: UPSTREAM(FEET) =
                                                                                           FLOW LENGTH(FEET) =
                                                                                                                    140.00
                                                                                                                               MANNING'S N =
                                                                                                                                                 0.013
                                                                                            ESTIMATED PIPE DIAMETER (INCH) INCREASED TO 18.000
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
            DEPTH OF FLOW IN 18.0 INCH PIPE IS 7.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 9.98
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
  *USER SPECIFIED(SUBAREA):
  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
 URDAM NEWLI GRADED AREAS RUNOFF COEFFICIENT = .3500 ES'
S.C.S. CURVE NUMBER (AMC II) = 0 PII
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00 PII
UPSTREAM ELEVATION(FEET) = 845.00 LOI
DOWNSTREAM ELEVATION(FEET) = 835.00
ELEVATION DIFFERENCE(FFEET) = 10.00 *****
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION! ----
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061 >>:
SUBAREA RUNOFF(CFS) = 0.59
                                                                                           PIPE-FLOW(CFS) = 6.79
PIPE TRAVEL TIME(MIN.) = 0.23 Tc(MIN.) = 9.28
LONGEST FLOWPATH FROM NODE 932.10 TO NODE 928.00 =
                                                                                         *************************
                                                                                           FLOW PROCESS FROM NODE 928.00 TO NODE 928.00 IS CODE = 11
                                                                                           >>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<
  TOTAL AREA(ACRES) = 0.59
TOTAL AREA(ACRES) = 0.24 TOTAL RUNOFF(CFS) = 0.59
                                                                                            ** MAIN STREAM CONFLUENCE DATA **
                                                                                           ** MAIN STREAM RUNOFF TC NUMBER (CFS) (MIN.)
1 6.79 9.28
*********
                                                                                                                               INTENSITY
                                                                                                                                                AREA
 FLOW PROCESS FROM NODE 931.00 TO NODE 932.00 IS CODE = 53
                                                                                                                              (INCH/HOUR) (ACRE)
                                                                                                                                  5.483
                                                                                                                              932.10 TO NODE
  >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<
                                                                                           LONGEST FLOWPATH FROM NODE
                                                                                                                                                   928.00 =
                                                                                                                                                                  879.00 FEET.
  >>>>TRAVELTIME THRU SUBAREA<
 ELEVATION DATA: UPSTREAM(FEST) = 835.00 DOWNSTREAM(FEST) = 750.
CHANNEL LENGTH THRU SUBAREA(FEST) = 382.00 CHANNEL SLOPE = 0.2225
NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
                                                                                           ** MEMORY BANK # 3 CONFLUENCE DATA **
STREAM RUNOFF TC INTENSIT
                                                                                                        CFS) (MIN.)
155.20 22 57
                                                                                                                               INTENSITY
                                                                                                                                                AREA
                                                                                                                              (INCH/HOUR)
3.090
                                                                                                                                              (ACRE)
141.58
                                                                                           NUMBER
 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VEHICLE CHANNEL FLOW THRU SUBAREA(CFS) = 0.59
FLOW VELOCITY(FEET/SEC) = 2.64 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 2.41 TC(MIN.) = 8.68
LONGEST FLOWPATH FROM NODE 930.00 TO NODE 932.00 = 482.00 FEET.
                                                                                           LONGEST FLOWPATH FROM NODE 916.00 TO NODE
                                                                                                                                                   928.00 =
                                                                                                                                                               5021.00 FEET.
                                                                                           STREAM RUNOFF
NUMBER (CFS)
1 70.56
                                                                                                                      Tc
                                                                                                                               INTENSITY
                                                                                                                   (MIN.)
                                                                                                                              (INCH/HOUR)
                                                                                                                      9.28
                                                                                                                              3.090
                                                                                                                  22.57
 FLOW PROCESS FROM NODE 931.00 TO NODE 932.00 IS CODE = 81
                                                                                                      159.03
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                           COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                         159.03 Tc(MIN.) =
                                                                                           PEAK FLOW RATE(CFS) = 159.0
TOTAL AREA(ACRES) = 144.9
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.724
  *USER SPECIFIED(SUBAREA):
  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                         ****************
                                                                                          FLOW PROCESS FROM NODE 928.00 TO NODE 928.00 IS CODE = 12
  SUBARBA AREA (ACRES) = 2.36 SUBARBA RUNOFF(CFS) = 4.73
TOTAL AREA (ACRES) = 2.6 TOTAL RUNOFF(CFS) = 5.21
                                                                                           >>>>CLEAR MEMORY BANK # 3 <<<<
                                                                                         _____
  TC(MIN.) = 8.68
                                                                                         *****
FLOW PROCESS FROM NODE 932.00 TO NODE 932.50 IS CODE = 31
                                                                                           >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>
>>>>SING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                            TION DATA: UPSTREAM(FEET) = 745.00 DOWNSTREAM(FEET) = 740.00
                                                                                           ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                                               = 737.00 DOWNSTREAM(FEET) = 722.00 MANNING'S N = 0.013
                                                                                           FLOW LENGTH(FEET) = 283.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 39.0 INCH PIPE IS 27.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 25.11
ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER OF PIPES = 1
  ELEVATION DATA: UPSTREAM(FEET) =
  FLOW LENGTH(FEET) =
                          184.00
                                     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.) = 8.41
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                                                           PIPE-FLOW(CFS) = 159.03
PIPE TRAVEL TIME(MIN.) = (
                                                                                           PIPE-FLOW(CFS) = 159.03

PIPE TRAVEL TIME(MIN.) = 0.19 Tc(MIN.) = 22.76

LONGEST FLOWPATH FROM NODE 916.00 TO NODE 933.0
                                                                                                                                                   933.00 = 5304.00 FEET.
  PIPE-FLOW(CFS) =
                           5.21
```

```
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
AREA-AVERAGE RUNDUF CUEFFICIENT - 0.3300

FLOW PROCESS FROM NODE 933.00 TO NODE 933.00 IS CODE = 11

TOTAL AREA(ACRES) = 312.1 TOTAL RUNOFF(CFS) = 292.8

TC(MIN.) = 28.13
  >>>>CONFILIENCE MEMORY BANK # 1 WITH THE MAIN_STREAM MEMORY
                                                                                               FLOW PROCESS FROM NODE 936.00 TO NODE 937.00 IS CODE = 31
   ** MAIN STREAM CONFLUENCE DATA **
               REAM CONLL
RUNOFF
(CFS)
                                       INTENSITY
                                                                                               >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                          (MIN.) (INCH/HOUR)
  NUMBER
                                                       (ACRE)
                                                                                               >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                           22.76
                                     3.073 1
916.00 TO NODE
                                                       144.93
E 933.00 = 5304.00 FEET.
                                                                                                                             FEET) = 580.00 DOWNSTREAM(FEET) =
               159.03
  LONGEST FLOWPATH FROM NODE
                                                                                               ELEVATION DATA: UPSTREAM(FEET) =
                                                                                               ELEVATION DATA. UPSIREAM(FEEI) = 580.00 DOWNS.
FLOW LENGTH(FEET) = 65.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 48.0 INCH PIPE IS 38.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 27.28
ESTIMATED PIPE DIAMETER(INCH) = 48.00 NUMBER
PIPE-FLOW(CFS) = 292.80
                                                                                                                                                       0.013
  ** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM RUNOFF TC INTENSI
                                       INTENSITY
                RUNOFF Tc (CFS) (MIN.)
                                                                                                                                                 NUMBER OF PIPES = 1
                                      (INCH/HOUR)
  NUMBER
                                                       (ACRE)
                                                                                               109.86
  LONGEST FLOWPATH FROM NODE
                                     910.00 TO NODE
                                                            933.00 =
                                                                         5388.00 FEET.
  ** PEAK FLOW RATE TABLE **
                                                                                               ***************
             RUNOFF
(CFS)
263.08
                                       INTENSITY
  STREAM
                             Tc
                           (MIN.)
15.96
  NUMBER
                                     (INCH/HOUR)
                                                                                               FLOW PROCESS FROM NODE 937.00 TO NODE 937.00 IS CODE = 10
                                      3.073
                                            3.863
                          22.76
                                                                                               >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<
              279.57
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =
                                 279.57 Tc(MIN.) =
                                                            22.76
  TOTAL AREA(ACRES) =
                                254.8
                                                                                               FLOW PROCESS FROM NODE 944.00 TO NODE 943.00 IS CODE =
FLOW PROCESS FROM NODE 933.00 TO NODE 933.00 IS CODE = 12
                                                                                              USER-SPECIFIED VALUES ARE AS FOLLOWS:
                                                                                          TC(MIN) = 14.16 RAIN INTENSITY(INCH/HOUR) = 4.1
== TOTAL AREA(ACRES) = 161.30 TOTAL RUNOFF(CFS) =
  >>>>CI.FAP MEMORY BANK # 1 ccccc
                                                                                          FLOW PROCESS FROM NODE 933.00 TO NODE 934.00 IS CODE = 31
                                                                                              FLOW PROCESS FROM NODE 943.00 TO NODE 943.00 IS CODE = 1
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                               >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <--
   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                            ______
  ------ TOTAL NUMBER OF STREAMS
                                                                                              TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 14.16
RAINFALL INTENSITY(INCH/HR) = 4.17
TOTAL STREAM AREA(ACRES) = 161.30
  ELEVATION DATA: UPSTREAM(FEET) = 722.00 DOWNSTREAM(FEET) = 660.00 FLOW LENGTH(FEET) = 1279.00 MANNING'S N = 0.013
  FLOW LENGTH(FEET) = 1279.00 MANNING'S N = 0.0 DEPTH OF FLOW IN 48.0 INCH PIPE IS 35.8 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 27.79 ESTIMATED PIPE DIAMETER(INCH) = 48.00 NUMBER
                                                                                              PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                   NUMBER OF PIPES = 1
                                                                                                                                             337 35
  PIPE-FLOW(CFS) = 279.57
PIPE TRAVEL TIME(MIN.) =
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  FLOW PROCESS FROM NODE 934.00 TO NODE 935.00 IS CODE = 53
                                                                                                                         _____
                                                                                               *USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
   >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<
                                                                                              S.C.S. CURVE NUMBER (AMC II) = 0

INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00

UPSTREAM ELEVATION(FEET) = 630.00

DOWNSTREAM ELEVATION(FEET) = 625.00

ELEVATION DIFFERENCE(FEET) = 5.00
  >>>>TRAVELTIME THRU SUBAREA<
  ELEVATION DATA: UPSTREAM(FEET) = 3660.00 DOWNSTREAM(FEET) = 615.00
  ELEVATION DATA: UPSTREAM(FEET) = 3660.00 DOWNSTREAM(FEET) = 615.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 1100.00 CHANNEL SLOPE = 2.7682
  CHANNEL LENGTH THRU SUBAREA(FEET) = 1100.00 CHANNEL SLOPE = 2.7682 NOTE: CHANNEL SLOPE OF 1.5 WAS ASSUMED IN VELOCITY ESTIMATION CHANNEL FLOW THRU SUBAREA(CFS) = 279.57 FLOW VELOCITY(FEET/SEC) = 25.84 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME(MIN.) = 0.71 Tc(MIN.) = 24.24 LONGEST FLOWPATH FROM NODE 910.00 TO NODE 935.00 = 7767.00 FEET.
                                                                                               DOWNSTREAM ELEVATION(FEET) = 625.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 7.695
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 95.00
(Reference: Table 3-1B of Hydrology Manual)
                                                                                                THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION! 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.185
                                                                                               TOTAL AREA(ACRES) = 0.32

TOTAL AREA(ACRES) = 0.15 TOTAL RUNOFF(CFS) =
  FLOW PROCESS FROM NODE 934.00 TO NODE 935.00 IS CODE = 81
   >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.951
                                                                                               FLOW PROCESS FROM NODE 941.00 TO NODE 942.00 IS CODE = 53
   USER SPECIFIED(SUBAREA):
  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                               >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<
  S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                                >>>>TRAVELTIME THRU SUBAREA<
                                                                                                             ELEVATION DATA: UPSTREAM(FEET) = 625.00 DOWNSTREAM(FEET) = 600.0
CHANNEL LENGTH THRU SUBAREA(FEET) = 413.00 CHANNEL SLOPE = 0.0605
NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  SUBAREA AREA (ACRES) = 24.30 SUBAREA RUNOFF(CFS) = 25.10 TOTAL AREA (ACRES) = 279.1 TOTAL RUNOFF(CFS) = 288.
                                                                                                                                                                               600.00
                24.24
  TC(MIN.) =
                                                                                               NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VEHICLIT ESTIMATION
CHANNEL FLOW THRU SUBAREA(CFS) = 0.32
FLOW VELOCITY(FEET/SEC) = 1.38 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 5.00 TC(MIN.) = 12.69
LONGEST FLOWPATH FROM NODE 940.00 TO NODE 942.00 = 513.00 FEET
  FLOW PROCESS FROM NODE 935.00 TO NODE 936.00 IS CODE = 53
   >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<
  >>>>TRAVELTIME THRU SUBAREA<
                                                                                               FLOW PROCESS FROM NODE 941.00 TO NODE 942.00 IS CODE =
  ELEVATION DATA: UPSTREAM(FEET) =
                                             615.00
                                                       DOWNSTREAM(FEET) =
  CHANNEL LENGTH THRU SUBAREA(FEET) = 1376.00 CHANNEL SLOPE = 0.0254
CHANNEL FLOW THRU SUBAREA(CFS) = 288.25
                                                                                               >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
  CHANNEL FLOW IRRU SUBARBA(CFS) = 280.29
FLOW VELOCITY(FEET/SEC) = 5.89 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 3.89 Tc(MIN.) = 28.13
LONGEST FLOWPATH FROM NODE 910.00 TO NODE 936.00 = 9143.00 FEET.
                                                                                                100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.479
                                                                                               *HISER SPECIFIED (SHEAREA):
                                                                                               "USBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  FLOW PROCESS FROM NODE 935.00 TO NODE 936.00 IS CODE = 81
                                                                                               SUBAREA ARRA(ACRES) = 2.03 SUBAREA RUNOFF(CFS) = 3.18
TOTAL AREA(ACRES) = 2.2 TOTAL RUNOFF(CFS) = 3.4
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                               TC(MIN.) =
                                                                                                             12.69
______
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.681
  *USER SPECIFIED (SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                              FLOW PROCESS FROM NODE 942.00 TO NODE 943.00 IS CODE = 31
  S.C.S. CURVE NUMBER (AMC II) =
                                                                                               >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
```

```
ELEVATION DATA: UPSTREAM(FEET) =
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                                                                                             578.00 DOWNSTREAM(FEET) = 577.00
                                                                                                            ELEVATION DAIR: OFSIREAM (FEET) = 576.00 DANNING'S N = 0.0

PEPH OF FLOW IN 75.0 INCH PIPE IS 56.2 INCHES PIPE-FLOW VELOCITY (FEET/SEC.) = 21.09

ESTIMATED PIPE DIAMETER(INCH) = 75.00 NUMBER
                                                                                    -----
                                     .========
  ELEVATION DATA: UPSTREAM(FEET) = 600.00 DOWNSTREAM(FEET) = 595.00 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 4.5 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 9.98 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1 PIPE-FLOW(CFS) = 3.42 PIPE TRAVEL TIME(MIN.) = 0.14 TC(MIN.) = 12.83
                                                                                                                                                                       NUMBER OF DIDES - 1
                                                                                                             PIPE-FLOW(CFS) = 520.54
PIPE TRAVEL TIME(MIN.) = 0
                                                                                                                                                             Tc(MIN.) =
                                                                                                                                                  0.05
                                                                                                                                                                                28.22
                                                                                                             LONGEST FLOWPATH FROM NODE 910.00 TO NODE 945.00 = 10273.00 FEET.
  LONGEST FLOWPATH FROM NODE 940.00 TO NODE 943.00 =
                                                                                      595.00 FEET.
                                                                                                             END OF FIRST OFFSITE BOUNDARY
  FLOW PROCESS FROM NODE 943.00 TO NODE 943.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIDENCE<
     >>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                                             FLOW PROCESS FROM NODE 950.00 TO NODE 951.00 IS CODE = 21
______
  TOTAL NUMBER OF STREAMS =
                                                                                                             >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  TIME OF CONCENTRATION(MIN.) = 12.83
RAINFALL INTENSITY(INCH/HR) = 4.45
TOTAL STREAM AREA(ACRES) = 2.18
                                                                                                             *USER SPECIFIED(SUBAREA):
                                                                                                             URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                          3.42
                                                                                                             UPSTREAM ELEVATION(FEET) = 1860.00
DOWNSTREAM ELEVATION(FEET) = 1850.0
                                                                                                                                                     1850.00
  ** CONFIGUENCE DATA **
                                                                                                            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) = 7.061

SUBAREA RUNOFF (CFS) = 0.84

TOTAL AREA(ACRES) = 0.34 TOTAL RUNOFF (CFS) = 0.84
              RUNOFF
  STREAM
                                               INTENSITY
                                                                    AREA
                                (MIN.)
                   (CFS)
                                            (INCH/HOUR)
                                              4.173
                 337.35
                               14.16
                                                                    161.30
                  3.42
                             12.83
                                                 4.448
                                                                      2 18
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
  ** PEAK FLOW RATE TABLE **
                                                                                                             FLOW PROCESS FROM NODE 951.00 TO NODE 952.00 IS CODE = 53
  STREAM
                 RUNOFF
                                  ТС
                                             TMTFMSTTV
                   (CFS)
                               (MIN.)
                                                                                                             >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA
  NUMBER
                                           (INCH/HOUR)
                                           4.448
4.173
                  309.04
                               12.83
                                                                                                             ELEVATION DATA: UPSTREAM(FEET) = 1850.00 DOWNSTREAM(FEET) = 1390.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 1137.00 CHANNEL SLOPE = 0.4046
                 340.56
                            14.16
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 340.56 Tc(MIN.) = 14.16

TOTAL AREA(ACRES) = 163.5

LONGEST FLOWPATH FROM NODE 910.00 TO NODE 943.00 = 9208.00 FET.

FLOW PEOCESS FROM NODE 943.00 TO NODE 943.00 TO NODE 937.00 TS CODE - 31.
  FLOW PROCESS FROM NODE 943.00 TO NODE 937.00 IS CODE = 31
                                                                                                        -----
                                                                                                             FLOW PROCESS FROM NODE 951.00 TO NODE 952.00 IS CODE = 81
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                             >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
  ELEVATION DATA: UPSTREAM(FEET) = 595.00 DOWNSTREAM(FEET) = 582.00 = 582.00  

FLOW LENGTH(FEET) = 1000.00 MANNING'S N = 0.013  

DEPTH OF FLOW IN 66.0 INCH PIPE IS 49.5 INCHES  

PIPE-FLOW VELOCITY(FEET/SEC.) = 17.81  

URBAN NEWLY GRADED AREAS  
SSTIMATED PIPE DIAMETER (INCH) = 66.00 NUMBER OF PIPES = 1 S.C.S. CURVE NUMBER (AMC
                                                                                                             100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.750 *USER SPECIFIED(SUBAREA):
                                                                                                             URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                                             UKBAN NEWLY GRADED AREAS KUNDFF CUEFFICIENT = .3500 S.C.S. CUTVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500 SUBAREA AREA(ACRES) = 18.34 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 18.7 TOTAL RUNOFF(CFS) =
  PIPE-FLOW(CFS) = 340.56
PIPE TRAVEL TIME(MIN.) = 0
                                               Tc(MIN.) =
                                       0.94
                                                                    15.10
                                                                                                                                                                                          30.49
  LONGEST FLOWPATH FROM NODE 910.00 TO NODE 937.00 = 10208.00 FEET.
                                                                                                             TOTAL AREA(ACRES) = TC(MIN.) = 11.59
                                                                                                         *******************
  FLOW PROCESS FROM NODE 937.00 TO NODE 937.00 IS CODE = 11
                                                                                                       -- FLOW PROCESS FROM NODE 952.00 TO NODE 953.00 IS CODE = 52
  >>>>CONFIJIENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<
                                                                                                             >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA
   ** MAIN STREAM CONFLUENCE DATA **
                                                                                                            CHANNEL LENGTH THRU SUBAREA(FEET) = 1390.00 DOWNSTREAM(FEET) = 1040.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 1715.00 CHANNEL SLOPE = 0.2041 NOTE: CHANNEL SLOPE of .1 WAS ASSUMED IN VELOCITY ESTIMATION CHANNEL FLOW THRU SUBAREA(CFS) = 31.05 FLOW VELOCITY(FEET/SEC) = 10.69 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME(MIN.) = 2.67 TC(MIN.) = 14.26 LONGEST FLOWPATH FROM NODE 950.00 TO NODE 953.00 = 2952.00 FEET
                                                                                                              RUNOFF TC INTENSITY AREA
(CFS) (MIN.) (INCH/HOUR) (ACRE)
  NUMBER
                 340 56
                               15.10
                                                4 005
                                                               163.48
  LONGEST FLOWPATH FROM NODE
                                            910.00 TO NODE 937.00 = 10208.00 FEET.
                BANK # 1 CONFLUENCE DATA **
RUNOFF To
   ** MEMORY BANK #
                                             INTENSITY
  STREAM
                                                                 AREA
                                                                                                                                                                                               2952 OO FEET
                  RUNOFF TC
(CFS) (MIN.)
                                           (INCH/HOUR)
                                                              (ACRE)
  NUMBER
                                                                                                          *************
                                                                312.09
                                                                    937.00 =
  LONGEST FLOWPATH FROM NODE
                                            910.00 TO NODE
                                                                                     9208.00 FEET.
                                                                                                            FLOW PROCESS FROM NODE 952.00 TO NODE 953.00 IS CODE = 81
  ** PEAK FLOW RATE TABLE **
                                                                                                             >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
               RUNOFF
(CFS)
  STREAM
                                  Tc
                                              INTENSITY
                               (MIN.)
                                                                                                             100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.155 *USER SPECIFIED(SUBAREA):
  NUMBER
                                            (INCH/HOUR)
                            15.10
28.17
                                                   4.005
                                                                                                             URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                520.54
                                                  2.678
                                                                                                             URBAN NEMLY GRADED ARRAS RUNNUFF CUEFFICIENT - .5550 S.C.S. CURVE NUMBER (AMC II) = 0 ARRA-AVERAGE RUNNUFF COEFFICIENT = 0.3500 SUBAREA AREA(ACRES) = 96.51 SUBAREA RUNNUFF(CFS) = 140.34 TOTAL AREA(ACRES) = 115.2 TOTAL RUNNUFF(CFS) = 167.5
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) = 520.5
TOTAL AREA(ACRES) = 475.6
                                      520.54 Tc(MIN.) = 28.17
                                                                                                             TC(MIN.) = 14.26
  FLOW PROCESS FROM NODE 937.00 TO NODE 937.00 IS CODE = 12
                                                                                                        -- FLOW PROCESS FROM NODE
                                                                                                                                              953.00 TO NODE 954.00 IS CODE = 52
  >>>>CLEAR MEMORY BANK # 1 <<<<<
                                                                                                             >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA<
                                                                                                          ELEVATION DATA: UPSTREAM(FEET) = 1040.00 DOWNSTREAM(FEET) = 880.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 2170.00 CHANNEL SLOPE = 0.0737 CHANNEL FLOW THRU SUBAREA(CFS) = 167.50
  FLOW PROCESS FROM NODE 937.00 TO NODE 945.00 IS CODE = 31
                                                                                                            CHANNEL ELOGIH THRO SUBAREA(FEET) = 2170.00 CHANNEL SLOPE = 0.0737 CHANNEL FLOW THRU SUBAREA(CFS) = 167.50 FLOW VELOCITY(FEET/SEC) = 15.08 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME(MIN.) = 2.40 TC(MIN.) = 16.66
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
```

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LONGEST FLOWPATH FROM NODE 950.00 TO NODE 954.00 = 5122.00 FEET. -----
                                                                                       >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY
FLOW PROCESS FROM NODE 953.00 TO NODE 954.00 IS CODE = 81
                                                                                        ** MAIN STREAM CONFILIENCE DATA *
                                                                                       STREAM RUNOFF Tc

NUMBER (CFS) (MIN.)

1 19.76 11.65
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                                           INTENSITY
                                                                                                                         (INCH/HOUR) (ACRE)
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.758
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                       ** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM RUNOFF TC INTENSITY
NUMBER (CFS) (MIN.) (INCH/HOUR
 URBAN NEWLY GRADED AREAS KONOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500

SUBAREA AREA(ACRES) = 73.58 SUBAREA RUNOFF(CFS) = 96.78

TOTAL AREA(ACRES) = 188.8 TOTAL RUNOFF(CFS) = 248.30
                                                                                                                                           AREA
                                                                                                                          (INCH/HOUR) (ACRE)
                                                                                                                                         188.77
                                                                                        LONGEST FLOWPATH FROM NODE
                                                                                                                          950.00 TO NODE
  TC(MIN.) = 16.66
                                                                                                                                            955.00 = 5235.00 FEET.
                                                                                       ** PEAK FLOW RATE TABLE **
                                                                                       STREAM RUNOFF TC
NUMBER (CFS) (MIN.)
1 191.97 11.65
 FLOW PROCESS FROM NODE 954.00 TO NODE 955.00 IS CODE = 31
                                                                                                                           INTENSITY
                                                                                                                       (INCH/HOUR)
4.734
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                             16.79
                                                                                                   263.91
 ELEVATION DATA: UPSTREAM(FEET) = 874.00 DOWNSTREAM(FEET) = 873.00
                                                                                       COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 FLOW LENGTH(FEET) = 113.00 MANNING'S N = 0.0 DEPTH OF FLOW IN 63.0 INCH PIPE IS 47.3 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 14.24 ESTIMATED PIPE DIAMETER(INCH) = 63.00 NUMBER
                                                                                       PEAK FLOW RATE(CFS) = 263.9
TOTAL AREA(ACRES) = 199.5
                                                     0.013
                                                                                                                     263.91 Tc(MIN.) =
                                                                                                                                             16.79
 NUMBER OF PIPES = 1
                                                                                       FLOW PROCESS FROM NODE 955.00 TO NODE 955.00 IS CODE = 12
 FLOW PROCESS FROM NODE 955.00 TO NODE 955.00 IS CODE = 10
                                                                        ----- FLOW PROCESS FROM NODE
 >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
                                                   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<>>>
                                                                                       ______
 FLOW PROCESS FROM NODE 957.00 TO NODE 958.00 IS CODE = 21
                                                                                                                              908.00 DOWNSTREAM(FEET) = 905.00
                                                                                       FLOW LENGTH(FEET) = 204.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 57.0 INCH PIPE IS 45.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 17.27
ESTIMATED PIPE DIAMETER(INCH) = 57.00 NUMBER OF PIPES = 1
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  USER SPECIFIED(SUBAREA):
                                                                                       URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
 UPSTREAM ELEVATION(FEET) = 1240.00
DOWNSTREAM ELEVATION(FEET) = 1230.00
                                                                                     FLOW PROCESS FROM NODE 960.00 TO NODE 960.00 IS CODE = 1
  ELEVATION DIFFERENCE(FEET) =
                                      10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
                                                                                        >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
                                                                                     ______
 SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) =
                                                                                       TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                0.62
                             0.25 TOTAL RUNOFF(CFS) =
                                                                                       TIME OF CONCENTRATION(MIN.) = 16.99
RAINFALL INTENSITY(INCH/HR) = 3.71
                                                                                                                        199.45
 FLOW PROCESS FROM NODE 958.00 TO NODE 958.00 IS CODE = 53
                                                                                       TOTAL STREAM AREA(ACRES) =
                                                                                       PEAK FLOW RATE(CFS) AT CONFLUENCE = 263.91
  >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA
                                                                                     FLOW PROCESS FROM NODE 962.00 TO NODE 963.00 IS CODE = 21
 ELEVATION DATA: UPSTREAM(FEET) = 1230.00 DOWNSTREAM(FEET) = 980.0
CHANNEL LENGTH THRU SUBAREA(FEET) = 708.00 CHANNEL SLOPE = 0.3531
                                                                           980.00 -
 CHANNEL LENGTH THRU SUBAREA(FEET) = 708.00 CHANNEL SLOPE = 0.3531
NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
CHANNEL FLOW THRU SUBAREA(CFS) = 0.62
FLOW VELOCITY(FEET/SEC) = 3.33 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 3.55 Tc(MIN.) = 9.81
LONGEST FLOWPATH FROM NODE 957.00 TO NODE 958.00 = 808.00 FEET.
                                                                                        >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                        *USER SPECIFIED(SUBAREA):
                                                                                        URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                        S.C.S. CURVE NUMBER (AMC II) =
INITIAL SUBAREA FLOW-LENGTH(FEET)
                                                                                                                            0
                                                                                       UPSTREAM ELEVATION(FEET) = 1240.00
DOWNSTREAM ELEVATION(FEET) = 1230.00
ELEVATION DIFFERENCE(FEET) = 10.00
**********************
 FLOW PROCESS FROM NODE 958.00 TO NODE 959.00 IS CODE = 81
                                                                                        SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                                     6.267
                                                                                        WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
    >>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                       SUBAREA RUNOFF(CFS) = 0.69
TOTAL AREA(ACRES) = 0.28 TOTAL RUNOFF(CFS) =
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.287
 **USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
 OKRAH NEBIT GRADES HARRS KONTY COEFFICIENT = .5300

S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500

SUBAREA RUNOFF (CFS) = 19.30

TOTAL AREA(ACRES) = 10.7 TOTAL RUNOFF(CFS) = 19.30
                                                                                       FLOW PROCESS FROM NODE 963.00 TO NODE 964.00 IS CODE = 52
                                                                                        >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>>TRAVELTIME THRU SUBAREA<
  TC(MIN.) =
                                                                                       .....
                                                                                       ELEVATION DATA: UPSTREAM(FEET) = 1230.00 DOWNSTREAM(FEET) = 890.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 1033.00 CHANNEL SLOPE = 0.3291 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) = 0.69

FLOW VELOCITY(FEET/SEC) = 4.74 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME(MIN.) = 3.63 Tc(MIN.) = 9.90

LONGEST FLOWPATH FROM NODE 962.00 TO NODE 964.00 = 1133.00 FEET
                             959.00 TO NODE 955.00 IS CODE = 31
 FLOW PROCESS FROM NODE
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  ______
                                       994.00 DOWNSTREAM(FEET) = 908.00
 ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                                                                         1133.00 FEET.
 FLOW LENGTH(FEET) = 1637.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 12.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 14.89
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                    MANNING'S N
                                                                                     ************************
                                                                                       FLOW PROCESS FROM NODE 963.00 TO NODE 964.00 IS CODE = 81
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                                                 ......
                                                                                        100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.258
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
 FLOW PROCESS FROM NODE 955.00 TO NODE 955.00 IS CODE = 11
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>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<
                                                                                           18.63
                                                                                             FLOW PROCESS FROM NODE 967.00 TO NODE
 FLOW PROCESS FROM NODE 964.00 TO NODE 960.00 IS CODE = 31
                                                                                             >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                              *USER SPECIFIED(SUBAREA):
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <---
                                                                                             URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                                                    0 = 100.00
                                                                                             INITIAL SUBAREA FLOW-LENGTH (FEET)
  ELEVATION DATA: UPSTREAM(FEET) =
                                          900.00 DOWNSTREAM(FEET) = 895.00
 ELEVATION DATA: UPSTREAM(FEET) = 900.00 DOWNST
FLOW LENGTH(FEET) = 215.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 21.0 INCH PIPE IS 14.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.85
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER
                                                                                             INITIAL SUBAREA FLOW-LENGIN(FEET) = UPSTREAM ELEVATION(FEET) = 1670.00

DOWNSTREAM ELEVATION(FEET) = 1660.00

ELEVATION DIFFERENCE(FEET) = 10.00
                                                                                             LOWING MEAN ELEVATION (FEET) = 1660.00
ELEVATION DIFFERENCE (FEET) = 10.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
SUBAREA RUNOFF(CFS) = 1.75
TOTAL AREA(ACRES) = 0.71 TOTAL RUNOFF(CFS) = 1.75
                                                    NUMBER OF PIPES =
  PIPE-FLOW(CFS) = 18.63
PIPE TRAVEL TIME(MIN.) = 0.33  Tc(MIN.) = 10.23
LONGEST FLOWPATH FROM NODE 962.00 TO NODE 960.00 = 1348.00 FEET.
                                                                                       ***
--- FLOW PROCESS FROM NODE 968.00 TO NODE 969.00 IS CODE = 52
 FLOW PROCESS FROM NODE 960.00 TO NODE 960.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIDENCE<
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                                                              >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
 >>>>TRAVELTIME THRU SUBAREA<
                                                                                             >>>>TRAVELTIME THRU SUBAREA
 TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  TIME OF CONCENTRATION(MIN.) = 10.23
RAINFALL INTENSITY(INCH/HR) = 5.15
TOTAL STREAM AREA(ACRES) = 10.12
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                 18.63
  ** CONFLUENCE DATA **
               RUNOFF
  STREAM
                                        THTFNSTTV
                                                          APFA
                (CFS)
                           (MIN.) (INCH/HOUR)
                                                                                           .....
                                                        (ACRE)
               263.91 16.99 3.711
18.63 10.23 5.148
                                                                                             FLOW PROCESS FROM NODE 968.00 TO NODE 969.00 IS CODE = 81
               263.91
                                                          199.45
                                                           10.12
                                                                                              >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                              100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.439
*USER SPECIFIED(SUBAREA):
                                                                                             "USBAN SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) = 199.47
SUBAREA RAEA(ACRES) = 199.47
TOTAL AREA(ACRES) = 200.2
TOTAL RUNOFF(CFS) = 240.99
    PEAK FLOW RATE TABLE **
            RUNOFF Tc
(CFS) (MIN.)
                                       INTENSITY
  NUMBER
                                     (INCH/HOUR)
               177.49
                       10.23
                                         5.148
                                                                                              TOTAL AREA(ACRES)
                                                                                              TC(MIN.) = 19.12
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 277.33 Tc(MIN.) = 16.99
TOTAL AREA(ACRES) = 209.6
                                                                                             FLOW PROCESS FROM NODE 969.00 TO NODE 970.00 IS CODE = 52
  LONGEST FLOWPATH FROM NODE 950.00 TO NODE 960.00 = 5439.00 FEET. -
                                                                                            >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA<
                                                                                          - ELEVATION DATA: UPSTREAM(FEET) = 950.00 DOWNSTREAM(FEET) :
 FLOW PROCESS FROM NODE 960.00 TO NODE 965.00 IS CODE = 31
                                                                                             CHANNEL LENGTH THRU SUBAREA(FEET) = 950.00 DOWNSTREAM(FEET) = 770.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 3275.00 CHANNEL SLOPE = 0.0550 CHANNEL FLOW THRU SUBAREA(CFS) = 240.94 FLOW VELOCITY(FEET/SEC) = 14.57 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME(MIN.) = 3.75 TC(MIN.) = 22.86 LONGEST FLOWPATH FROM NODE 967.00 TO NODE 970.00 = 7459.00 FEET.
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  ELEVATION DATA: UPSTREAM(FEET) = 905.00 DOWNSTREAM(FEET) = 870.00
FLOW LENGTH(FEET) = 947.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 51.0 INCH PIPE IS 37.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 25.15
ESTIMATED PIPE DIAMETER(INCH) = 51.00 NUMBER OF PIPES = 1
                                                                                          *****************
                                                                                            FLOW PROCESS FROM NODE 969.00 TO NODE 970.00 IS CODE = 81
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                              100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.064
******************
                                                                                             *USER SPECIFIED(SUBARRA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
 FLOW PROCESS FROM NODE 965.00 TO NODE 970.00 IS CODE = 52
                                                                                             URBAN NEWLY GRADED AREAS KUNNUFF COEFICIANTS.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) = 259.60 SUBAREA RUNOFF(CFS) = 278.40
TOTAL AREA(ACRES) = 459.8 TOTAL RUNOFF(CFS) = 493.6
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA
 >>>>IRAVELIIME THRU SUBAREA<<<<
  ELEVATION DATA: UPSTREAM(FEET) = 870.00 DOWNSTREAM(FEET) = 770. CHANNEL LENGTH THRU SUBAREA(FEET) = 600.00 CHANNEL SLOPE = 0.1667
                                                                                             TC(MIN.) = 22.86
 ** MAIN STREAM CONFLUENCE DATA **
                                                                                                      RUNOFF
(CFS)
  FLOW PROCESS FROM NODE 965.00 TO NODE 970.00 IS CODE = 81
                                                                                                                                  INTENSITY
                                                                                                                         Tc
                                                                                                                      (MIN.)
                                                                                             NUMBER
                                                                                                                                 (INCH/HOUR) (ACRE)
                                                                                                                       22.86
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                          493.08
                                                                                                                                     3.064
                                                                                             LONGEST FLOWPATH FROM NODE
                                                                                                                                 967.00 TO NODE 970.00 =
                                                                                                                                                                     7459.00 FEET.
  _____
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.562
                                                                                             ** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM RUNOFF TC INTENSIT
NUMBER (CFS) (MIN.) (INCH/HOU
         SPECIFIED(SUBAREA)
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                                                                   INTENSITY
                                                                                                                                                   AREA
                                                                                                                                 (INCH/HOUR)
                                                                                                                                                  (ACRE)
                                                                                                                                                  213.18
  SUBAREA AREA(ACRES) = 3.61 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 213.2 TOTAL RUNOFF(CFS) = TC(MIN.) = 18.10
                                                                                             LONGEST FLOWPATH FROM NODE
                                                                                                                                 950.00 TO NODE 970.00 =
                                                                                                                                                                     6986.00 FEET.
                                                                      4.50
                                                                                              ** PEAK FLOW RATE TABLE **
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
                                                                                                         RUNOFF
(CFS)
667.74
                                                                                             STREAM
                                                                                                                         Tc
                                                                                                                                   TNTENSTTY
                                                                                                                      (MIN.)
                                                                                             NUMBER
                                                                                                                                 (INCH/HOUR)
                                                                                                                       18.10
 FLOW PROCESS FROM NODE 970.00 TO NODE 970.00 IS CODE = 10
                                                                                                         731.64
                                                                                                                       22.86
```

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 731.64 Tc(MIN.) = TOTAL AREA(ACRES) = 673.0 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA >>>>TRAVELTIME THRU SUBAREA<
ELEVATION DATA: UPSTREAM(FEET) = 770.00 DOWNSTREAM(FEET) = 630.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 3900.00 CHANNEL SLOPE = 0.0359 CHANNEL FLOW THRU SUBAREA(FEET) = 731.64 FLOW VELOCITY(FEET/SEC) = 16.77 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME(MIN.) = 3.88 TC(MIN.) = 26.74 LONGEST FLOWPATH FROM NODE 967.00 TO NODE 971.00 = 11359.00 FEET. *********************** FLOW PROCESS FROM NODE 970.00 TO NODE 971.00 IS CODE = 81 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW< 100 YEAR RAINFALL INTENSITY(INCH/HOUR) - 2....
*USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) = 151.95
SUBAREA RUNOFF(CFS) = 147.30
TOTAL AREA(ACRES) = 824.9
TOTAL RUNOFF(CFS) = 799.6 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.770 799.67 FLOW PROCESS FROM NODE 970.00 TO NODE 970.00 IS CODE = 12 >>>>CLEAR MEMORY BANK # 1 <<<< _______ END OF STUDY SUMMARY: END OF STODY SUMMARY:

TOTAL AREA (ACRES) = 824.9 TC(MIN.) = 26.74

PEAK FLOW RATE(CFS) = 799.67 ______ END OF RATIONAL METHOD ANALYSIS

CHAPTER 6

5.1.6 – Rational Method Hydrologic Analysis (AES 2015)

Drainage Areas Tributary to Planning Areas 16/19 WQ Basins

OTAY RANCH VILLAGE 14 & PA 16/19 DRAINAGE AREAS TRIBUTARY TO PLANNING AREAS 16/19

CHAPTER 5

5.1.7 – Rational Method Proposed Condition Hydrology Maps

(c) Copyright 1982-2015 Advanced Engineering Software (aes) Ver. 22.0 Release Date: 07/01/2015 License ID 1239 ELEVATION DATA: UPSTREAM(FEET) = 1320.00 DOWNSTREAM(FEET) = 1070.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 2053.00 CHANNEL SLOPE = 0.1218 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION Analysis prepared by: CHANNEL FLOW THRU SUBAREA(CFS) = 97.81 FLOW VELOCITY(FEET/SEC) = 14.91 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME(MIN.) = 2.29 Tc(MIN.) = 15.90 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 103.00 = 4956.00 FEET. ********************** DESCRIPTION OF STUDY **************** FLOW PROCESS FROM NODE 102.00 TO NODE 103.00 IS CODE = 81 Village 16 North >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW< -----100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.872 *USER SPECIFIED(SUBAREA): FILE NAME: R:\1235\HYD\CALCS\AES\SRP\V16N.DAT URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 TIME/DATE OF STUDY: 17:52 08/03/2017 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500 SUBAREA AREA(ACRES) = 81.12 SUBAREA RUNOFF(CFS) = 109.94 TOTAL AREA(ACRES) = 146.4 TOTAL RUNOFF(CFS) = 198.4 USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION: 198.40 2003 SAN DIEGO MANUAL CRITERIA TC(MIN.) = 15.90 ******************** USER SPECIFIED STORM EVENT(YEAR) = 100.00 6-HOUR DURATION PRECIPITATION (INCHES) = SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00 FLOW PROCESS FROM NODE 103.00 TO NODE 103.00 IS CODE = 1 3.100 SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95 SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE TOTAL NUMBER OF STREAMS = 2 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 CONFIDENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE: CONFLUENCE VALUES USED FOR ABOUT TIME OF CONCENTRATION(MIN.) = 15.90 RAINFALL INTENSITY(INCH/HR) = 3.87 WIDTH CROSSFALL IN- / OUT-/PARK- HEIGHT WIDTH LIP HIKE FACTOR

(FT) (FT) SIDE / SIDE / WAY (FT) (FT) (FT) (FT) NO. (FT) PEAK FLOW RATE(CFS) AT CONFLUENCE = 198.40 16.0 8.0 0.020/0.020/0.020 0.50 2.00 0.0313 0.125 0.0150 0.020/0.020/0.020 FLOW PROCESS FROM NODE 105.00 TO NODE 106.00 IS CODE = 21 GLOBAL STREET FLOW-DEPTH CONSTRAINTS: Relative Flow-Depth = 0.00 FEET as (Maximum Allowable Street Flow Depth) - (Top-of-Curb) >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS ______ 2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN *USER SPECIFIED(SUBAREA): URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE. S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBARBA FLOW-LENGTH(FEET) = 1 UPSTREAM ELEVATION(FEET) = 1200.00 DOWNSTREAM ELEVATION(FEET) = 1195.00 ELEVATION DIFFERENCE(FEET) = 5.00 100.00 ******************** FLOW PROCESS FROM NODE 100.00 TO NODE 101.00 IS CODE = 21 SUBARRA OVERLAND TIME OF FLOW(MIN.) = 7.695
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 95.00 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS< ._____ *USER SPECIFIED(SUBAREA): (Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION! URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 s.c.s. CURVE NUMBER (AMC II) = 0INITIAL SUBAREA FLOW-LENGTH(FEET) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.185 UPSTREAM ELEVATION(FEET) = 1900.00

DOWNSTREAM ELEVATION(FEET) = 1890.00

ELEVATION DIFFERENCE(FEET) = 10.00 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 0.50 0.23 TOTAL RUNOFF(CFS) = ELEVATION DIFFERENCE(FEET) = 10.00 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN To CALCULATION! 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061 FLOW PROCESS FROM NODE 106.00 TO NODE 107.00 IS CODE = 52 >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>>TRAVELTIME THRU SUBAREA<>>>> TOTAL AREA(ACRES) = 4.08 -----FLOW PROCESS FROM NODE 101.00 TO NODE 102.00 IS CODE = 52>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW< >>>>TRAVELTIME THRU SUBAREA -----ELEVATION DATA: UPSTREAM(FEET) = 1890.00 DOWNSTREAM(FEET) = 1320.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 2803.00 CHANNEL SLOPE = 0.2034 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION ****************** CHANNEL FLOW THRU SUBARRA(CFS) = 4.08

FLOW VELOCITY(FEET/SEC) = 6.36 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)

TRAVEL TIME(MIN.) = 7.34 Tc(MIN.) = 13.61

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 102.00 = 2903.00 FEET. FLOW PROCESS FROM NODE 106.00 TO NODE 107.00 IS CODE = 81 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW< ______ 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.889 *USER SPECIFIED(SUBAREA): FLOW PROCESS FROM NODE 101.00 TO NODE 102.00 IS CODE = 81 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW< SUBAREA AREA(ACRES) = 3.10 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 3.3 TOTAL RUNOFF(CFS) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.282 6.86 *USER SPECIFIED(SUBAREA): TC(MIN.) = URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) = 63.62 SUBAREA RUNOFF(CFS) = 95.34
TOTAL AREA(ACRES) = 65.3 TOTAL RUNOFF(CFS) = 97.83 ***** FLOW PROCESS FROM NODE 107.00 TO NODE 108.00 IS CODE = 31 97.81 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA< >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>> TC(MIN.) = 13.61

>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT 2003,1985,1981 HYDROLOGY MANUAL

```
218.6 TOTAL RUNOFF(CFS) =
_____
                                                                                          TOTAL AREA(ACRES) =
                                                                                                                                                      273.58
 ELEVATION DATA: UPSTREAM(FEET) = 1180.00 DOWNSTREAM(FEET) = 1155.00 FLOW LENGTH(FEET) = 512.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                          TC(MIN.) = 17.99
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 6.8 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 11.22 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
                                                                                         FLOW PROCESS FROM NODE 109.00 TO NODE 109.00 IS CODE = 10
                                              NUMBER OF PIPES = 1
                                                                                          >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
 PIPE-FLOW(CFS) = 6.86

PIPE TRAVEL TIME(MIN.) = 0.76 Tc(MIN.) = 9.06

LONGEST FLOWPATH FROM NODE 105.00 TO NODE 108.00 =
                                                                777.00 FEET.
                                                                                          FLOW PROCESS FROM NODE 111.00 TO NODE 112.00 IS CODE = 21
************************
 FLOW PROCESS FROM NODE 108.00 TO NODE 103.00 IS CODE = 52
                                                                                          >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                        ______
 >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>>TRAVELTIME THRU SUBAREA<>>>>
                                                                                          *USER SPECIFIED(SUBAREA):
                                                                                          URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
0
                                                                                          S.C.S. CURVE NUMBER (AMC II) =
 ELEVATION DATA: UPSTREAM(FEET) = 1155.00 DOWNSTREAM(FEET) =
                                                                                          INITIAL SUBAREA FLOW-LENGTH(FEET) =
                                                                                                                                  100.00
  CHANNEL LENGTH THRU SUBAREA(FEET) = 1035.00 CHANNEL SLOPE = 0.0821
                                                                                          UPSTREAM ELEVATION(FEET) = 1195.00

DOWNSTREAM ELEVATION(FEET) = 1185.00

ELEVATION DIFFERENCE(FEET) = 10.00
 CHANNEL FLOW THRU SUBAREA(CFS) =
                                          6.86
 TRAVEL TIME (MIN.) = 2.64 Tc(MIN.) = 11.71

LONGEST FLOWPATH FROM NODE 105.00 TO NODE 103.00 = 1812.00 FEET.
                                                                                          SUBARBA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
                                                                                          SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) =
                                                                                                                       0.82
                                                                                                                    0.33 TOTAL RUNOFF(CFS) =
 FLOW PROCESS FROM NODE 108.00 TO NODE 103.00 IS CODE = 81
                                                                                        >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
______
                                                                                          FLOW PROCESS FROM NODE 112.00 TO NODE 113.00 IS CODE = 52
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.718
 *USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                          >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
                                                                                          >>>>TRAVELTIME THRU SUBAREA<
 S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                          -----
                                                                                          ELEVATION DATA: UPSTREAM(FEET) = 1185.00 DOWNSTREAM(FEET) = 1020.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 1480.00 CHANNEL SLOPE = 0.1115 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 ARBA-AVERAGE RUNOFF COEFFICIENT - 0.5355
SUBAREA AREA (ACRES) = 27.52 SUBAREA RUNOFF(CFS) = 45.44
TOTAL AREA(ACRES) = 30.9 TOTAL RUNOFF(CFS) = 50.5
                                                                50 94
 TC(MIN.) = 11.71
                                                                                          CHANNEL FLOW THRU SUBAREA(CFS) = 0.82
FLOW VELOCITY(FEET/SEC) = 4.74 (PER LACFCD/RCTC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 5.20 Tc(MIN.) = 11.47
LONGEST FLOWPATH FROM NODE 111.00 TO NODE 113.00 = 1580.00 FEET.
 FLOW PROCESS FROM NODE 103.00 TO NODE 103.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                                                         FLOW PROCESS FROM NODE 112.00 TO NODE 113.00 IS CODE = 81
-----
 TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                          >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>
 TIME OF CONCENTRATION(MIN.) = 11.71
RAINFALL INTENSITY(INCH/HR) = 4.72
                                                                                           100 YEAR RAINFALL INTENSITY (INCH/HOUR) = 4.782
  TOTAL STREAM AREA(ACRES) =
                                 30.85
                                                                                          *USER SPECIFIED(SUBAREA):
                                                                                          URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) = 23.73
SUBAREA REA(ACRES) = 23.73
TOTAL AREA(ACRES) = 24.1
TOTAL RUNOFF(CFS) = 40.2
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                             50.94
 ** CONFLUENCE DATA **
           RUNOFF
                           Tc
                                    INTENSITY
 STREAM
                                                    AREA
              (CFS)
                        (MIN.) (INCH/HOUR)
                                                   (ACRE)
                                   3.872
             198.40
                        15.90
                                                    146.39
                                                                                          TC(MIN.) =
                                                                                                       11.47
              50.94
                        11.71
                                      4.718
                                                                                        *****
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                         FLOW PROCESS FROM NODE 113.00 TO NODE 110.00 IS CODE = 31
 CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                          >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                          >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<-
 STREAM
             RUNOFF
                         Tc
                                   INTENSITY
                                                                                        ______
                        (MIN.)
 NUMBER
               (CFS)
                                 (INCH/HOUR)
                                                                                          ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                                              1020.00 DOWNSTREAM(FEET) = 1015.00
                                  4.718
                                                                                          FLOW LENGTH(FEET) = 176.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 27.0 INCH PIPE IS 18.1 INCHES
             197.01
                        11.71
             240.21
                       15.90
                                     3.872
                                                                                          PIPE-FLOW VELOCITY(FEET/SEC.) = 14.19
                                                                                          ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 240.21 Tc(MIN.) = 15.90
TOTAL AREA(ACRES) = 177.2
                                                                                          PIPE-FLOW(CFS) = 40.27
PIPE TRAVEL TIME(MIN.) = (
                                                                                                                     0.21
                                                                                                                               Tc(MIN.) = 11.67
                                                                                          LONGEST FLOWPATH FROM NODE
                                                                                                                         111.00 TO NODE 110.00 = 1756.00 FEET.
  LONGEST FLOWPATH FROM NODE 100.00 TO NODE
                                                    103.00 = 4956.00 FEET.
 *****
                                                                                        *******************
 FLOW PROCESS FROM NODE 103.00 TO NODE 109.00 IS CODE = 52
                                                                                          FLOW PROCESS FROM NODE 110.00 TO NODE 110.00 IS CODE = 10
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
                                                                                          >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<
>>>>TRAVELTIME THRU SUBAREA<
                                                                                        ______
 ELEVATION DATA: UPSTREAM(FEET) = 1070.00 DOWNSTREAM(FEET) = CHANNEL LENGTH THRU SUBAREA(FEET) = 1882.00 CHANNEL SLOPE = CHANNEL FLOW THRU SUBAREA(CFS) = 240.21
                                                                                        **********************
                                                   CHANNEL SLOPE = 0.0584
                                                                                          FLOW PROCESS FROM NODE 115.00 TO NODE 116.00 IS CODE = 21
 CHANNEL ELOW THRU SUBAREA(FEET) = 1002.00 CHANNEL SLOPE = 0.0364

CHANNEL FLOW THRU SUBAREA(CFS) = 240.21

FLOW VELOCITY(FEET/SEC) = 15.01 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)

TRAVEL TIME(MIN.) = 2.09 TC(MIN.) = 17.99

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 109.00 = 6838.00 FEET.
                                                                                          >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                        -----
                                                                                          *USER SPECIFIED(SUBAREA):
                                                                                          LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
**********************
                                                                                          S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
 FLOW PROCESS FROM NODE 103.00 TO NODE 109.00 IS CODE = 81
                                                                                          UPSTREAM ELEVATION(FEET) = 1335.00

DOWNSTREAM ELEVATION(FEET) = 1333.00

ELEVATION DIFFERENCE(FEET) = 2.00
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.576
                                                                                          SUBAREA OVERLAND TIME OF FLOW(MIN.) = 2.988 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
  *USER SPECIFIED(SUBAREA):
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                   THE MAXIMUM OVERLAND FLOW LENGTH = 70.00 (Reference: Table 3-1B of Hydrology Manual)
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                                    THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION!
 SUBAREA AREA(ACRES) = 41.35 SUBAREA RUNOFF(CFS) = 51.75
                                                                                           100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
```

```
NOTE: RAINFALL INTENSITY IS BASED ON To = 5-MINUTE.
                                                                                           >>>>(STANDARD CURB SECTION USED) << <<
 NOTE: RAINFALL INCLUSIONS
SUBAREA RUNOFF(CFS) = 0.62
TOTAL AREA(ACRES) = 0.09 TOTAL RUNOFF(CFS) = 0.62
                                                                                         -----
                                                                                           UPSTREAM ELEVATION(FEET) = 1235.00 DOWNSTREAM ELEVATION(FEET) = 1220.00
                                                                                           STREET LENGTH(FEET) = 1405.00 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00
*************************
 FLOW PROCESS FROM NODE 116.00 TO NODE 117.00 IS CODE = 61
                                                                                           DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                           INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  >>>>(STANDARD CURB SECTION USED) <---
 UPSTREAM ELEVATION(FEET) = 1333.00 DOWNSTREAM ELEVATION(FEET) = 1238.00
                                                                                           SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET LENGTH(FEET) = 1212.00
STREET HALFWIDTH(FEET) = 18.00
                                                                                           STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
                                    CURB HEIGHT (INCHES) =
                                                                                                                                                                    0.0150
                                                                                           Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                             **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                             STREETFLOW MODEL RESULTS USING ESTIMATED FLOW: STREET FLOW DEPTH(FEET) = 0.32
                                                                                             HALFSTREET FLOOD WIDTH(FEET) = 9.
AVERAGE FLOW VELOCITY(FEET/SEC.) =
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                           AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.28
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.73
STREET FLOW TRAVEL TIME(MIN.) = 10.26 Tc(MIN.) = 19.90
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.351
*USER SPECIFIED(SUBADEA).
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                           *USER SPECIFIED(SUBAREA):
RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) = 0.26
HALFSTREET FLOOD WIDTH(FEET) =
                                                                                           S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.460
                                                                                           AREA-AVERAGE RUNOFF COEFFICIENTS
SUBAREA AREA(ACRES) = 5.56
TOTAL AREA(ACRES) = 5.7
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.14

PRODUCT OF DEPTHAVELOCITY(FT*FT/SEC.) = 1.32

STREET FLOW TRAVEL TIME(MIN.) = 3.93 TC(MIN.) =
                                                                                                                              SUBAREA RUNOFF(CFS) =
                                                                                                                                                                  8.77
                                                                                                                                   PEAK FLOW RATE(CFS) =
                                                                                           100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.625
  *USER SPECIFIED(SUBAREA):
 "USEAN SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .8500

S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.850

SUBAREA AREA(ACRES) = 1.76

SUBAREA RUNOFF(CFS) = 9.91

TOTAL AREA(ACRES) = 1.9

PEAK FLOW RATE(CFS) = 10.42
                                                                                          **************************
                                                                                           FLOW PROCESS FROM NODE 121.00 TO NODE 121.00 IS CODE = 1
  END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                           >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
 DEPTH(FEET) = 0.30 HALFSTREET FLOOW WIDTH(FEET) = 8.79 FLOW VELOCITY(FEET/SEC.) = 5.84 DEPTH*VELOCITY(FT*FT/SEC.) = LONGEST FLOWPATH FROM NODE 115.00 TO NODE 117.00 = 1312.0
                                                                                           >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                           TOTAL NUMBER OF STREAMS = 2
                                 115.00 TO NODE 117.00 = 1312.00 FEET.
                                                                                           CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                           CONFLUENCE VALUES USED FOR AREA TIME OF CONCENTRATION(MIN.) = 19.90 RAINFALL INTENSITY(INCH/HR) = 3.35 TOTAL STREAM AREA(ACRES) = 5.69
******************************
 FLOW PROCESS FROM NODE 117.00 TO NODE 121.00 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
                                                                                           PEAK FLOW RATE(CFS) AT CONFLUENCE =
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
-----
                                                                                           ** CONFLUENCE DATA **
 ELEVATION DATA: UPSTREAM(FEET) = 1233.00 DOWNSTREAM(FEET) = 1220.00 FLOW LENGTH(FEET) = 1397.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 12.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.70
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
                                                                                                      RUNOFF
(CFS)
                                                                                           STREAM
                                                                                                                    TC
                                                                                                                              INTENSITY
                                                                                                                                              AREA
                                                                                           NUMBER
                                                                                                                  (MIN.) (INCH/HOUR)
                                                                                                                                             (ACRE)
                                                                                                        10.42
                                                                                                                 10.39
                                                                                                                               5.095
                                                                                                                                                1.85
                                                                                                                 19.90
                                                                                               2
                                                                                                        8.77
                                                                                                                                3.351
                                                                                                                                                5.69
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                           CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                           ** PEAK FLOW RATE TABLE **
***********************
                                                                                           STREAM
                                                                                                   RUNOFF
                                                                                                                   Tc
                                                                                                                             INTENSITY
                                                                                                                  (MIN.)
 FLOW PROCESS FROM NODE 121.00 TO NODE 121.00 IS CODE = 1
                                                                                           NUMBER
                                                                                                        (CFS)
                                                                                                                           (INCH/HOUR)
                                                                                                                            5.095
                                                                                                                  10.39
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE<>
                                                                                                        15.62
                                                                                                                 19.90
                                                                                                                               3.351
______
 TOTAL NUMBER OF STREAMS = 2
                                                                                           COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                           TOTAL AREA(ACRES) = 15.62 Tc(MIN.) = 19.90
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 COMPLUENCE VALUES USED FOR INSTITUTE OF CONCENTRATION(MIN.) = 10.39
RAINFALL INTENSITY(INCH/HR) = 5.10
TOTAL STREAM AREA(ACRES) = 1.85
                                                                                           LONGEST FLOWPATH FROM NODE 115.00 TO NODE
                                                                                                                                              121.00 = 2709.00 FEET.
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                             10 42
                                                                                           FLOW PROCESS FROM NODE 121.00 TO NODE 122.00 IS CODE = 31
*************************
 FLOW PROCESS FROM NODE 119.00 TO NODE 120.00 IS CODE = 21
                                                                                           >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                           >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <---
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                          ELEVATION DATA: UPSTREAM(FEET) = 1220.00 DOWNSTREAM(FEET) = 1065.00
------
                                                                                           FLOW LENGTH(FEET) = 1400.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  *USER SPECIFIED(SUBAREA):
 RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
                                                                                           DEPTH OF FLOW IN 18.0 INCH PIPE IS 8.6 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 18.86 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
 UPSTREAM ELEVATION(FEET) = 1236.35

DOWNSTREAM ELEVATION(FEET) = 1235.35

ELEVATION DIFFERENCE(FEET) = 1.00
                                                                                                                                        NUMBER OF PIPES = 1
                                                                                           SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                             9.638
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
                                                                                         *********************
           THE MAXIMUM OVERLAND FLOW LENGTH = 70.00 (Reference: Table 3-1B of Hydrology Manual)
                                                   70.00
                                                                                           FLOW PROCESS FROM NODE 122.00 TO NODE 122.00 IS CODE = 1
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.349
                                                                                           >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
                              0.32
                            0.13 TOTAL RUNOFF(CFS) =
                                                                                           TOTAL NUMBER OF STREAMS = 2
                                                              0.32
                                                                                           CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                           COMPLUENCE VALUES SEEF FOR THE CONCENTRATION (MIN.) = 21.14
RAINFALL INTENSITY(INCH/HR) = 3.22
TOTAL STREAM AREA(ACRES) = 7.54
************************
 FLOW PROCESS FROM NODE 120.00 TO NODE 121.00 IS CODE = 61
                                                                                           PEAK FLOW RATE(CFS) AT CONFLUENCE =
 >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                                      15.62
```

```
CONFIJIENCE FORMULA USED FOR 2 STREAMS.
***********************
  FLOW PROCESS FROM NODE 123.00 TO NODE 124.00 IS CODE = 21
                                                                                                     ** PEAK FLOW RATE TABLE **
                                                                                                                                         INTENSITY
                                                                                                    STREAM
                                                                                                                 RUNOFF
                                                                                                                  (CFS)
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                    NUMBER
                                                                                                                             (MIN.)
                                                                                                                                        (INCH/HOUR)
 20.26
                                                                                                                              6.28
                                                                                                                                            7.052
  *USER SPECIFIED(SUBAREA):
                                                                                                                   21.62
                                                                                                                             21.14
                                                                                                                                            3.223
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                    COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNITIAL SUBARBA FLOW-LENGTH(FEET) = 1250.00
DOWNSTREAM ELEVATION(FEET) = 1240.00
DOWNSTREAM ELEVATION(FEET) = 1240.00
                                                                                                    PEAK FLOW RATE(CFS) = 21.62 Tc(MIN.) = TOTAL AREA(ACRES) = 9.9
                                               100.00
                                                                                                                                                              21 14
                                                                                                    LONGEST FLOWPATH FROM NODE 115.00 TO NODE 122.00 = 4109.00 FEET.
  ELEVATION DIFFERENCE(FEET) =
                                        10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                  *******************
                                                  2.590
  SUBARRA OVERLAND TIME OF FLOW MIN.) - 2.390
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
                                                                                                    FLOW PROCESS FROM NODE 122.00 TO NODE 126.00 IS CODE = 31
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
                                                                                                    >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) =
                                 1.16
                                                                                                    >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
                                                                                                    ELEVATION DATA: UPSTREAM(FEET) = 1065.00 DOWNSTREAM(FEET) = 1055.00 FLOW LENGTH(FEET) = 33.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                               0.18 TOTAL RUNOFF(CFS) =
  FLOW PROCESS FROM NODE 124.00 TO NODE 125.00 IS CODE = 61
                                                                                                    DEPTH OF FLOW IN 18.0 INCH PIPE IS 7.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 29.79
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  >>>>(STANDARD CURB SECTION USED) << <<
 UPSTREAM ELEVATION(FEET) = 1230.00 DOWNSTREAM ELEVATION(FEET) = 1065.00
                                                                                                    PIPE-FLOW(CFS) = 21.62
PIPE TRAVEL TIME(MIN.) = 0.02 Tc(MIN.) = 21.16
                                                                                                    LONGEST FLOWPATH FROM NODE 115.00 TO NODE 126.00 = 4142.00 FEET.
  STREET LENGTH(FEET) = 1400.00 CURB HEIGHT(INCHES) = 6.0
  STREET HALFWIDTH(FEET) = 18.00
                                                                                                  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                    FLOW PROCESS FROM NODE 126.00 TO NODE 110.00 IS CODE = 31
                                                                                                    >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                    >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =
                                                                                                    ELEVATION DATA: UPSTREAM(FEET) = 1055.00 DOWNSTREAM(FEET) = 1050.00
  STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
                                                                                                    ELEVATION DATA: UPSTREAM(FEET) = 1055.00 DOWNSTREAM(FEET) = 3.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 12.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 15.99
ESSTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
 **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = STREETFLOW MODEL RESULTS USING ESTIMATED FLOW: STREET FLOW DEPTH(FEET) = 0.26

HALFSTREET FLOOD WIDTH(FEET) = 6.74

AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.36

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.66

STREET FLOW TRAVEL TIME(MIN.) = 3.67 TC(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.067
**UISER SPECIFIED(SUBARRA):
                                                                                                    **************************
                                                                    6.26
                                                                                                    FLOW PROCESS FROM NODE 110.00 TO NODE 110.00 IS CODE = 11
                                                                                                    >>>>CONFIJIENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
                                                                                                  ______
  S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.790
                                                                                                    ** MAIN STREAM CONFLUENCE DATA **
  SUBAREA AREA(ACRES) = 2.17
                                       SUBAREA RUNOFF(CFS) = 12.12
                                                                                                    STREAM
                                                                                                                 RUNOFF
                                                                                                                                         INTENSITY
                                                                                                                                                          AREA
                                 2.4
                                             PEAK FLOW RATE(CFS) =
                                                                                                                             (MIN.)
                                                                                                    NUMBER
                                                                                                                  (CFS)
                                                                                                                                        (INCH/HOUR) (ACRE)
  TOTAL AREA(ACRES) =
                                                                                                                   21.62
                                                                                                                                        3.213 9.89
115.00 TO NODE 110.00 =
                                                                                                                             21.24
  END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                    LONGEST FLOWPATH FROM NODE
                                                                                                                                                                           4225.00 FEET.
  DEPTH(FEET) = 0.30 HALFSTREET FLOOD WIDTH(FEET) = 8.85

FLOW VELOCITY(FEET/SEC.) = 7.27 DEPTH*VELOCITY(FT*FT/SEC.) = 2.21

LONGEST FLOWPATH FROM NODE 123.00 TO NODE 125.00 = 1500.00 FEET.
                                                                                                    ** MEMORY BANK # 2 CONFLUENCE DATA **
STREAM RUNOFF TC INTENSI
                                                                                                                                        INTENSITY
                                                                                                                             (MIN.)
                                                                                                                                        (INCH/HOUR) (ACRE)
                                                                                                    NUMBER
                                                                                                                  (CFS)
                                                                                                                   40.27
                                                                                                                             11.67
                                                                                                                                           4.727
                                                                                                                                                          24.06
  FLOW PROCESS FROM NODE 125.00 TO NODE 122.00 IS CODE = 31
                                                                                                     LONGEST FLOWPATH FROM NODE
                                                                                                                                        111.00 TO NODE
                                                                                                                                                           110.00 =
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
                                                                                                     ** PEAK FLOW RATE TABLE **
                                                                                                             RUNOFF
(CFS)
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <----
                                                                                                    STREAM
                                                                                                                               TC
                                                                                                                                         INTENSITY
                                                                                                                             (MIN.)
                                                                                                                                        (INCH/HOUR)
 -----
                                                                                                    NUMBER
  ELEVATION DATA: UPSTREAM(FEET) = 1065.00 DOWNSTREAM(FEET) = 1055.00 FLOW LENGTH(FEET) = 33.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                                 52.15
                                                                                                                              11.67
                                                                                                                                              4.727
                                                                                                                             21.24
                                                                                                                 48.99
                                                                                                                                              3.213
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 5.9 INCHES
PIPE-FLOW VELOCITY(FRET/SEC.) = 25.99
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 13.12
PIPE TRAVEL TIME(MIN.) = 0.02 Tc(MIN.) = 6.28
LONGEST FLOWPATH FROM NODE 123.00 TO NODE 122.00 = 1533.00 FEET.
                                                                                                    COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                    PEAK FLOW RATE(CFS) =
TOTAL AREA(ACRES) =
                                                                                                                                    52.15 Tc(MIN.) = 11.67
                                                                                                                                  34 0
                                                                                                    FLOW PROCESS FROM NODE 110.00 TO NODE 110.00 IS CODE = 12
                                                                                                    >>>> CLEAR MEMORY BANK # 2 <<<<
 FLOW PROCESS FROM NODE 122.00 TO NODE 122.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<<
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                                    FLOW PROCESS FROM NODE 110.00 TO NODE 109.00 IS CODE = 31
  ._____
                                                                                                     >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
  TOTAL NUMBER OF STREAMS = 2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                    >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
 CONFLUENCE VALUES USED FOR THE TIME OF CONCENTRATION(MIN.) = 6.28
RAINFALL INTENSITY(INCH/HR) = 7.05
TOTAL STREAM AREA(ACRES) = 2.35
                                                                                                    ELEVATION DATA: UPSTREAM(FEET) = 1050.00 DOWNSTREAM(FEET) = 970.00 FLOW LENGTH(FEET) = 300.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 18.0 INCH PIPE IS 14.5 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 34.10 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
  ** CONFLUENCE DATA **
                                                                                                    PIPE-FLOW(CFS) = 52.15

PIPE TRAVEL TIME(MIN.) = 0.15 TC(MIN.) = 11.82

LONGEST FLOWPATH FROM NODE 115.00 TO NODE 109.00 = 4525.00 FEET.
  STREAM
              RUNOFF
                                        INTENSITY
                                                          AREA
                            (MIN.)
  NUMBER
                (CFS)
                                      (INCH/HOUR)
                                                         (ACRE)
                15.62
                           21.14
                                          3.223
                13.12
                            6.28
                                                            2.35
                                                                                                    FLOW PROCESS FROM NODE 109.00 TO NODE 109.00 IS CODE = 11
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```

```
TRAVEL TIME(MIN.) = 8.91 Tc(MIN.) = 15.18 LONGEST FLOWPATH FROM NODE 129.00 TO NODE 131.00 = 2636.00 FEET.
 >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<
  ** MAIN STREAM CONFLUENCE DATA **
                                                                                            FLOW PROCESS FROM NODE 130.00 TO NODE 131.00 IS CODE = 81
                                    INTENSITY
 STREAM
             RUNOFF
                          Tc
                                                   AREA
                        (MIN.)
                                  (INCH/HOUR) (ACRE)
 NUMBER
               (CFS)
                                                                                             >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
               52.15
                        11.82
                                     4.689
                                                   33.95
 LONGEST FLOWPATH FROM NODE
                                  115.00 TO NODE 109.00 = 4525.00 FEET.
                                                                                             100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.991
                                                                                             *HISER SPECIFIED(SHBAREA):
  ** MEMORY BANK # 1 CONFLUENCE DATA **
                                                                                            URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                            S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
             RUNOFF
                                    INTENSITY
                                                   AREA
              (CFS)
                        (MIN.)
 NUMBER
                                  (INCH/HOUR) (ACRE)
              273.58
                                                                                            SUBAREA AREA(ACRES) = 47.26 SUBAREA RUNOFF(CFS) = 66.01
TOTAL AREA(ACRES) = 47.5 TOTAL RUNOFF(CFS) = 66.
                        17.99
                                                  218.59
                                  100.00 TO NODE 109.00 = 6838.00 FEET.
 LONGEST FLOWPATH FROM NODE
                                                                                                                                                            66.35
                                                                                            TC(MIN.) = 15.18
  ** PEAK FLOW RATE TABLE **
            RUNOFF
                                    INTENSITY
 STREAM
                           Tc
 NUMBER
              (CFS)
                        (MIN.)
                                  (INCH/HOUR)
                                                                                            FLOW PROCESS FROM NODE 131.00 TO NODE 132.00 IS CODE = 31
            231.87
                          11.82
                                        4.689
                                                                                             >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                            >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << < <
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =
                             313.35 Tc(MIN.) = 17.99
                                                                                            ELEVATION DATA: UPSTREAM(FEET) = 1200.00 DOWNSTREAM(FEET) = 1100.00
                                                                                            FLOW LENGTH(FEET) = 534.00 MANNING'S N = 0.0 DEPTH OF FLOW IN 21.0 INCH PIPE IS 17.1 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 31.68
                            252.5
 TOTAL AREA(ACRES) =
                                                                                                                                               0.013
************
 FLOW PROCESS FROM NODE 109.00 TO NODE 109.00 IS CODE = 12
                                                                                            ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES =
                                                                                            PIPE-FLOW(CFS) = 66.35
PIPE TRAVEL TIME(MIN.) = 0
                                                                                            FIFE-FLOW(CFS) = 06.35

PIPE TRAVEL TIME(MIN.) = 0.28 Tc(MIN.) = 15.46

LONGEST FLOWPATH FROM NODE 129.00 TO NODE 132.00 = 3170.00 FEET.
  >>>> CLEAR MEMORY BANK # 1 <<<<<
______
                                                                                          ***********************
FLOW PROCESS FROM NODE 109.00 TO NODE 127.00 IS CODE = 52
                                                                                            FLOW PROCESS FROM NODE 132.00 TO NODE 133.00 IS CODE = 52
 >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
                                                                                            >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
  >>>>TRAVELTIME THRU SUBAREA
                                                                                            >>>>TRAVELTIME THRU SUBAREA<
                                                                                            ELEVATION DATA: UPSTREAM(FEET) = 1100.00 DOWNSTREAM(FEET) = 995.0
CHANNEL LENGTH THRU SUBAREA(FEET) = 2700.00 CHANNEL SLOPE = 0.0389
CHANNEL FLOW THUI SINAPRA (FES) = 66.35
 ._____
 ELEVATION DATA: UPSTREAM(FEET) = 970.00 DOWNSTREAM(FEET) = 905.
CHANNEL LENGTH THRU SUBAREA(FEET) = 1297.00 CHANNEL SLOPE = 0.0501
CHANNEL FLOW THRU SUBAREA(CFS) = 313.35
                                                                                            CHANNEL FLOW THRU SUBAREA(CFS) =
                                                                                                                                     66.35
 TRAVEL TIME (MIN.) = 1.43 Tc(MIN.) = 19.42

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 127.00 = 8135.00 FEET.
                                                                                            TRAVEL TIME (MIN.) = 5.43 Tc(MIN.) = 20.89

LONGEST FLOWPATH FROM NODE 129.00 TO NODE 133.00 = 5870.00 FEET.
 FLOW PROCESS FROM NODE 109.00 TO NODE 127.00 IS CODE = 81
                                                                                            FLOW PROCESS FROM NODE 132.00 TO NODE 133.00 IS CODE = 81
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                            >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.404
                                                                                             100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.248
  *USER SPECIFIED(SUBAREA):
                                                                                             *USER SPECIFIED(SUBAREA):
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                            URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3593
                                                                                            S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
 SUBAREA AREA(ACRES) = 26.39 SUBAREA RUNOFF(CFS) = 31.44
TOTAL AREA(ACRES) = 278.9 TOTAL RUNOFF(CFS) = 341.0
                                                                                            SUBAREA AREA(ACRES) = 170.51 SUBAREA RUNOFF(CFS) = 193.83
TOTAL AREA(ACRES) = 218.0 TOTAL RUNOFF(CFS) = 247.
                                                                341 09
 TC(MIN.) = 19.42
                                                                                            TC(MIN.) = 20.89
 FLOW PROCESS FROM NODE 127.00 TO NODE 127.00 IS CODE = 10
                                                                                            FLOW PROCESS FROM NODE 133.00 TO NODE 134.00 IS CODE = 52
  >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<
                                                                                            >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
______
                                                                                            >>>>TRAVELTIME THRU SUBAREA<
                                                                                           -----
                                                                                            CHANNEL LENGTH THRU SUBAREA(FEET) = 2000.00
                                                                                            ELEVATION DATA: UPSTREAM(FEET) = 995.00 DOWNSTREAM(FEET) =
                                                                                                                                                                     950.00
                                                                                                                                               CHANNEL SLOPE = 0.0225
 FLOW PROCESS FROM NODE 129.00 TO NODE 130.00 IS CODE = 21
                                                                                            CHANNEL FLOW THRU SUBAREA(CFS) = 247.82

FLOW VELOCITY(FEET/SEC) = 9.40 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)

TRAVEL TIME(MIN.) = 3.54 Tc(MIN.) = 24.43

LONGEST FLOWPATH FROM NODE 129.00 TO NODE 134.00 = 7870.00 FEET.
 >>>>RATIONAL METHOD INITIAL SUBARRA ANALYSIS<
                         -----
  *HISER SPECIFIED(SHBAREA):
  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                          **********************
  S.C.S. CURVE NUMBER (AMC II) =
  INITIAL SUBAREA FLOW-LENGTH(FEET) =
                                                                                            FLOW PROCESS FROM NODE 133.00 TO NODE 134.00 IS CODE = 81
                                          100.00
 UPSTREAM ELEVATION(FEET) = 1660.00
DOWNSTREAM ELEVATION(FEET) = 1650.00
ELEVATION DIFFERENCE(FEET) = 10.00
                                                                                            >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>
                                     10.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
                                                                                             100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.936
                                                                                             *USER SPECIFIED(SUBAREA):
                                                                                            URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
 SUBAREA RUNOFF(CFS) = 0.59
TOTAL AREA(ACRES) = 0.24 TOTAL RUNOFF(CFS) =
                                                                                            S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                            SUBAREA AREA(ACRES) = 87.55 SUBAREA RUNOFF(CFS) = 89.95
TOTAL AREA(ACRES) = 305.6 TOTAL RUNOFF(CFS) = 313.
                                                                                            TC(MIN.) = 24.43
 FLOW PROCESS FROM NODE 130.00 TO NODE 131.00 IS CODE = 52
                                                                                          *****
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
 >>>>TRAVELTIME THRU SUBAREA<
                                                                                            FLOW PROCESS FROM NODE 134.00 TO NODE 135.00 IS CODE = 31
 ELEVATION DATA: UPSTREAM(FEET) = 1650.00 DOWNSTREAM(FEET) = 1200.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 2536.00 CHANNEL SLOPE = 0.1774 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) = 0.59
                                                                                            >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                             ELEVATION DATA: UPSTREAM(FEET) = 950.00 DOWNSTREAM(FEET) = 940.00
 CHANNEL FLOW THRU SUBAREA(CFS) = 0.59
FLOW VELOCITY(FEET/SEC) = 4.74 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
                                                                                            FLOW LENGTH(FEET) = 332.00 MANNING'S N = 0.0 DEPTH OF FLOW IN 54.0 INCH PIPE IS 41.8 INCHES
                                                                                                                   332.00 MANNING'S N = 0.013
```

```
PIPE-FLOW VELOCITY (FEET/SEC.) = 23.79
                                                                                           >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
 ESTIMATED PIPE DIAMETER(INCH) = 54.00 NUMBER OF PIPES = 1
                                                                                         -----
 PIPE-FLOW(CFS) = 313.95
PIPE TRAVEL TIME(MIN.) = 0
                                                                                           TOTAL NUMBER OF STREAMS = 2
 FIFE TROWN (FG) - 313.93
PIPE TRAVEL TIME (MIN.) = 0.23 TC (MIN.) = 24.67
LONGEST FLOWPATH FROM NODE 129.00 TO NODE 135.00 = 8202.00 FEET.
                                                                                           CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                           TIME OF CONCENTRATION(MIN.) = 13.46
RAINFALL INTENSITY(INCH/HR) = 4.31
                                                                                            TOTAL STREAM AREA(ACRES) =
                                                                                           PEAK FLOW RATE(CFS) AT CONFLUENCE =
 FLOW PROCESS FROM NODE 135.00 TO NODE 136.00 IS CODE = 52
                                                                                                                                       20.33
                                                                                            ** CONFLUENCE DATA **
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
  >>>>TRAVELTIME THRU SUBAREA<
                                                                                                       RUNOFF
                                                                                                                     Tc
                                                                                                                              INTENSITY
                                                                                                                                               AREA
 (CFS)
                                                                                                                   (MIN.) (INCH/HOUR)
                                                                                           NUMBER
                                                                                                                                              (ACRE)
 ELEVATION DATA: UPSTREAM(FEET) = 940.00 DOWNSTREAM(FEET) = CHANNEL LENGTH THRU SUBAREA(FEET) = 480.00 CHANNEL SLOPE = CHANNEL FLOW THRU SUBAREA(CFS) = 313.95
                                                                                                                             2.868
                                                                                                       313.95
                                                                                                                  25.34
                                                                                                                                               311.24
                                                    CHANNEL SLOPE = 0.0313
                                                                                                        20.33
                                                                                                                 13.46
                                                                                                                                4.311
 CHANNEL FLOW THRU SUBAREA(CFS) = 313.95

FLOW VELOCITY(FEET/SEC) = 11.94 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)

TRAVEL TIME(MIN.) = 0.67 Tc(MIN.) = 25.34

LONGEST FLOWPATH FROM NODE 129.00 TO NODE 136.00 = 8682.00 FEET.
                                                                                           RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                           CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                           ** PEAK FLOW RATE TABLE **
                                                                                           STREAM
                                                                                                       RUNOFF
                                                                                                                    Tc
                                                                                                                             INTENSITY
                                                                                                                  (MIN.)
 FLOW PROCESS FROM NODE 135.00 TO NODE 136.00 IS CODE = 81
                                                                                            NUMBER
                                                                                                         (CFS)
                                                                                                                            (INCH/HOUR)
                                                                                                                            4.311
                                                                                                       187.17
                                                                                                                  13.46
                                                                                               1
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                           COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.868
 *USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                           PEAK FLOW RATE(CFS) = 327.47 Tc(MIN.) = TOTAL AREA(ACRES) = 324.7
 S.C.S. CURVE NUMBER (AMC II) =
                                                                                           LONGEST FLOWPATH FROM NODE 129.00 TO NODE 136.00 = 8682.00 FEET.
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500

SUBAREA AREA(ACRES) = 5.68 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 311.2 TOTAL RUNOFF(CFS) =
                                                                                          FLOW PROCESS FROM NODE 136.00 TO NODE 127.00 IS CODE = 52
                                                                313.95
               25.34
 TC(MIN.) =
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
                                                                                           >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
                                                                                           >>>>TRAVELTIME THRU SUBAREA<
                                                                                           ELEVATION DATA: UPSTREAM(FEET) = 925.00 DOWNSTREAM(FEET) = 905.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 1059.00 CHANNEL SLOPE = 0.0189 CHANNEL FLOW THRU SUBAREA(CFS) = 327.47
 FLOW PROCESS FROM NODE 136.00 TO NODE 136.00 IS CODE = 1
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
                                                                                           CHANNEL FLOW HARD SUBARBA(CFS) = 327.47
FLOW VELOCITY(FEET/SEC) = 9.40 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.88 TC(MIN.) = 27.21
LONGEST FLOWPATH FROM NODE 129.00 TO NODE 127.00 = 9741.00 FEET.
 -----
 TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 CONFLUENCE VALUES USED FOR TAXABLE STATES.

TIME OF CONCENTRATION(MIN.) = 25.34
RAINFALL INTENSITY(INCH/HR) = 2.87
TOTAL STREAM AREA(ACRES) = 311.24
                                                                                           FLOW PROCESS FROM NODE 136.00 TO NODE 127.00 IS CODE = 81
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                           313.95
                                                                                           >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>
*******************
 FLOW PROCESS FROM NODE 138.00 TO NODE 139.00 IS CODE = 21
                                                                                            100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.739
                                                                                            *USER SPECIFIED(SUBAREA):
                                                                                           URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
 -----
  *HISER SPECIFIED(SHBAREA):
                                                                                           AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                           SUBAREA AREA(ACRES) = 11.54 SUBAREA RUNOFF(CFS) = 11.06
TOTAL AREA(ACRES) = 336.2 TOTAL RUNOFF(CFS) = 327.
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =
                                                                                           TOTAL AREA(ACRES) =
  INITIAL SUBAREA FLOW-LENGTH (FEET) =
                                           100.00
                                                                                                         27.21
 UPSTREAM ELEVATION(FEET) = 1030.00
DOWNSTREAM ELEVATION(FEET) = 1020.00
                                                                                           NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  ELEVATION DIFFERENCE(FEET) =
                                                                                         .....
                                    10.00
 SUBARRA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
                                                                                           FLOW PROCESS FROM NODE 127.00 TO NODE 127.00 IS CODE = 10
                                                                                           >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<
 SUBAREA RUNOFF(CFS) = 1.41
TOTAL AREA(ACRES) = 0.57 TOTAL RUNOFF(CFS) =
                                                                                         ______
**************************************
                                                                                           FLOW PROCESS FROM NODE 141.00 TO NODE 142.00 IS CODE = 21
 FLOW PROCESS FROM NODE 139.00 TO NODE 136.00 IS CODE = 52
                                                                                           >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
 >>>>TRAVELTIME THRU SUBAREA<
                                                                                            *HISER SPECIFIED(SHBAREA):
                                                                                           URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .4100
 ELEVATION DATA: UPSTREAM(FEET) = 1020.00 DOWNSTREAM(FEET) = 925.0 CHANNEL LENGTH THRU SUBAREA(FEET) = 1657.00 CHANNEL SLOPE = 0.0573
                                                                                           S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
                                                                         925 00
                                                                                           UPSTREAM ELEVATION(FEET) = 985.00
DOWNSTREAM ELEVATION(FEET) = 984.00
ELEVATION DIFFERENCE(FEET) = 1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =
                                           1 41
 CHANNEL FLOW THRU SUBAREA(CFS) = 1.41
FLOW VELOCITY(FEET/SEC) = 3.84 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 7.20 Tc(MIN.) = 13.46
LONGEST FLOWPATH FROM NODE 138.00 TO NODE 136.00 = 1757.00 FEET.
                                                                                                                                1.00
                                                                                           SUBAREA OVERLAND TIME OF FLOW(MIN.) = 9.179 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
*******************
                                                                                                     THE MAXIMUM OVERLAND FLOW LENGTH = 69.29 (Reference: Table 3-1B of Hydrology Manual)
 FLOW PROCESS FROM NODE 139.00 TO NODE 136.00 IS CODE = 81
                                                                                                     THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION!
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>
                                                                                            100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.520
-----
                                                                                           SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) =
                                                                                                                        2.29
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.311
                                                                                                                      1.01 TOTAL RUNOFF(CFS) =
  *USER SPECIFIED(SUBAREA):
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                         **********************
                                                                                           FLOW PROCESS FROM NODE 142.00 TO NODE 143.00 IS CODE = 61
 SUBAREA AREA(ACRES) = 12.90 SUBAREA RUNOFF(CFS) = 19.47
TOTAL AREA(ACRES) = 13.5 TOTAL RUNOFF(CFS) = 20.3
                                                                                           >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                           >>>>(STANDARD CURB SECTION USED) << <<
                                                                                          _____
 TC(MIN.) = 13.46
                                                                                           UPSTREAM ELEVATION(FEET) = 984.00 DOWNSTREAM ELEVATION(FEET) = 937.00
************************
                                                                                           STREET LENGTH(FEET) = 840.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
 FLOW PROCESS FROM NODE 136.00 TO NODE 136.00 IS CODE = 1
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<>>>
                                                                                           DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 9.00
```

```
(CFS) (MIN.) (INCH/HOUR) (ACRE) 353.16 19.42 3.404 287.41
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                        NUMBER
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                        LONGEST FLOWPATH FROM NODE
                                                                                                                       100.00 TO NODE 127.00 =
                                                                                                                                                       8135.00 FEET.
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                        ** MEMORY BANK # 2 CONFLUENCE DATA **
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
                                                                                                                        INTENSITY
                                                                                        STREAM
                                                                                                   RUNOFF
                                                                                                                                       AREA
                                                                        0.0150
                                                                                                                Tc
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =
                                                                                                              (MIN.)
                                                                                                                        (INCH/HOUR) (ACRE)
                                                               0.0200
                                                                                        NUMBER
                                                                                                     (CFS)
                                                                                                   327.47
                                                                                                              27.21
                                                                                                                          2.739
                                                                                                                                      336.25
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                        LONGEST FLOWPATH FROM NODE
                                                                                                                        129.00 TO NODE 127.00 =
                                                                                                                                                       9741.00 FEET.
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                        ** PEAK FLOW RATE TABLE **
    STREET FLOW DEPTH(FEET) = 0.31
 STREET FLOW DEPTH(FEET) = 0.51
HALPSTREET FLOOD WIDTH(FEET) = 9.04
AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.05
PRODUCT OF DEPTHEVELOCITY(FT*FT/SEC.) = 1.55
STREET FLOW TRAVEL TIME (MIN.) = 2.77
TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.656
                                                                                                                        INTENSITY
                                                                                        STREAM
                                                                                                  RUNOFF
                                                                                                               Tc
                                                                                                              (MIN.)
                                                                                        NUMBER
                                                                                                   (CFS)
                                                                                                                       (INCH/HOUR)
                                                         11.95
                                                                                                  611.61
                                                                                                               27.21
                                                                                        COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 611.61 TC(MIN.) =
  *USER SPECIFIED(SUBAREA):
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .4100
 S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
                                                                                        TOTAL AREA(ACRES) =
                                                                                                                  623.7
 SUBAREA AREA(ACRES) = 7.47
                                     SUBAREA RUNOFF(CFS) =
                             8.5
                                       PEAK FLOW RATE(CFS) =
 TOTAL AREA(ACRES) =
                                                                     16.19
                                                                                       FLOW PROCESS FROM NODE 127.00 TO NODE 127.00 IS CODE = 12
 END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                        >>>> CLEAR MEMORY BANK # 1 <<<<<
 DEPTH(FEET) = 0.35 HALFSTREET FLOOD WIDTH(FEET) = 11.43 FLOW VELOCITY(FEET/SEC.) = 5.69 DEPTH*VELOCITY(FT*FT/SEC.) = LONGEST FLOWPATH FROM NODE 141.00 TO NODE 143.00 = 910.
                                                                 910.00 FEET.
                                                                                        FLOW PROCESS FROM NODE 127.00 TO NODE 127.00 IS CODE = 12
 FLOW PROCESS FROM NODE 143.00 TO NODE 144.00 IS CODE = 31
                                                                                        >>>> CLEAR MEMORY BANK # 2 <<<<
                                                                                      _____
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
                                                                                      >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <----
                                                                                        FLOW PROCESS FROM NODE 127.00 TO NODE 145.00 IS CODE = 52
 ELEVATION DATA: UPSTREAM(FEET) = 930.00 DOWNSTREAM(FEET) = 920.00
 FLOW LENGTH(FEET) = 166.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.5 INCHES
                                                                                        >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
                                                                                        >>>>TRAVELTIME THRU SUBAREA
                                                                                        ELEVATION DATA: UPSTREAM(FEET) = 905.00 DOWNSTREAM(FEET) = 882.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 991.00 CHANNEL SLOPE = 0.0232 CHANNEL FLOW THRU SUBAREA(CFS) = 611.61
 PIPE-FLOW VELOCITY(FEET/SEC.) = 15.11
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 16.19
PIPE TRAVEL TIME(MIN.) = 0
 TRAVEL TIME (MIN.) = 1.30 Tc(MIN.) = 28.51

LONGEST FLOWPATH FROM NODE 129.00 TO NODE 145.00 = 10732.00 FEET.
FLOW PROCESS FROM NODE 144.00 TO NODE 127.00 IS CODE = 31
                                                                                       ***********************
                                                                                        FLOW PROCESS FROM NODE 127.00 TO NODE 145.00 IS CODE = 81
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<>>>>
-----
                                                                                        >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
 ELEVATION DATA: UPSTREAM(FEET) = 920.00 DOWNSTREAM(FEET) = 905.00 FLOW LENGTH(FEET) = 191.00 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.) = 16.73 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1 DIRPETON (FES) = 16.10
                                                                                         100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.657
                                                                                         *USER SPECIFIED(SUBAREA):
                                                                                        URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                        S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3549
 PIPE-FILOW(CFS) = 16.19

PIPE TRAVEL TIME(MIN.) = 0.19  Tc(MIN.) = 12.32

LONGEST FLOWPATH FROM NODE 141.00 TO NODE 127.00 = 1267.00 FEET.
                                                                                                                  4.17 SUBAREA RUNOFF(CFS) = 627.8 TOTAL RUNOFF(CFS) =
                                                                                        SUBAREA AREA(ACRES) =
TOTAL AREA(ACRES) =
                                                                                        TOTAL AREA(ACRES) = TC(MIN.) = 28.51
                                                                                                                                                    611 61
                                                                                        NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
                                                                                      *******************
 FLOW PROCESS FROM NODE 127.00 TO NODE 127.00 IS CODE = 11
                                                                                        FLOW PROCESS FROM NODE 145.00 TO NODE 145.00 IS CODE = 10
 >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY
______
                                                                                        >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<
                                                                                      _______
  ** MAIN STREAM CONFLUENCE DATA **
           RUNOFF TC
                                  INTENSITY
 STREAM
                                                 AREA
                                 (INCH/HOUR) (ACRE)
                                                                                        FLOW PROCESS FROM NODE 147.00 TO NODE 148.00 IS CODE = 21
              16 19
                       12 32
                                   4 564
                                                 8.48
                                                                                                                                      -----
 LONGEST FLOWPATH FROM NODE
                                 141.00 TO NODE
                                                   127.00 =
                                                                                        >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
 ** MEMORY BANK # 1 CONFLUENCE DATA **
                                                                                        *USER SPECIFIED(SUBAREA):
            RUNOFF
                                                                                        URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0
 STREAM
                         Tc
                                  INTENSITY
                                                 AREA
                       (MIN.)
                                 (INCH/HOUR)
 NUMBER
              (CFS)
                                               (ACRE)
                                                                                        INITIAL SUBAREA FLOW-LENGTH(FEET) =
                       19.42
                                    3.404
                                                278.93
                                                                                        UPSTREAM ELEVATION(FEET) = 1455.00

DOWNSTREAM ELEVATION(FEET) = 1440.00

ELEVATION DIFFERENCE(FEET) = 15.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) =
 LONGEST FLOWPATH FROM NODE
                                 100.00 TO NODE
                                                   127.00 =
                                                                8135.00 FEET.
 ** PEAK FLOW RATE TABLE **
                                                                                                                                  6.267
 STREAM
           RUNOFF
                         Tc
                                  INTENSITY
             (CFS)
                       (MIN.)
                                                                                        WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN To CALCULATION!
 NUMBER
                                 (INCH/HOUR)
                                                                                         100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
            232.61
                        12.32
                                      4.564
                                                                                        SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) =
                                                                                                                    0.67
                                                                                                                  0.27 TOTAL RUNOFF(CFS) =
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 353.16 Tc(MIN.) = 19.42
TOTAL AREA(ACRES) = 287.4
                                                                                      ************************
                                                                                        FLOW PROCESS FROM NODE 148.00 TO NODE 149.00 IS CODE = 52
                                                                                        >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
                                                                                        >>>>TRAVELTIME THRU SUBAREA
 FLOW PROCESS FROM NODE 127.00 TO NODE 127.00 IS CODE = 11
                                                                                      _____
                                                                                        ELEVATION DATA: UPSTREAM(FEET) = 1430.00 DOWNSTREAM(FEET) = 975.C
CHANNEL LENGTH THRU SUBAREA(FEET) = 2769.00 CHANNEL SLOPE = 0.1643
NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
 >>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<
______
                                                                                        NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION CHANNEL FLOW THRU SUBAREA(CFS) = 0.67
  ** MAIN STREAM CONFLUENCE DATA **
 STREAM RUNOFF TC INTENSITY
                                                AREA
```

```
TC(MIN.) = 17.43
                                                                                FLOW PROCESS FROM NODE 145.00 TO NODE 145.00 IS CODE = 11
********************
 FLOW PROCESS FROM NODE 148.00 TO NODE 149.00 IS CODE = 81
                                                                                >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>
______
                                                                                ** MAIN STREAM CONFLUENCE DATA **
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.858
                                                                                           RUNOFF
                                                                                                              INTENSITY
                                                                                STREAM
                                                                                                                            AREA
                                                                                                    (MIN.)
                                                                                NUMBER
                                                                                            (CFS)
                                                                                                             (INCH/HOUR)
                                                                                                                          (ACRE)
  *USER SPECIFIED(SUBAREA):
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                            22.26
                                                                                                    17.43
                                                                                                                3.649
                                                                                                                           17.43
                                                                                                             151.00 TO NODE
                                                                                                                              145.00 = 2090.00 FEET.
 S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                LONGEST FLOWPATH FROM NODE
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                ** MEMORY BANK # 1 CONFLUENCE DATA **
 SUBAREA REA(ACRES) = 58.35 SUBAREA RUNOFF(CFS) = 78.79
TOTAL AREA(ACRES) = 58.6 TOTAL RUNOFF(CFS) = 79.
                                                                                           RUNOFF
                                                         79.15
                                                                                STREAM
                                                                                                              INTENSITY
                                                                                                      Tc
                                                                                                    (MIN.)
                                                                                                             (INCH/HOUR)
             16.00
                                                                                NUMBER
                                                                                            (CFS)
                                                                                                                           (ACRE)
 TC(MIN.) =
                                                                                           611.61
                                                                                                     28.51
                                                                                                                2.657
                                                                                                                           627.83
*********************
                                                                                LONGEST FLOWPATH FROM NODE
                                                                                                             129.00 TO NODE
                                                                                                                             145.00 = 10732.00 FEET.
 FLOW PROCESS FROM NODE 149.00 TO NODE 145.00 IS CODE = 52
                                                                                 ** PEAK FLOW RATE TABLE **
 >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
                                                                                STREAM
                                                                                         RUNOFF
(CFS)
                                                                                                      Tc
                                                                                                              INTENSITY
  >>>>TRAVELTIME THRU SUBAREA
                                                                                                     (MIN.)
                                                                                                             (INCH/HOUR)
 -----
                                                                                          396 29
                                                                                                     17 43
                                                                                                                  3 649
                                                                                                     28.51
 ELEVATION DATA: UPSTREAM(FEET) =
                                   975.00 DOWNSTREAM(FEET) =
                                                                 882.00
                                                                                          627.82
                                                                                                                  2.657
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1855.00 CHANNEL SLOPE = 0.0501
CHANNEL FLOW THRU SUBAREA(CFS) = 79.15
                                                                                COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                PEAK FLOW RATE(CFS) =
 TRAVEL TIME (MIN.) = 3.12 Tc(MIN.) = 19.11

LONGEST FLOWPATH FROM NODE 147.00 TO NODE 145.00 = 4724.00 FEET.
                                                                                                          627.82 Tc(MIN.) =
                                                                                TOTAL AREA(ACRES) =
                                                                                                        645.3
                                                                                FLOW PROCESS FROM NODE 145.00 TO NODE 145.00 IS CODE = 11
 FLOW PROCESS FROM NODE 149.00 TO NODE 145.00 IS CODE = 81
                                                                                >>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.439
                                                                                ** MAIN STREAM CONFLUENCE DATA **
                                                                                           RUNOFF
  *USER SPECIFIED(SUBAREA):
                                                                                STREAM
                                                                                                              INTENSITY
                                                                                                                            AREA
                                                                                                      TC
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                                     (MIN.)
                                                                                NUMBER
                                                                                            (CFS)
                                                                                                             (INCH/HOUR)
                                                                                                                          (ACRE)
 S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                                                2.657
                                                                                           627.82
                                                                                                    28.51
                                                                                                                           645.26
                                                                                                                              145.00 = 10732.00 FEET.
                                                                                LONGEST FLOWPATH FROM NODE
                                                                                                             129.00 TO NODE
 SUBAREA AREA(ACRES) = 51.56 SUBAREA RUNOFF(CFS) = 62.06 TOTAL AREA(ACRES) = 110.2 TOTAL RUNOFF(CFS) = 132.6
                                                                                ** MEMORY BANK # 2 CONFLUENCE DATA **
                                                        132.62
                                                                                         RUNOFF
                                                                                                              INTENSITY
                                                                                STREAM
 TC(MIN.) = 19.11
                                                                                                      Tc
                                                                                                                            AREA
                                                                                                     (MIN.)
                                                                                                             (INCH/HOUR)
                                                                                NUMBER
                                                                                            (CFS)
                                                                                                                           (ACRE)
                                                                                           132.62
                                                                                                    19.11
                                                                                                                3.439
                                                                                                                           110.18
                                                                                                                             145.00 =
                                                                                LONGEST FLOWPATH FROM NODE
                                                                                                             147.00 TO NODE
 FLOW PROCESS FROM NODE 145.00 TO NODE 145.00 IS CODE = 10
                                                                                                                                          4724.00 FEET.
 >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<
                                                                                 ** PEAK FLOW RATE TABLE **
                                                                                        RUNOFF
(CFS)
                                                                                STREAM
                                                                                                      TC
                                                                                                              INTENSITY
                                                                                                    (MIN.)
                                                                                NUMBER
                                                                                                             (INCH/HOUR)
                                                                                          553.56
                                                                                                     19.11
                                                                                                                  3.439
 FLOW PROCESS FROM NODE 151.00 TO NODE 152.00 IS CODE = 21
                                                                                                    28.51
                                                                                    2
                                                                                          730.30
                                                                                                                  2.657
                                                                                COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                 PEAK FLOW RATE(CFS) =
                                                                                                          730.30 Tc(MIN.) = 28.51
                                                                                                       755 4
  *HISER SPECIFIED(SHBAREA):
                                                                                TOTAL AREA(ACRES) =
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) =
                                                                               *******************
                                 0
 INITIAL SUBAREA FLOW-LENGTH (FEET) =
                                    100.00
                                                                                FLOW PROCESS FROM NODE 145.00 TO NODE 145.00 IS CODE = 12
 UPSTREAM ELEVATION(FEET) = 970.00
DOWNSTREAM ELEVATION(FEET) = 960.0
                              960.00
                                                                                >>>>CLEAR MEMORY BANK # 1 <<<<<
 ELEVATION DIFFERENCE(FEET) =
                                 10.00
                                                                               ______
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN To CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
                                                                                FLOW PROCESS FROM NODE 145.00 TO NODE 145.00 IS CODE = 12
 SUBAREA RUNOFF(CFS) = 0.84
TOTAL AREA(ACRES) = 0.34 TOTAL RUNOFF(CFS) =
                                                                                >>>>CLEAR MEMORY BANK # 2 <<<<
                                                                               ______
*****
 FLOW PROCESS FROM NODE 152.00 TO NODE 145.00 IS CODE = 52
                                                                                FLOW PROCESS FROM NODE 145.00 TO NODE 146.00 IS CODE = 31
 >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA<
                                                                                >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
 -----
                                                                                >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
 ELEVATION DATA: UPSTREAM(FEET) = 960.00 DOWNSTREAM(FEET) = 882.0
CHANNEL LENGTH THRU SUBAREA(FEET) = 1990.00 CHANNEL SLOPE = 0.0392
                                                                               ELEVATION DATA: UPSTREAM(FEET) = 882.00 DOWNSTREAM(FEET) = 881.00
                                                                882.00
                                                                                ELEVATION DATA: UPSTREAM(FEET) =
                                                                                FLOW LENGTH(FEET) = 50.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 81.0 INCH PIPE IS 60.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 25.32
 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION CHANNEL FLOW THRU SUBAREA(CFS) = 0.84
 CHANNEL FLOW HARD SUBARBA(CFS) - 0.04
FLOW VELOCITY(FEET/SEC) = 2.97 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 11.17 Tc(MIN.) = 17.43
LONGEST FLOWPATH FROM NODE 151.00 TO NODE 145.00 = 2090.00 FEET.
                                                                                ESTIMATED PIPE DIAMETER(INCH) = 81.00
                                                                                                                        NUMBER OF PIPES = 1
                                                                                PIPE-FLOW(CFS) = 730.30
PIPE TRAVEL TIME(MIN.) =
                                                                                                         0.03 Tc(MIN.) = 28.54
                                                                                LONGEST FLOWPATH FROM NODE 129.00 TO NODE 146.00 = 10782.00 FEET.
 FLOW PROCESS FROM NODE 152.00 TO NODE 145.00 IS CODE = 81
                                                                               *******************
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                FLOW PROCESS FROM NODE 146.00 TO NODE 146.00 IS CODE = 10
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.649
                                                                                >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<
  *USER SPECIFIED(SUBAREA):
                                                                              _____
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                               FLOW PROCESS FROM NODE 154.00 TO NODE 155.00 IS CODE = 21
 SUBAREA REA(ACRES) = 17.09 SUBAREA RUNOFF(CFS) = 21.83
TOTAL AREA(ACRES) = 17.4 TOTAL RUNOFF(CFS) = 22.2
                                                         22.26
                                                                                >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
```

```
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
______
  *USER SPECIFIED(SUBAREA):
                                                                                                             100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.154
  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                            SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) =
                                                                                                                                             0.74
 S.C.S. CURVE NUMBER (AMC II) = 0

INITIAL SUBAREA FLOW-LENGTH(FEET) =

UPSTREAM ELEVATION(FEET) = 1030.00

DOWNSTREAM ELEVATION(FEET) = 1029.00

ELEVATION DIFFERENCE(FEET) = 1.00

SUBAREA OVERLAND TOTAL
                                                                                                                                             0.23 TOTAL RUNOFF(CFS) =
                                                                                                          *****
                                                                                                            FLOW PROCESS FROM NODE 159.00 TO NODE 160.00 IS CODE = 61
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                      9.978
                                                                                                            >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 69.29
                                                                                                            >>>>(STANDARD CURB SECTION USED) << <<
                                                                                                            .______
             (Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION!
                                                                                                            UPSTREAM ELEVATION(FEET) = 995.00 DOWNSTREAM ELEVATION(FEET) = 985.00 STREET LENGTH(FEET) = 1700.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.231
  SUBAREA RUNOFF(CFS) = 0.48
TOTAL AREA(ACRES) = 0.26 TOTAL RUNOFF(CFS) =
                                                                                                            DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
                                                                                                            INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  FLOW PROCESS FROM NODE 155.00 TO NODE 156.00 IS CODE = 61
                                                                                                            SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                            STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  >>>>(STANDARD CURB SECTION USED) <>>>
                                                                                                                                                                                                  0.0150
                                                                                                            Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
  UPSTREAM ELEVATION(FEET) = 1029.00 DOWNSTREAM ELEVATION(FEET) = 995.00
  STREET LENGTH(FEET) = 1392.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                               **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                               STREETFLOW MODEL RESULTS USING ESTIMATED FLOW: STREET FLOW DEPTH(FEET) = 0.45
                                                                                                            STREET FLOW DEPTH(FEET) = 0.45
HALFSTREET FLOOD WIDTH(FEET) = 16.35
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.29
PRODUCT OF DEPTHEVELOCITY(FT*FT/SEC.) = 1.04
STREET FLOW TRAVEL TIME (MIN.) = 12.35 Tc(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.329
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                                                                                                 20.11
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
  STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
                                                                                                             *USER SPECIFIED(SUBAREA):
                                                                                                            RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.520
                                                                                        0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
                                                                                                            SUBAREA AREA(ACRES) = 13.08
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                                                         SUBAREA RUNOFF(CFS) = 22.64
 **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.30

HALFSTREET FLOOD WIDTH(FEET) = 8.44

AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.21
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.95

STREET FLOW TRAVEL TIME(MIN.) = 7.23 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.680

**HOED_CORPUTED(UNDREA).**
                                                                                                            TOTAL AREA(ACRES) =
                                                                                                                                             13.3
                                                                                                                                                             PEAK FLOW RATE(CFS) =
                                                                                                                                                                                               23.04
                                                                                                            17.21
  *USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.512
                                                                                                          *******************
  SUBAREA AREA(ACRES) = 5.08
                                              SUBAREA RUNOFF(CFS) =
                                                                                                            FLOW PROCESS FROM NODE 160.00 TO NODE 160.00 IS CODE = 1
                                                 PEAK FLOW RATE(CFS) =
  TOTAL AREA(ACRES) =
                                    5.3
                                                                                                            >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
  END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                            >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES <<< >
  END OF SUBAREA STREET FLOW HYDROULICS:

DEPTH(FEET) = 0.35 HALFSTREET FLOOD WIDTH(FEET) = 11.14
FLOW VELOCITY(FEET/SEC.) = 3.70 DEPTH*VELOCITY(FT*FT/SEC.) = 1.29
LONGEST FLOWPATH FROM NODE 154.00 TO NODE 156.00 = 1462.00 FEET.
                                                                                                          TOTAL NUMBER OF STREAMS = 2
                                                                                                            CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                            COMPLUENCE VALUES USED FOR INSTITUTE.

TIME OF CONCENTRATION(MIN.) = 20.11
RAINFALL INTENSITY(INCH/HR) = 3.33

TOTAL STREAM AREA(ACRES) = 13.31
  FLOW PROCESS FROM NODE 156.00 TO NODE 160.00 IS CODE = 31
                                                                                                            PEAK FLOW RATE(CFS) AT CONFLUENCE =
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                             ** CONFLUENCE DATA **
______
                                                                                                            STREAM
                                                                                                                          RUNOFF
                                                                                                                                           Tc
                                                                                                                                                     INTENSITY
                                                                                                                                                                         AREA
  ELEVATION DATA: UPSTREAM(FEET) =
                                               995.00 DOWNSTREAM(FEET) = 985.00
                                                                                                            NUMBER
                                                                                                                            (CFS)
                                                                                                                                        (MIN.) (INCH/HOUR)
                                                                                                                                                                        (ACRE)
                                                                                                                                                    3.079
 FLOW LENGTH(FEET) = 1783.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 21.0 INCH PIPE IS 15.1 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 5.42

ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
                                                                                                                                       22.70
20.11
                                                                                                                            10.06
                                                                                                                                                                           5.34
                                                                                                                                                                          13.31
                                                                                                                            23.04
                                                                                                                                                        3.329
                                                                                                            RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  PIPE-FLOW(CFS) = 10.06
PIPE TRAVEL TIME(MIN.) = 5
                                                                                                             CONFLUENCE FORMULA USED FOR 2 STREAMS.
  FIFE-FLOW(CFS) = 10.06
PIFE TRAVEL TIME(MIN.) = 5.49 Tc(MIN.) = 22.70
LONGEST FLOWPATH FROM NODE 154.00 TO NODE 160.00 =
                                                                                                            ** PEAK FLOW RATE TABLE **
                                                                                                            STREAM
                                                                                                                          RUNOFF
                                                                                                                                         TC
                                                                                                                                                    INTENSITY
 *****
                                                                                                                                        (MIN.)
                                                                                                            NUMBER
                                                                                                                           (CFS)
                                                                                                                                                   (INCH/HOUR)
 FLOW PROCESS FROM NODE 160.00 TO NODE 160.00 IS CODE = 1
                                                                                                                            31.95
                                                                                                                                       20.11
                                                                                                                                                       3.329
                                                                                                                                       22.70
                                                                                                                            31.36
                                                                                                                                                       3.079
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<<
                                                                                                            COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 31.95 TC(MIN.) =

TOTAL AREA(ACRES) = 18.6
TOTAL NUMBER OF STREAMS = 2
 COMFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 22.70
RAINFALL INTENSITY(INCH/HR) = 3.08
TOTAL STREAM AREA(ACRES) = 5.34
                                                                                                            LONGEST FLOWPATH FROM NODE 154.00 TO NODE
                                                                                                                                                                          160.00 = 3245.00 FEET.
                                                                                                          *************************
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                            FLOW PROCESS FROM NODE 160.00 TO NODE 164.00 IS CODE = 31
**********
                                                                                                            >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
  FLOW PROCESS FROM NODE 158.00 TO NODE 159.00 IS CODE = 21
                                                                                                            >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <---
                                                                                                            ELEVATION DATA: UPSTREAM(FEET) = 985.00 DOWNSTREAM(FEET) = 940.00
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                            ELEVATION DATA: OFSIREAM(FEET) = 985.00 DOWNSIRE.
FLOW LENGTH(FEET) = 1335.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 16.1 INCHES
  *USER SPECIFIED(SUBAREA):
 RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 TO.00 UPSTREAM ELEVATION(FEET) = 1000.00 DOWNSTREAM ELEVATION(FEET) = 999.00 ELEVATION DIFFERENCE (FEET) = 1.00
                                                                                                            PIPE-FLOW VELOCITY(FEET/SEC.) = 14.28
ESTIMATED PIPE DIAMETER(INCH) = 24.00
                                                                                                            ESTIMATED PIPE DIAPHDIBANAMO,
PIPE-FLOW(CFS) = 31.95
PIPE TRAVEL TIME(MIN.) = 1.56 Tc(MIN.) = 21.66
PIPE TRAVEL TIME(MIN.) = 154.00 TO NODE 164.00 =
                                                                                                                                                                                          4580.00 FEET.
  ELEVATION DIFFERENCE(FEET) =
                                             1.00
```

```
NUMBER
                                                                                                                        (CFS)
                                                                                                                                   (MIN.) (INCH/HOUR)
  FLOW PROCESS FROM NODE 164.00 TO NODE 164.00 IS CODE = 1
                                                                                                                                   12.85
                                                                                                              2
                                                                                                                        58.82
                                                                                                                                  21.66
                                                                                                                                                  3.172
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                                         COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  TOTAL NUMBER OF STREAMS = 2
                                                                                                         TOTAL AREA(ACRES) = 34.9
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                         LONGEST FLOWPATH FROM NODE 154.00 TO NODE
 TIME OF CONCENTRATION(MIN.) = 21.66
RAINFALL INTENSITY(INCH/HR) = 3.17
                                                                                                                                                                     164.00 = 4580.00 FEET.
  TOTAL STREAM AREA(ACRES) =
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                         FLOW PROCESS FROM NODE 164.00 TO NODE 168.00 IS CODE = 31
                                                    31.95
 ***********************
                                                                                                         >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
 FLOW PROCESS FROM NODE 162.00 TO NODE 163.00 IS CODE = 21
                                                                                                          >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
                                                                                                       ______
                                                                                                         ELEVATION DATA: UPSTREAM(FEET) = 940.00 DOWNSTREA FLOW LENGTH(FEET) = 798.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 30.0 INCH PIPE IS 20.4 INCHES
                                                                                                                                                    940.00 DOWNSTREAM(FEET) = 912.00
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
______
  *USER SPECIFIED(SUBAREA):
                                                                                                         DEPTH OF FLOW IN 30.0 INCH PIPE IS 20.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 16.98
ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 60.45
PIPE TRAVEL TIME(MIN.) = 0.78 TC(MIN.) = 13.63
LONGEST FLOWPATH FROM NODE 154.00 TO NODE 168.00 = 5378.00 FEET.
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) = 0
  INITIAL SUBAREA FLOW-LENGTH(FEET)
  UPSTREAM ELEVATION(FEET) = 992.00
DOWNSTREAM ELEVATION(FEET) = 991.00
ELEVATION DIFFERENCE(FEET) = 1.00
                                                                                                       **********************
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                    7.756
                                                                                                         FLOW PROCESS FROM NODE 168.00 TO NODE 168.00 IS CODE = 1
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.154
  SUBAREA RUNOFF(CFS) =
                                   0.77
                               0.24 TOTAL RUNOFF(CFS) =
  TOTAL AREA(ACRES) =
                                                                                                         >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<-
                                                                                                       ------
TOTAL NUMBER OF STREAMS = 2
                                                                                                         CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 13.63
RAINFALL INTENSITY(INCH/HR) = 4.28
TOTAL STREAM AREA(ACRES) = 34.94
 FLOW PROCESS FROM NODE 163.00 TO NODE 164.00 IS CODE = 61
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
  >>>>(STANDARD CURB SECTION USED) < < < <
                                                                                                          PEAK FLOW RATE(CFS) AT CONFLUENCE =
 UPSTREAM ELEVATION(FEET) = 991.00 DOWNSTREAM ELEVATION(FEET) = 940.00 STREET LENGTH(FEET) = 1509.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                       .....
                                                                                                         FLOW PROCESS FROM NODE 166.00 TO NODE 167.00 IS CODE = 21
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                         >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                        -----
                                                                                                          *USER SPECIFIED(SUBAREA):
                                                                                                         LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                         S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                         INITIAL SUBARBA FLOW-LENGTH(FEET) = UPSTREAM ELEVATION(FEET) = 950.00 DOWNSTREAM ELEVATION(FEET) = 948.00 ELEVATION DIFFERENCE(FEET) = 2.00
  STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
                                                                                      0.0150
                                                                                                         ELEVATION DIFFERENCE(FEET) = 2.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW: STREET FLOW DEPTH(FEET) = 0.40
                                                                                                         100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
NOTE: RAINFALL INTENSITY IS BASED ON TC = 5-MINUTE.
 HALFSTREET FLOOD WIDTH(FEET) = 13.68
AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.94
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.97
STREET FLOW TRAVEL TIME(MIN.) = 5.09 TC(MIN.) = 12.85
                                                                                                         SUBAREA RUNOFF(CFS) = 1.60
TOTAL AREA(ACRES) = 0.23 TOTAL RUNOFF(CFS) =
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.443
                                                                                                         FLOW PROCESS FROM NODE 167.00 TO NODE 168.00 IS CODE = 61
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
                                                                                                         >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.520

SUBAREA AREA (ACRES) = 16.05 SUBAREA RUNOFF(CFS) = 37.08
                                                                                                          >>>>(STANDARD CURB SECTION USED) <<<<
                                                                                                       ______
                                                                                                         UPSTREAM ELEVATION(FEET) = 948.00 DOWNSTREAM ELEVATION(FEET) = 892.00 STREET LENGTH(FEET) = 1373.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
  TOTAL AREA(ACRES) =
                                 16.3
                                               PEAK FLOW RATE(CFS) =
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48 HALFSTREET FLOOD WIDTH(FEET) = 17.75
                                                                                                         DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
  DEPTH(FEET) = 0.48 HALFSTREET FLOOD WIDTH(FEET) = 17.75
FLOW VELOCITY(FEET/SEC.) = 5.75 DEPTH*VELOCITY(FT*FT/SEC.) = 2.77
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
AND L = 1509.0 FT WITH ELEVATION-DROP = 51.0 FT, IS 55.8 CFS,
WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 164.00
                                                                                                         INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                         SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                         SPECIFIED NUMBER OF HARFSIREETS CARRYING RUNOFF = 2

STREET PARKWAY CROSSFALL(DECIMAL) = 0.020

Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
  LONGEST FLOWPATH FROM NODE
                                      162.00 TO NODE
                                                             164.00 = 1579.00 FEET.
                                                                                                                                                                                             0.0150
*****
 FLOW PROCESS FROM NODE 164.00 TO NODE 164.00 IS CODE = 1
                                                                                                             **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                                                                                  10 63
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                                            STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                                         STREET FLOW DEPTH(FEET) = 0.33

HALFSTREET FLOW VELOCITY(FEET/SEC.) = 4.56

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.51

STREET FLOW TRAVEL TIME(MIN.) = 5.01 TC(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.200
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
 TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 12.85
RAINFALL INTENSITY(INCH/HR) = 4.44
TOTAL STREAM AREA(ACRES) = 16.29
                                                                                                          *USER SPECIFIED(SUBAREA):
                                                                                                         "GODAL SPECIFIED (SUBAREA):

RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4500

S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.465

SUBAREA AREA (ACRES) = 6.01 SUBAREA RUNOFF (CFS) = 16.77

TOTAL AREA (ACRES) = 6.2 PEAK FLOW RATE (CFS) -
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                    37.64
  ** CONFLUENCE DATA **
  STREAM RUNOFF
                              TC
                                          INTENSITY
                 (CFS)
                             (MIN.) (INCH/HOUR)
                                                                                                         TOTAL AREA(ACRES) =
                                                                                                                                           6.2
                                                                                                                                                       PEAK FLOW RATE(CFS) =
  NUMBER
                                                           (ACRE)
                                         3.172
                 31.95
                            21.66
                                                              18.65
                37.64
                          12.85
                                                                                                         END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                         DEPTH(FEET) = 0.38 HALFSTREET FLOOD WIDTH(FEET) = 12.69 FLOW VELOCITY(FEET/SEC.) = 5.20 DEPTH*VELOCITY(FT*FT/SEC.) = 1.98 LONGEST FLOWPATH FROM NODE 166.00 TO NODE 168.00 = 1443.00 FEET.
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
  ** PEAK FLOW RATE TABLE **
                                                                                                         FLOW PROCESS FROM NODE 169.00 TO NODE 168.00 IS CODE = 81
  STREAM RUNOFF To
                                        INTENSITY
```

```
______
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                             UPSTREAM ELEVATION(FEET) = 915.00 DOWNSTREAM ELEVATION(FEET) = 889.00
                                                                                              STREET LENGTH(FEET) = 765.00
STREET HALFWIDTH(FEET) = 22.00
                                                                                                                                 CURB HEIGHT(INCHES) = 6.0
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.200
 *USER SPECIFIED(SUBAREA):
NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8500
                                                                                              DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 11.00
 S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.5080
                                                                                             INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
 ARBA-AVERAGE RUNOFF COEFFICIENT - 0.3000
SUBAREA AREA (ACRES) = 0.79 SUBAREA RUNOFF (CFS) = TOTAL AREA (ACRES) = 7.0 TOTAL RUNOFF (CFS) =
                                                                                              SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                   22.14
                                                                                             SPECIFIED NUMBER OF HAMESIKEELS CHARLES AND AND STREET PARKWAY CROSSFALL(DECIMAL) = 0.020

Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
               7.67
 TC(MIN.) =
*************************
                                                                                              Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
 FLOW PROCESS FROM NODE 168.00 TO NODE 168.00 IS CODE = 1
                                                                                                **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                                                                7.14
                                                                                                STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE << < <
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                                                                STREET FLOW DEPTH(FEET) = 0.31
HALFSTREET FLOOD WIDTH(FEET) =
                                                                                             AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.88
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.18
STREET FLOW TRAVEL TIME(MIN.) = 3.29 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.379
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 7.67
RAINFALL INTENSITY(INCH/HR) = 6.20
TOTAL STREAM AREA(ACRES) = 7.03
                                                                                              *USER SPECIFIED(SUBAREA):
                                                                                             **TOSER SPECIFIED(SUBAREA).**
NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.804
SUBAREA AREA(ACRES) = 2.88 SUBAREA RUNOFF(CFS) = 13.17
TOTAL AREA(ACRES) = 3.2 PEAK FLOW RATE(CFS) =
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                              22 14
  ** CONFLUENCE DATA **
                           TC
                                     INTENSITY
 STREAM
            RUNOFF
                                                      AREA
                          (MIN.)
 NUMBER
               (CFS)
                                   (INCH/HOUR)
                                                     (ACRE)
                                                                                                                                      PEAK FLOW RATE(CFS) = 13.71
                                     4.277
               60.45
                        13.63
              22.14
                          7.67
                                       6.200
                                                                                              END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                             FLOW VELOCITY(FEET/SEC.) = 4.53 DEPTH*VELOCITY(FT*FT/SECLONGEST FLOWPATH FROM NODE 177.00 TO NODE 176.00 =
                                                                                                                                    DEPTH*VELOCITY(FT*FT/SEC.) =
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                                                                  865.00 FEET.
  ** PEAK FLOW RATE TABLE **
          RUNOFF TC (CFS) (MIN.)
                                                                                             FLOW PROCESS FROM NODE 176.00 TO NODE 176.00 IS CODE = 1
 STREAM
                                    INTENSITY
 NUMBER
                                   (INCH/HOUR)
                                   6.200
               63 84
                          7.67
                                                                                              >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
      1
               75.72 13.63
                                                                                              >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES << < <
                                      4.277
                                                                                             TOTAL NUMBER OF STREAMS = 2
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 75.7
TOTAL AREA(ACRES) = 42.0
                                                                                              CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                75.72 Tc(MIN.) = 13.63
                                                                                              TIME OF CONCENTRATION(MIN.) = 9.55
RAINFALL INTENSITY(INCH/HR) = 5.38
 LONGEST FLOWPATH FROM NODE 154.00 TO NODE 168.00 = 5378.00 FEET.
                                                                                                                              3.17
                                                                                              TOTAL STREAM AREA(ACRES) = 3.17
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                          13.71
 FLOW PROCESS FROM NODE 168.00 TO NODE 146.00 IS CODE = 31
                                                                                              ** CONFLUENCE DATA **
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                          RUNOFF
                                                                                                                                  INTENSITY
                                                                                              NUMBER
                                                                                                           (CFS)
75.72
                                                                                                                    (MIN.) (INCH/HOUR)
14.00 4.204
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
                                                                                                                                                 (ACRE)
                                                                                                                               4.204
                                                                                                                                                   41.97
 ELEVATION DATA: UPSTREAM(FEET) = 887.00 DOWNSTREAM(FEET) = 881.00
                                                                                                           13.71
                                                                                                                     9.55
                                                                                                                                   5.379
                                                                                                                                                    3.17
 FLOW LENGTH(FEET) = 314.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 36.0 INCH PIPE IS 25.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 14.25
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
                                                                                              RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                              CONFLUENCE FORMULA USED FOR 2 STREAMS.
 PIPE-FLOW(CFS) = 75.72
PIPE TRAVEL TIME(MIN.) = 0
                                                                                              ** PEAK FLOW RATE TABLE **
 PIPE-FLOW(CFS) = 75.72

PIPE TRAVEL TIME(MIN.) = 0.37 Tc(MIN.) = 14.00

LONGEST FLOWPATH FROM NODE 154.00 TO NODE 146.00 = 5692.00 FEET.
                                                                                              STREAM
                                                                                                          RUNOFF Tc
                                                                                                           (CFS)
                                                                                                                     (MIN.)
                                                                                              NUMBER
                                                                                                                               (INCH/HOUR)
                                                                                                                               5.379
                                                                                                           72.89
                                                                                                                      9.55
*******************
                                                                                                           86.44
                                                                                                                   14.00
 FLOW PROCESS FROM NODE 146.00 TO NODE 146.00 IS CODE = 1
                                                                                              COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                              PEAK FLOW RATE(CFS) = 86.44 Tc(MIN.) = TOTAL AREA(ACRES) = 45.1
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<<<
                                                                                                                                                   14.00
 TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                              LONGEST FLOWPATH FROM NODE 154.00 TO NODE
                                                                                                                                                   176.00 = 5692.00 FEET.
 TIME OF CONCENTRATION(MIN.) = 14.00
RAINFALL INTENSITY(INCH/HR) = 4.20
TOTAL STREAM AREA(ACRES) = 41.97
                                                                                            ******************
                                                                                             FLOW PROCESS FROM NODE 176 00 TO NODE 146 00 IS CODE = 11
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                             75.72
                                                                                              >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY
                                                                                             FLOW PROCESS FROM NODE 177.00 TO NODE 177.00 IS CODE = 21
                                                                                              ** MAIN STREAM CONFLUENCE DATA **
                                                                                             ** MAIN STREAM CONFEDERCE STREAM RUNOFF TC
                                                                                                                               INTENSITY
                                                                                                                              (INCH/HOUR)
4.204
                                                                                                                                              (ACRE)
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
______
                                                                                                                     14.00
                                                                                                                                                45.14
                                                                                                                             154.00 TO NODE 146.00 =
  *USER SPECIFIED(SUBAREA):
                                                                                              LONGEST FLOWPATH FROM NODE
                                                                                                                                                                5692.00 FEET.
 RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
 ** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM RUNOFF TC INTENSI
                                                                                                                                INTENSITY
                                                                                                                                                AREA
 UPSTREAM ELEVATION(FEET) = 930.00

DOWNSTREAM ELEVATION(FEET) = 920.00

ELEVATION DIFFERENCE(FEET) = 10.00
                                                                                                                     (MIN.)
                                                                                                                               (INCH/HOUR)
                                                                                                                                              (ACRE)
                                                                                                          730.30
                                                                                                                     28.54
                                                                                                                                  2.655
                                                                                                                                               755.44
                                                                                              LONGEST FLOWPATH FROM NODE
                                                                                                                               129.00 TO NODE
                                                                                                                                                   146.00 = 10782.00 FEET.
                                      10.00
 SUBARRA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN To CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
                                                                                              ** PEAK FLOW RATE TABLE **
                                                                                                      RUNOFF
(CFS)
                                                                                              STREAM
                                                                                                                       Tc
                                                                                                                                INTENSITY
                                                                                                                     (MIN.)
 SUBAREA RUNOFF(CFS) = 0.72
TOTAL AREA(ACRES) = 0.29 TOTAL RUNOFF(CFS) =
                                                                                              NUMBER
                                                                                                                              (INCH/HOUR)
                                                                                                        444.67
                                                                                                                      14.00
                                                                                                  2
                                                                                                        784.90
                                                                                                                      28.54
                                                                                                                                    2.655
                                                                                              COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 FLOW PROCESS FROM NODE 178.00 TO NODE 176.00 IS CODE = 61
                                                                                             PEAK FLOW RATE(CFS) =
TOTAL AREA(ACRES) =
                                                                                                                          784.90 Tc(MIN.) =
                                                                                                                          800.6
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
 >>>>(STANDARD CURB SECTION USED) << <<
```

```
FLOW PROCESS FROM NODE 146.00 TO NODE 146.00 IS CODE = 12
                                                                                                            >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
  >>>>CLEAR MEMORY BANK # 1 <<<<<
                                                                                                            *USER SPECIFIED(SUBAREA):
                                                                                                           URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                            INITIAL SUBAREA FLOW-LENGTH(FEET)
                                                                                                           UPSTREAM ELEVATION(FEET) = 1030.00

DOWNSTREAM ELEVATION(FEET) = 1020.00

ELEVATION DIFFERENCE(FEET) = 10.00
                                                                                                            ELEVATION DIFFERENCE (FEET) =
                                                                                                                                                     10.00
                                                                                                            SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                                                               6.267
                                                                                                           WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION! 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
                                                                                                            100 YEAR RAINFALL INC...
SUBAREA RUNOFF(CFS) =
                                                                                                                                          0.89
0.36 TOTAL RUNOFF(CFS) =
  FLOW PROCESS FROM NODE 200.00 TO NODE 201.00 IS CODE = 21
                                                                                                                                                                                   0.89
   >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
______
  *USER SPECIFIED(SUBAREA):
                                                                                                            FLOW PROCESS FROM NODE 206.00 TO NODE 207.00 IS CODE = 31
  RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600 S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                            >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  INITIAL SUBAREA FLOW-LENGTH(FEET)
                                                                                                            >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<-<-
  UPSTREAM ELEVATION(FEET) = 1020.35

DOWNSTREAM ELEVATION(FEET) = 1019.65

ELEVATION DIFFERENCE(FEET) = 0.70
                                                                                                           .-----
                                                                                                            ELEVATION DATA: UPSTREAM(FEET) = 1020.00 DOWNSTREAM(FEET) = 938.00
                                            0.70
                                                                                                            FLOW LENGTH(FEET) = 1355.00 MANNING'S N = 0.013
  SUBAREA OVERLAND TIME OF FLOW(MIN.) = 9.638
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 70.00
                                                                                                            ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                           DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.3 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 6.68
              (Reference: Table 3-1B of Hydrology Manual)
                                                                                                            ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                                                                           ESTIMATED PIPE DIAMBIBALING:, - 2000

PIPE-FLOW(CFS) = 0.89

PIPE TRAVEL TIME(MIN.) = 3.38 TC(MIN.) = 9.65

LONGEST FLOWPATH FROM NODE 205.00 TO NODE 207.00 = 1455.00 FEET.
   THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION! 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.349
  SUBAREA RUNOFF(CFS) = 1.87
TOTAL AREA(ACRES) = 0.76 TOTAL RUNOFF(CFS) =
                                                                                                         FLOW PROCESS FROM NODE 206.00 TO NODE 207.00 IS CODE = 81
  FLOW PROCESS FROM NODE 201.00 TO NODE 202.00 IS CODE = 61
                                                                                                            >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
                                                                                                          >>>>(STANDARD CURB SECTION USED)<
                                                                                                             100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.345
                                                                                                            *USER SPECIFIED(SUBAREA):
  UPSTREAM ELEVATION(FEET) = 1019.65 DOWNSTREAM ELEVATION(FEET) = 929.00 STREET LENGTH(FEET) = 1536.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 14.00
                                                                                                            URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                                           SUBAREA AREA(ACRES) = 11.35 SUBAREA RUNOFF(CFS) = 21.23
TOTAL AREA(ACRES) = 11.7 TOTAL RUNOFF(CFS) = 21.5
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 7.00
                                                                                                                                                                                     21.91
  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                            TC(MIN.) =
                                                                                                                             9.65
                                                                                                         ********************
                                                                                                           FLOW PROCESS FROM NODE 207.00 TO NODE 208.00 IS CODE = 31
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
  STREET PARKWAY CROSSFALL(DECIMAL) = 0.020

Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150

Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
                                                                                                            >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                            >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
                                                                                                         _____
      *TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                           ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                                                                       933.00 DOWNSTREAM(FEET) = 922.00
                                                                                                           ELEVATION DATA: UPSTREAM (FEET) = 933.00 DOWNSTRE.
FLOW LENGTH(FEET) = 175.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 12.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 16.31
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW MODEL RESULTS USING ESTIMATED FLOW.

STREET FLOW DEPTH(FEET) = 0.30

HALFSTREET FLOOD WIDTH(FEET) = 8.72

AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.07

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.53

STREET FLOW TRAVEL TIME(MIN.) = 5.05 TC(MIN.) = 14.68

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.077
                                                                                                                                                                NUMBER OF PIPES = 1
                                                                                                           PIPE-FLOW(CFS) = 21.91

PIPE TRAVEL TIME(MIN.) = 0.18 Tc(MIN.) = 9.83

LONGEST FLOWPATH FROM NODE 205.00 TO NODE 208.00 = 1630.00 FEET.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600 S.C.S. CURVE NUMBER (AMC II) = 0
  S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.460

SUBAREA AREA(ACRES) = 7.43

TOTAL AREA(ACRES) = 7.43

SUBAREA
                                                                                                           FLOW PROCESS FROM NODE 208.00 TO NODE 208.00 IS CODE =
                                              SUBAREA RUNOFF(CFS) = 13.93
                                                                                                            >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
                                                  PEAK FLOW RATE(CFS) =
                                                                                                          .....
                                                                                                            TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                            TIME OF CONCENTRATION(MIN.) = 9.83
RAINFALL INTENSITY(INCH/HR) = 5.28
TOTAL STREAM AREA(ACRES) = 11.71
                                                                                                           TOTAL STREAM AREA(ACRES) = 11.71
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                              21.91
**************************
                                                                                                         *************
  FLOW PROCESS FROM NODE 202.00 TO NODE 203.00 IS CODE = 31
                                                                                                            FLOW PROCESS FROM NODE 210.00 TO NODE 211.00 IS CODE = 21
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                                            >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<=
ELEVATION DATA: UPSTREAM(FEET) = 924.00 DOWNSTREAM(FEET) = 921.50
FLOW LENGTH(FEET) = 417.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 17.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.15
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
DIPE-FLOW(CFS.) = 15.36
                                                                                                         *USER SPECIFIED(SUBAREA):
                                                                                                            NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
                                                                                                            UPSTREAM ELEVATION(FEET) = 988.00

DOWNSTREAM ELEVATION(FEET) = 987.00
  PIPE-FLOW(CFS) = 15.36

PIPE TRAVEL TIME(MIN.) = 1.13  Tc(MIN.) = 15.81

LONGEST FLOWPATH FROM NODE 200.00 TO NODE 203.00 = 2023.00 FEET.
                                                                                                           ELEVATION DIFFERENCE (FEET) = 1.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                                                                4 038
                                                                                                            WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 66.43
(Reference: Table 3-1B of Hydrology Manual)
  FLOW PROCESS FROM NODE 203.00 TO NODE 203.00 IS CODE = 10
                                                                                                           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168

NOTE: RAINFALL INTENSITY IS BASED ON TO = 5-MINUTE.

SUBAREA RUNOFF(CFS) = 0.97

TOTAL AREA(ACRES) = 0.15 TOTAL RUNOFF(CFS) = 0.97
  >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
                                                                                                           TOTAL AREA(ACRES) =
                                                                                                                                           0.15 TOTAL RUNOFF(CFS) =
```

FLOW PROCESS FROM NODE 205.00 TO NODE 206.00 IS CODE = 21

```
(CFS) (MIN.)
                                                                                                                                                                  (INCH/HOUR) (ACRE)
                                                                                                                       NUMBER
  FLOW PROCESS FROM NODE 211.00 TO NODE 208.00 IS CODE = 61
                                                                                                                                         26.75
                                                                                                                                                       9.88
                                                                                                                                                                       5.264
                                                                                                                                                                                       12.87
                                                                                                                        LONGEST FLOWPATH FROM NODE
                                                                                                                                                                  205.00 TO NODE
                                                                                                                                                                                          203.00 =
                                                                                                                                                                                                            1670.00 FEET.
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
 >>>>(STANDARD CURB SECTION USED)
                                                                                                                        ** MEMORY BANK # 1 CONFLUENCE DATA **
                                                                                                                                                                   INTENSITY
                                                                                                                                                                                        AREA
                                                                                                                        STREAM
                                                                                                                                       RUNOFF
                                                                                                                                                        Tc
  UPSTREAM ELEVATION(FEET) = 987.00 DOWNSTREAM ELEVATION(FEET) = 927.00 STREET LENGTH(FEET) = 694.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 14.00
                                                                                                                                                      (MIN.)
                                                                                                                                                                   (INCH/HOUR)
                                                                                                                                                                                     (ACRE)
                                                                                                                        NUMBER
                                                                                                                                         (CFS)
                                                                                                                                         15.36
                                                                                                                                                     15.81
                                                                                                                                                                      3.886
                                                                                                                                                                                         8.19
                                                                                                                        LONGEST FLOWPATH FROM NODE
                                                                                                                                                                   200.00 TO NODE
                                                                                                                                                                                           203.00 =
                                                                                                                                                                                                             2023.00 FEET.
                                                                                                                        ** PEAK FLOW RATE TABLE **
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 7.00
  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                                                      RUNOFF
                                                                                                                        STREAM
                                                                                                                                                        Tc
                                                                                                                                                                    INTENSITY
                                                                                                                                                      (MIN.)
                                                                                                                        NUMBER
                                                                                                                                       (CFS)
                                                                                                                                                                  (INCH/HOUR)
                                                                                                                                                        9.88
                                                                                                                                                      15.81
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                                                       35.11
                                                                                                                                                                         3.886
  STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
                                                                                                 0.0150
                                                                                                                       COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 36.34 Tc(MIN.) =
                                                                                                                        PEAK FLOW RATE(CFS) =
                                                                                                                        TOTAL AREA(ACRES) =
                                                                                                                                                            21.1
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                      3.76
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                                                       FLOW PROCESS FROM NODE 203.00 TO NODE 203.00 IS CODE = 12
     STREET FLOW DEPTH(FEET) = 0.23
HALFSTREET FLOOD WIDTH(FEET) =
  HALFSIRE FLOOD WELDCITY(FEET/SEC.) = 5.07
AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.02
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.14
STREET FLOW TRAVEL TIME(MIN.) = 2.30 Tc(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.007
                                                                                                                        >>>> CLEAR MEMORY BANK # 1 <<<<<
                                                                                                                        .....
                                                                                                                       FLOW PROCESS FROM NODE 203.00 TO NODE 212.00 IS CODE = 31
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.790 SUBAREA AREA(ACRES) = 1.01 SUBAREA RUNOFF(COEFFICIENT) SUBAREA RUNOFFICIENT SUBAREA RUNOFFICIEN
                                                                                                                        >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                        >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
                                                   SUBAREA RUNOFF(CFS) =
                                                                                       5.59
                                                                                                                     ______
                                                                                                                        ELEVATION DATA: UPSTREAM(FEET) =
                                                       PEAK FLOW RATE(CFS) =
                                                                                                                                                                         921.00 DOWNSTREAM(FEET) = 915.50
                                                                                                                       FLOW LENGTH(FEET) = 625.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 30.0 INCH PIPE IS 23.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.70
ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.26 HALFSTREET FLOOD WIDTH(FEET) = 6.79
FLOW VELOCITY(FEET/SEC.) = 5.55 DEPTH*VELOCITY(FT*FT/SEC.) = 1.45
LONGEST FLOWPATH FROM NODE 210.00 TO NODE 208.00 = 764.00 FEI
                                                                                                                                                                                   NUMBER OF PIPES = 1
                                                                                                                       PIPE-FILOW(CFS) = 36.34

PIPE TRAVEL TIME(MIN.) = 1.20 Tc(MIN.) = 11.08

LONGEST FLOWPATH FROM NODE 200.00 TO NODE 212.00 = 2648.00 FEET.
                                                                                         764.00 FEET.
*****
  FLOW PROCESS FROM NODE 208.00 TO NODE 208.00 IS CODE = 1
                                                                                                                     *******************
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
                                                                                                                       FLOW PROCESS FROM NODE 212.00 TO NODE 212.00 IS CODE = 1
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
-----
                                                                                                                        >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
  TOTAL NUMBER OF STREAMS = 2
                                                                                                                     ______
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                        TOTAL NUMBER OF STREAMS = 2
  TIME OF CONCENTRATION(MIN.) = 6.34
RAINFALL INTENSITY(INCH/HR) = 7.01
TOTAL STREAM AREA(ACRES) = 1.16
                                                                                                                        CONFIJIENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                                       TIME OF CONCENTRATION(MIN.) = 11.08
RAINFALL INTENSITY(INCH/HR) = 4.89
TOTAL STREAM AREA(ACRES) = 21.06
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                            6.42
                                                                                                                        PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                                 36.34
  ** CONFLUENCE DATA **
                                                                                                                     *****
                                                INTENSITY
  STREAM
                 RUNOFF
                                   Tc
                                                                      AREA
                                 (MIN.)
                                                                                                                       FLOW PROCESS FROM NODE 214.00 TO NODE 215.00 IS CODE = 21
                                             (INCH/HOUR)
  NUMBER
                   (CFS)
                                                                    (ACRE)
                                 9.83
                                                                      11.71
                    6 42
                                 6 34
                                                  7 007
                                                                        1 16
                                                                                                                       >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                                       .....
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                                        *USER SPECIFIED(SUBAREA):
                                                                                                                        RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
   ** PEAK FLOW RATE TABLE **
                                                                                                                        UNDSTREAM ELEVATION(FEET) = 932.35

DOWNSTREAM ELEVATION(FEET) = 931.65

ELEVATION DIFFERENCE(FEET) = 0.70
  STREAM
                 RUNOFF
                                              INTENSITY
                                   Тc
                                (MIN.)
  NUMBER
                                             (INCH/HOUR)
                   (CFS)
                                                                                                                       6.34
                                                 7.007
        1
                   20.56
        2
                                9.83
                   26.75
                                                 5.283
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) = 26.75 Tc(MIN.) = TOTAL AREA(ACRES) = 12.9
                                                                                                                                     (Reference: Table 3-1B of Hydrology Manual)
                                                                        9 83
                                                                                                                                     THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION!
                                                                                                                        100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.349
SUBAREA RUNOFF(CFS) = 0.79
  LONGEST FLOWPATH FROM NODE 205.00 TO NODE 208.00 = 1630.00 FEET.
*******************
                                                                                                                        TOTAL AREA(ACRES) =
                                                                                                                                                           0.32 TOTAL RUNOFF(CFS) =
  FLOW PROCESS FROM NODE 208.00 TO NODE 203.00 IS CODE = 31
                                                                                                                     >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                        FLOW PROCESS FROM NODE 215.00 TO NODE 212.00 IS CODE = 61
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
ELEVATION DATA: UPSTREAM(FEET) = 922.00 DOWNSTREAM(FEET) = 921.00 FLOW LENGTH(FEET) = 40.00 MANNING'S N = 0.013
                                                                                                                       >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<>>>>>(STANDARD CURB SECTION USED)<
  ELEVATION DATA: OPSTREAM(FEET) = 922.00 DOWNST
FLOW LENGTH(FEET) = 40.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 24.0 INCH PIPE IS 15.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 12.23
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER
                                                                                                                       UPSTREAM ELEVATION(FEET) = 931.00 DOWNSTREAM ELEVATION(FEET) = 921.00
                                                                                                                       STREET LENGTH(FEET) = 1018.00 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 14.00
                                                              NUMBER OF PIPES = 1
  PIPE-FLOW(CFS) = 26.75
PIPE TRAVEL TIME(MIN.) = 0.05 Tc(MIN.) = 9.88
LONGEST FLOWPATH FROM NODE 205.00 TO NODE 203.00 = 1670.00 FEET.
                                                                                                                        DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 7.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                                        SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
  FLOW PROCESS FROM NODE 203.00 TO NODE 203.00 IS CODE = 11
                                                                                                                       STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
  >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<
                                                                                                                                                                                                                       0.0150
                                                                                                                        Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
______
   ** MAIN STREAM CONFLUENCE DATA **
                                                                                                                           **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                        INTENSITY
  STREAM RUNOFF TC
                                                                  AREA
                                                                                                                          STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
```

```
STREET FLOW DEPTH(FEET) = 0.35
    PRODUCT OF DEPTH(VELOCITY(FT&FT/SEC.) = 0.85

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.85
                                                                                        *****************
                                                                                           FLOW PROCESS FROM NODE 219.00 TO NODE 216.00 IS CODE = 61
 STREET FLOW TRAVEL TIME(MIN.) = 7.09 Tc(MIN.) = 16.72 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.749
                                                                                           >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                           >>>>(STANDARD CURB SECTION USED) << <<
  *USER SPECIFIED(SUBAREA):
                                                                                                  -----
 RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600
                                                                                          UPSTREAM ELEVATION(FEET) = 940.00 DOWNSTREAM ELEVATION(FEET) = 910.00
                                                                                          STREET LENGTH(FEET) = 544.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 14.00
 S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.460
SUBAREA AREA(ACRES) = 6.77
SUBAREA TOTAL ABPLA(ACRES) = 7.1
                              .77 SUBAREA RUNOFF(CFS) = 11.67
7.1 PEAK FILOW DAMP/CDS:
                                                                                           DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 7.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
 TOTAL AREA(ACRES) =
  END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.41 HALFSTREET FLOOD WIDTH(FEET) = 14.00 FLOW VELOCITY(FEET/SEC.) = 2.79 DEPTH*VELOCITY(FT*FT/SEC
                                       DEPTH*VELOCITY(FT*FT/SEC.) = 1.16
                                                                                           SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                          STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
 LONGEST FLOWPATH FROM NODE
                                214.00 TO NODE 212.00 = 1088.00 FEET.
                                                                                                                                                                  0.0150
************************
                                                                                           Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
 FLOW PROCESS FROM NODE 212.00 TO NODE 212.00 IS CODE = 1
                                                                                             **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
                                                                                            STREETFLOW MODEL RESULTS USING ESTIMATED FLOW: STREET FLOW DEPTH(FEET) = 0.28
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
 ._____
                                                                                            HALFSTREET FLOOD WIDTH(FEET) = AVERAGE FLOW VELOCITY(FEET/SEC.) =
                                                                                           AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.65
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.31
STREET FLOW TRAVEL TIME(MIN.) = 1.95 Tc(MIN.) =
 TOTAL NUMBER OF STREAMS = 2
 TOTAL TREAM AFA(ACRES) = 7.09
                                                                                            100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.400
 TOTAL STREAM AREA(ACRES) = 7.09
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                           *USER SPECIFIED(SUBAREA):
                                                                                           RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600
                                                                                           S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.460

SUBAREA AREA (ACRES) = 3.80 SUBAREA RUNOFF(CFS) = 11.19
  ** CONFLUENCE DATA **
                                    INTENSITY
           RUNOFF
                          Tc
 STREAM
                         (MIN.)
                                                                                                                                  PEAK FLOW RATE(CFS) =
 NUMBER
              (CFS)
                                  (INCH/HOUR)
                                                   (ACRE)
                                                                                           TOTAL AREA(ACRES) =
                                                                                                                      4.1
                                                                                                                                                                12.10
               36.34
                                   4.890
3.749
                                                                                           END OF SUBAREA STREET FLOW HYDRAULICS:
     2
              12.23
                       16.72
                                                                                           DEPTH(FEET) = 0.33 HALFSTREET FLOOD WIDTH(FEET) = 10.09
                                                                                          FLOW VELOCITY(FEET/SEC.) = 5.32 DEPTH*VELOCITY(FT*FT/SEC.) = LONGEST FLOWPATH FROM NODE 218.00 TO NODE 216.00 = 64
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                                                                                  1 75
 CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                                                            644.00 FEET.
                                                                                         *******************
  ** PEAK FLOW RATE TABLE **
            RUNOFF
                                                                                          FLOW PROCESS FROM NODE 216.00 TO NODE 216.00 IS CODE = 1
 STREAM
                          Tc
                                   INTENSITY
                        (MIN.) (INCH/HOUR)
 NUMBER
              (CFS)
                        11.08
                                  4.890
                                                                                           >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
               44.44
     1
                       16.72
                                                                                           >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
              40.09
                                     3.749
                                                                                        ______
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                          TOTAL NUMBER OF STREAMS = 2
 PEAK FLOW RATE(CFS) = 44.44 Tc(MIN.) = 11.08
TOTAL AREA(ACRES) = 28.1
                                                                                           CONFIDENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                           CONFLIGNCE VALUES SEEF FOR INDEFENDENT TIME OF CONCENTRATION(MIN.) = 7.30 RAINFALL INTENSITY(INCH/HR) = 6.40 TOTAL STREAM AREA(ACRES) = 4.11
 LONGEST FLOWPATH FROM NODE 200.00 TO NODE 212.00 = 2648.00 FEET.
                                                                                           PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                     12.10
 FLOW PROCESS FROM NODE 212.00 TO NODE 216.00 IS CODE = 31
                                                                                           ** CONFLUENCE DATA **
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                          STREAM RUNOFF
NUMBER (CFS)
                                                                                                                    Tc
                                                                                                                             INTENSITY
                                                                                                                                             AREA
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <---
                                                                                                                  (MIN.) (INCH/HOUR)
                                                                                                                            4.701
                                                                                                                11.77
7.30
 -----
                                                                                                       44 44
                                                                                                                                              28 15
 ELEVATION DATA: UPSTREAM(FEET) = 915.50 DOWNSTREAM(FEET) = 905.00
                                                                                                       12.10
                                                                                                                               6.400
 PIEDENTATION DEFINE OF PIPES = 1

DEPTH OF FLOW IN 30.0 INCH PIPE IS 20.1 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 12.71

ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
                                                                                          RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                          CONFLUENCE FORMULA USED FOR 2 STREAMS.
 ESTIMATED FIFE DIAPPELECTION.,

PIPE-FLOW(CFS) = 44.44

PIPE TRAVEL TIME(MIN.) = 0.70 Tc(MIN.) = 11.77

LONGEST FLOWPATH FROM NODE 200.00 TO NODE 216.00 = 3178.00 FEET.
                                                                                           ** PEAK FLOW RATE TABLE **
                                                                                                  RUNOFF Tc (CFS) (MIN.)
                                                                                           STREAM
                                                                                                                            INTENSITY
                                                                                           NUMBER
                                                                                                                           (INCH/HOUR)
                                                                                                       44.75
                                                                                                                  7.30
                                                                                                                              6.400
*******************
                                                                                                       53.33 11.77
                                                                                                                              4.701
 FLOW PROCESS FROM NODE 216.00 TO NODE 216.00 IS CODE = 1
                                                                                           COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                          DEAK FLOW RATE(CFS) = 53.33 Tc(MIN.) = 11.77

TOTAL AREA(ACRES) = 32.3

LONGEST FLOWPATH FROM NODE 200.00 TO NODE 216.00 = 3178.00 FEET.
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 11.77
RAINFALL INTENSITY(INCH/HR) = 4.70
TOTAL STREAM AREA(ACRES) = 28.15
                                                                                        ***********
                                                                                          FLOW PROCESS FROM NODE 216.00 TO NODE 220.00 IS CODE = 31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                            44.44
                                                                                           >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                           >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <---
______
 FLOW PROCESS FROM NODE 218.00 TO NODE 219.00 IS CODE = 21
                                                                                                                               905.00 DOWNSTREAM(FEET) = 904.40
                                                                                           ELEVATION DATA: UPSTREAM(FEET) =
                                                                                          ELEVATION DATA: UPSTREAM(FEET) = 905.00 DOWNSTREAM(FEET) = FLOW LENGTH(FEET) = 36.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 33.0 INCH PIPE IS 22.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 12.45
ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
______
  *USER SPECIFIED(SUBAREA):
 RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00 UPSTREAM ELEVATION(FEET) = 950.00 DOWNSTREAM ELEVATION(FEET) = 940.00
                                                                                           PIPE-FLOW(CFS) = 53.33
PIPE TRAVEL TIME(MIN.) = 0
                                                                                          *******************
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.348
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.821
                                                                                           FLOW PROCESS FROM NODE 220.00 TO NODE 220.00 IS CODE = 1
                                                                                          >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
                                                                                        TOTAL NUMBER OF STREAMS = 2
 SUBAREA RUNOFF(CFS) = 1.12
TOTAL AREA(ACRES) = 0.31 TOTAL RUNOFF(CFS) = 1.12
                                                                                          CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
```

```
TIME OF CONCENTRATION(MIN.) = 11.82
RAINFALL INTENSITY(INCH/HR) = 4.69
TOTAL STREAM AREA(ACRES) = 32.26
                                                                                                2
                                                                                                         65.96
                                                                                                                 11.82
                                                                                                                                4.689
                                                                                            COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                            PEAK FLOW RATE (CFS) = 65.96 Tc(MIN.) = TOTAL AREA(ACRES) = 39.8
                                             53.33
******
                                                                                            LONGEST FLOWPATH FROM NODE 200.00 TO NODE
                                                                                                                                                 220.00 = 3214.00 FEET.
 FLOW PROCESS FROM NODE 222.00 TO NODE 223.00 IS CODE = 21
                                                                                            FLOW PROCESS FROM NODE 220.00 TO NODE 225.00 IS CODE = 31
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  *USER SPECIFIED(SUBAREA):
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBARRA FLOW-LENGTH(FEET) = 100.00
                                                                                            >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <---
                                                                                          ______
                                                                                            ELEVATION DATA: UPSTREAM(FEET) = 904.40 DOWNSTREAM(FEET) = 884.00
 UPSTREAM ELEVATION(FEET) = 992.00
DOWNSTREAM ELEVATION(FEET) = 982.00
ELEVATION DIFFERENCE(FEET) = 10.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                            FLOW LENGTH(FEET) = 485.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 30.0 INCH PIPE IS 20.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 18.58
ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES =
                                              6.267
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
                                                                                            PIPE-FLOW(CFS) = 65.96

PIPE TRAVEL TIME(MIN.) = 0.44  Tc(MIN.) = 12.26

LONGEST FLOWPATH FROM NODE 200.00 TO NODE 225.00 = 3699.00 FEET.
  TOTAL AREA(ACRES) =
                                                               0.72
                                                                                          *****
                                                                                            FLOW PROCESS FROM NODE 225.00 TO NODE 225.00 IS CODE = 1
 FLOW PROCESS FROM NODE 223.00 TO NODE 224.00 IS CODE = 31
                                                                                            >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
                                                                                           -----
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
                                                                                            TOTAL NUMBER OF STREAMS = 2
ELEVATION DATA: UPSTREAM(FEET) = 982.00 DOWNSTREAM(FEET) = 925.00 FLOW LENGTH(FEET) = 1437.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                            CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 12.26
RAINFALL INTENSITY(INCH/HR) = 4.58
TOTAL STREAM AREA(ACRES) = 39.85
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.3 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 5.43 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
                                                                                            PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                        65.96
                                                NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 0.72

PIPE TRAVEL TIME(MIN.) = 4.41  Tc(MIN.) = 10.68

LONGEST FLOWPATH FROM NODE 222.00 TO NODE 224.00 =
                                                                                            FLOW PROCESS FROM NODE 227.00 TO NODE 228.00 IS CODE = 21
                                                                 1537.00 FEET.
                                                                                            >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                          -----
*****
                                                                                            *USER SPECIFIED(SUBAREA):
 FLOW PROCESS FROM NODE 223.00 TO NODE 224.00 IS CODE = 81
                                                                                            NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
                                                                                             S.C.S. CURVE NUMBER (AMC II) =
                                                                                            INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>
                                                                                            UPSTREAM ELEVATION(FEET) = 950.00
______
                                                                                                                            940.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.006
                                                                                            DOWNSTREAM ELEVATION(FEET) = ELEVATION DIFFERENCE(FEET) =
  *USER SPECIFIED(SUBAREA):
                                                                                                                                10.00
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                             SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                                        2.590
                                                                                            WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION! 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
                                                                                            NOTE: RAINFALL INTENSITY IS BASED ON TC = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 2.00
TOTAL AREA(ACRES) = 0.31 TOTAL RUNOFF(CFS) =
 SUBAREA AREA(ACRES) = 7.30 SUBAREA RUNOFF(CFS) = 12.79
TOTAL AREA(ACRES) = 7.6 TOTAL RUNOFF(CFS) = 13.3
                                                                13.30
                                                                                                                       0.31 TOTAL RUNOFF(CFS) =
 TC(MIN.) =
               10.68
*********************
                                                                                          *****
 FLOW PROCESS FROM NODE 224.00 TO NODE 220.00 IS CODE = 31
                                                                                            FLOW PROCESS FROM NODE 228.00 TO NODE 225.00 IS CODE = 61
 >>>>COMPLITE PIPE-FLOW TRAVEL TIME THRU SUBARRA<
                                                                                            >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
                                                                                            >>>>(STANDARD CURB SECTION USED)
 -----
                                                                                            -----
 ELEVATION DATA: UPSTREAM(FEET) = 920.00 DOWNSTREAM(FEET) = 904.40 FLOW LENGTH(FEET) = 218.00 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.) = 15.39 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                                                            UPSTREAM ELEVATION(FEET) = 940.00 DOWNSTREAM ELEVATION(FEET) = 889.00 STREET LENGTH(FEET) = 942.00 CURB HEIGHT(INCHES) = 6.0
                                                                                            STREET HALFWIDTH(FEET) = 14.00
                                                                                            DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 7.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                            STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
*****
                                                                                            Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
 FLOW PROCESS FROM NODE 220.00 TO NODE 220.00 IS CODE = 1
                                                                                            Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
                                                                                               **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                              STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES << < <
                                                                                              STREET FLOW DEPTH(FEET) = 0.33
 -----
 TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                              HALFSTREET FLOOD WIDTH(FEET) = 10.04
AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.24
 TIME OF CONCENTRATION(MIN.) = 10.92
RAINFALL INTENSITY(INCH/HR) = 4.94
TOTAL STREAM AREA(ACRES) = 7.59
                                                                                            PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.71
STREET FLOW TRAVEL TIME(MIN.) = 3.00 Tc(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.602
                                                                                                                                                         5.59
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                             13.30
                                                                                             *USER SPECIFIED(SUBAREA):
                                                                                            NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  ** CONFLUENCE DATA **
                                                                                            S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.790
                           Tc
                                     INTENSITY
             RUNOFF
               (CFS)
                         (MIN.) (INCH/HOUR)
                                                                                            SUBAREA AREA(ACRES) = 3.24
TOTAL AREA(ACRES) = 3.5
                                                                                                                                  SUBAREA RUNOFF(CFS) = 19.46
PEAK FLOW RATE(CFS) =
                                                    (ACRE)
 NUMBER
                                  4.689
                         11.82
                                                     32.26
               53.33
               13.30
                        10.92
                                       4.936
                                                                                            END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                            END OF SUBAREA STREET FLOW HYDROULICS.

DEPTH(FEET) = 0.38 HALFSTREET FLOOD WIDTH(FEET) = 12.88

FLOW VELOCITY(FEET/SEC.) = 6.00 DEPTH*VELOCITY(FT*FT/SEC.) = 2.30

LONGEST FLOWPATH FROM NODE 227.00 TO NODE 225.00 = 1042.00 FEET.
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 2 STREAMS.
  ** PEAK FLOW RATE TABLE **
                                                                                          ******************
 STREAM
                          Tc
                                    INTENSITY
             RUNOFF
                         (MIN.)
                                                                                            FLOW PROCESS FROM NODE 228.00 TO NODE 225.00 IS CODE = 81
 NUMBER
               (CFS)
                                  (INCH/HOUR)
                                    4.936
               63.96
                        10.92
```

```
>>>>ADDITION OF SUBARRA TO MAINLINE PEAK FLOW<>>>
-----
                                                                                             SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.602
                                                                                             STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
   USER SPECIFIED(SUBAREA):
                                                                                                                                                                       0.0150
 LAWNS, GOLF COURSES, ETC. GOOD COVER RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.6668
                                                                                             Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
                                                                                                **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
 SUBAREA AREA(ACRES) = 1.38 SUBAREA RUNOFF(CFS) = 3.67
TOTAL AREA(ACRES) = 4.9 TOTAL RUNOFF(CFS) = 24.9
                                                                                               STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                               STREET FLOW DEPTH(FEET) = 0.30
HALFSTREET FLOOD WIDTH(FEET) =
                                                                 24.99
 TC(MIN.) =
                5.59
                                                                                             AVERAGE FLOWD WIDIH(FEET) = 8.78
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.31
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.70
STREET FLOW TRAVEL TIME(MIN.) = 6.06 Tc(MIN.) = 15.35
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.962
**
*************************************
 FLOW PROCESS FROM NODE 225.00 TO NODE 225.00 IS CODE = 1
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE<>
                                                                                             *USER SPECIFIED(SUBAREA):
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                             RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600
                                                                                             S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.460
______
 TOTAL NUMBER OF STREAMS = 2
                                                                                                                                 SUBAREA RUNOFF(CFS) = 5.41
PEAK FLOW RATE(CFS) =
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                             SUBAREA AREA(ACRES) = 2.97
 TIME OF CONCENTRATION(MIN.) = 5.59
RAINFALL INTENSITY(INCH/HR) = 7.60
TOTAL STREAM AREA(ACRES) = 4.93
                                                                                             TOTAL AREA(ACRES) =
                                                                                                                          3.5
                                                                                                                                                                       6.40
                                                                                             END OF SUBAREA STREET FLOW HYDRAULICS:
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                             DEPTH(FEET) = 0.34 HALFSTREET FLOOD WIDTH(FEET) = 10.69
                                                                                             FLOW VELOCITY(FET/SEC.) = 2.54 DEPTH*VELOCITY(FT*FT/SEC.) = LONGEST FLOWPATH FROM NODE 231.00 TO NODE 233.00 = 903
                                                                                                                                                                      0.86
  ** CONFLUENCE DATA **
                                                                                                                                                                 903.00 FEET.
                          Tc INTENSITY (MIN.) (INCH/HOUR)
             RUNOFF
(CFS)
                                                                                           *********************
 NUMBER
                                                     (ACRE)
                       12.26
                                  4.50
7.602
                                                                                             FLOW PROCESS FROM NODE 233.00 TO NODE 234.00 IS CODE = 31
              24.99
                                                                                             >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                             >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <---
 CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                           ______
                                                                                             ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                                                   882.00 DOWNSTREAM(FEET) = 881.00
                                                                                             FLOW LENGTH(FEET) = 102.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.07
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
  ** PEAK FLOW RATE TABLE **
             RUNOFF
                                    INTENSITY
                         (MIN.)
 NUMBER
               (CFS)
                                   (INCH/HOUR)
               64.74
                          5.59
                                                                                             PIPE-FLOW(CFS) = 6.40

PIPE TRAVEL TIME(MIN.) = 0.28 Tc(MIN.) = 15.63

LONGEST FLOWPATH FROM NODE 231.00 TO NODE 234.00 = 1005.00 FEET.
               81.02
                                      4.581
      2
                       12.26
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 81.02 Tc(MIN.) = 12.26

TOTAL AREA(ACRES) = 44.8

LONGEST FLOWPATH FROM NODE 200.00 TO NODE 225.00 = 3699.00 FEET.
                                                                                           *******************
                                                                                             FLOW PROCESS FROM NODE 234.00 TO NODE 234.00 IS CODE = 1
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
 FLOW PROCESS FROM NODE 225.00 TO NODE 229.00 IS CODE = 31
                                                                                           ______
                                                                                             TOTAL NUMBER OF STREAMS = 2
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                             CONFIDENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                             CONFIDENCE VALUES USED FOR INDEPENDEN
TIME OF CONCENTRATION(MIN.) = 15.63
RAINFALL INTENSITY(INCH/HR) = 3.92
TOTAL STREAM AREA(ACRES) = 3.51
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << < <
 ELEVATION DATA: UPSTREAM(FEET) = 884.00 DOWNSTREAM(FEET) = 883.00 FLOW LENGTH(FEET) = 80.00 MANNING'S N = 0.013
 FLOW LENGTH(FEET) = 80.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 39.0 INCH PIPE IS 28.9 INCHES
                                                                                             PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                          6.40
 DEPTH OF FLOW IN 39.0 INCH PIPE IS 28.9 INCHES
PIPE-FLOW VELOCITY(FFET/SEC.) = 12.27
ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 81.02
PIPE TRAVEL TIME(MIN.) = 0.11 TC(MIN.) = 12.36
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 229.00 = 3779.00 FEET.
                                                                                           *****
                                                                                             FLOW PROCESS FROM NODE 235.00 TO NODE 236.00 IS CODE = 21
                                                                                             >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                             .....
                                                                                             *USER SPECIFIED(SUBAREA):
                                                                                             RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 65.00
 FLOW PROCESS FROM NODE 229.00 TO NODE 229.00 IS CODE = 10
                                                                                             UPSTREAM ELEVATION(FEET) = 913.00
DOWNSTREAM ELEVATION(FEET) = 913.00
DI DIVATION DIEFERENCE (FEET) = 0.65
  >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
______
                                                                                             ELEVATION DIFFERENCE(FEET) =
                                                                                                                                  0.65
                                                                                             SUBARRA OVERLAND TIME OF FLOW(MIN.) = 9.288
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.478
 FLOW PROCESS FROM NODE 231.00 TO NODE 232.00 IS CODE = 21
                                                                                             SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) =
                                                                                                                          1.03
                                                                                                                        0.41 TOTAL RUNOFF(CFS) =
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                         *******************
  *USER SPECIFIED(SUBAREA):
 RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600
                                                                                             FLOW PROCESS FROM NODE 236.00 TO NODE 237.00 IS CODE = 61
 S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
                                                                                             >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                             65.00
 UPSTREAM ELEVATION(FEET) = 908.65

DOWNSTREAM ELEVATION(FEET) = 908.00

ELEVATION DIFFERENCE(FEET) = 0.65
                                                                                             >>>>(STANDARD CURB SECTION USED) <---
                                                                                           UPSTREAM ELEVATION(FEET) = 913.00 DOWNSTREAM ELEVATION(FEET) = 898.00
                                      0.65
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                             STREET LENGTH(FEET) = 1269.00 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 14.00
                                              9.288
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.478
 TOTAL AREA(ACRES) = 0.54 TOTAL RUNOFF(CFS) =
                                                                1.36
                                                                                             DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 7.00
                                                                                             INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
 FLOW PROCESS FROM NODE 232.00 TO NODE 233.00 IS CODE = 61
                                                                                             SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                             STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
  >>>>(STANDARD CURB SECTION USED) <---
                                                                                             Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
 .....
                                                                                             Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
 UPSTREAM ELEVATION(FEET) = 908.00 DOWNSTREAM ELEVATION(FEET) = 898.00
 STREET LENGTH(FEET) = 838.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 14.00
                                                                                                **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                               STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                               STREET FLOW DEPTH(FEET) = 0.35
HALFSTREET FLOOD WIDTH(FEET) = 11.24
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.60
PRODUCT OF DEPTHAVELOCITY(FT*FT/SEC.) =
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 7.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
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STREET FLOW TRAVEL TIME(MIN.) = 8.13 Tc(MIN.) = 17.42 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.652
                                                                                   ** PEAK FLOW RATE TABLE **
 STREET FLOW TRAVEL TIME(MIN.) =
                                                                                          RUNOFF
                                                                                   STREAM
                                                                                                                 INTENSITY
  *USER SPECIFIED(SUBAREA):
                                                                                   NUMBER
                                                                                             (CFS)
                                                                                                       (MIN.)
                                                                                                                (INCH/HOUR)
 RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600
                                                                                              93.79
                                                                                                        12.36
                                                                                                                     4.555
 S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.460
                                                                                                                     3.571
                                                                                      2
                                                                                             82.15
                                                                                                       18.03
 SUBAREA AREA(ACRES) = 7.15
                                   SUBAREA RUNOFF(CFS) = 12.01
PEAK FLOW RATE(CFS) =
                                                                                   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                            7.6
                                                                 12 70
                                                                                   PEAK FLOW RATE(CFS) =
TOTAL AREA(ACRES) =
 TOTAL AREA(ACRES) =
                                                                                                             93.79 Tc(MIN.) =
                                                                                                                                  12.36
                                                                                                            55.8
 END OF SUBAREA STREET FLOW HYDRAULICS:
 END OF SUBAREA STREET FLOW HYDROLLIGS.

DEPTH(FEET) = 0.41 HALFSTREET FLOOD WIDTH(FEET) = 14.00

FLOW VELOCITY(FEET/SEC.) = 2.99 DEPTH*VELOCITY(FT*FT/SEC.) = 1.23

LONGEST FLOWPATH FROM NODE 235.00 TO NODE 237.00 = 1334.00 FEET.
                                                                                 .....
                                                                                  FLOW PROCESS FROM NODE 229.00 TO NODE 229.00 IS CODE = 12
                                                                                   >>>>CLEAR MEMORY BANK # 1 <<<<<
    ******
                                                                                 ______
 FLOW PROCESS FROM NODE 237.00 TO NODE 234.00 IS CODE = 31
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                   FLOW PROCESS FROM NODE 229.00 TO NODE 240.00 IS CODE = 31
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <---
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
 ELEVATION DATA: UPSTREAM(FEET) = 883.00 DOWNSTREAM(FEET) = 881.00
                                                                                   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
                               MANNING'S N = 0.013
 FLOW LENGTH(FEET) = 111.00 MANNING'S N = 0.0 DEPTH OF FLOW IN 18.0 INCH PIPE IS 13.7 INCHES
                                                                                 ELEVATION DATA: UPSTREAM(FEET) = 885.00 DOWNSTREAM(FEET) = 880.00
 PIPE-FLOW VELOCITY(FEET/SEC.) = 8.83
                                                                                   FLOW LENGTH(FEET) = 51.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 21.9 INCHES
 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 12.70
PIPE TRAVEL TIME(MIN.) = (
                                                                                   PIPE-FLOW VELOCITY(FEET/SEC.) = 27.10
ESTIMATED PIPE DIAMETER(INCH) = 27.00
 NUMBER OF PIPES = 1
                                                                                   PIPE-FLOW(CFS) = 93.79

PIPE TRAVEL TIME(MIN.) = 0.03 Tc(MIN.) = 12.40

LONGEST FLOWPATH FROM NODE 200.00 TO NODE 240.00 = 3830.00 FEET.
FLOW PROCESS FROM NODE 234.00 TO NODE 234.00 IS CODE = 1
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                   FLOW PROCESS FROM NODE 240.00 TO NODE 243.00 IS CODE = 31
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                                                   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <---
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 17.63
RAINFALL INTENSITY(INCH/HR) = 3.62
                                                                                   ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                                     880.00 DOWNSTREAM(FEET) = 878.00
                                                                                   FLOW LENGTH(FEET) = 170.00 MANNING'S N = 0.0 DEPTH OF FLOW IN 42.0 INCH PIPE IS 30.6 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 12.48
                                                                                                                 MANNING'S N = 0.013
 TOTAL STREAM AREA(ACRES) =
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                         12.70
                                                                                   ESTIMATED PIPE DIAMETER(INCH) = 42.00
                                                                                                                           NUMBER OF PIPES = 1
  ** CONFLUENCE DATA **
                                                                                   PIPE-FLOW(CFS) = 93.79
PIPE TRAVEL TIME(MIN.) = 0
                                                                                                            0.23 Tc(MIN.) = 12.62
 STREAM
           RUNOFF
                         TC
                                 INTENSITY
                                                AREA
                       (MIN.)
                               (INCH/HOUR)
                                                                                   LONGEST FLOWPATH FROM NODE 200.00 TO NODE 243.00 = 4000.00 FEET.
 NUMBER
             (CFS)
                                               (ACRE)
                                3.917
              6.40
                      15.63
                                                  3.51
                                                                                 ******************
             12.70
                     17.63
                                                                                  FLOW PROCESS FROM NODE 243.00 TO NODE 243.00 IS CODE = 1
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                 ______
 ** PEAK FLOW RATE TABLE **
                                                                                   TOTAL NUMBER OF STREAMS = 2
                                                                                   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
            RUNOFF
                                INTENSITY
 STREAM
                        Tc
                      (MIN.)
                                                                                   TIME OF CONCENTRATION(MIN.) = 12.62
RAINFALL INTENSITY(INCH/HR) = 4.49
TOTAL STREAM AREA(ACRES) = 55.85
             (CFS)
                             (INCH/HOUR)
                                3.917
             17.66
                      15.63
             18.62
                                                                                   PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                          93 79
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 18.62 Tc(MIN.) = 17.63
TOTAL AREA(ACRES) = 11.1
                                                                                 *******************
                                                                                   FLOW PROCESS FROM NODE 241.00 TO NODE 242.00 IS CODE = 21
 LONGEST FLOWPATH FROM NODE 235.00 TO NODE 234.00 = 1445.00 FEET.
                                                                                   >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                 ______
 FLOW PROCESS FROM NODE 234.00 TO NODE 229.00 IS CODE = 31
                                                                                   *USER SPECIFIED(SUBAREA):
                                                                                   URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                   S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
                                                                                   UPSTREAM ELEVATION(FEET) = 885.00
DOWNSTREAM ELEVATION(FEET) = 880.00
 ._____
 ELEVATION DATA: UPSTREAM(FEET) = 881.00 DOWNSTREAM(FEET) = 880.00 FLOW LENGTH(FEET) = 160.00 MANNING'S N = 0.013
 ELEVATION DATA: OPPIREAM(FEET) = 881.00 DOWNST
FLOW LENGTH(FEET) = 160.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 27.0 INCH PIPE IS 17.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.64
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER
                                                                                   ELEVATION DIFFERENCE(FEET)
                                                                                                                    5.00
                                                                                   SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.865
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.369
                                                                                   SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) =
                                                                                                           0.34
0.13 TOTAL RUNOFF(CFS) =
                                          NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 18.62
PIPE TRAVEL TIME(MIN.) = 0
                                                                                                                                           0 34
                                  Tc(MIN.) = 18.03
                           0.40
                                               229.00 = 1605.00 FEET.
 LONGEST FLOWPATH FROM NODE 235.00 TO NODE
                                                                                   FLOW PROCESS FROM NODE 242.00 TO NODE 243.00 IS CODE = 31
*****************
 FLOW PROCESS FROM NODE 229.00 TO NODE 229.00 IS CODE = 11
                                                                                   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
 >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<
                                                                                 ______
                                                                                   ELEVATION DATA: UPSTREAM(FEET) = 880.00 DOWNSTREAM(FEET) = 878.00
                                                                                   FLOW LENGTH (FEET) = 198.00 MANNING'S N = 0.013
                                                                                   ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  ** MAIN STREAM CONFLUENCE DATA **
                                                                                   DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 2.69
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
            RUNOFF
                       Tc
                                INTENSITY
                                              AREA
 STREAM
                      (MIN.)
                               (INCH/HOUR)
                                            (ACRE)
 NUMBER
             (CFS)
                                  3.571
                      18.03
                                              11.07
                               235.00 TO NODE
 LONGEST FLOWPATH FROM NODE
                                                229.00 =
                                                            1605.00 FEET.
                                                                                   PIPE-FLOW(CFS) = 0.34
PIPE TRAVEL TIME(MIN.) = 1
                                                                                                             1.22 Tc(MIN.) =
 ** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM RUNOFF TC INTENSI
                                                                                   LONGEST FLOWPATH FROM NODE 241.00 TO NODE 243.00 =
                                INTENSITY
                                              AREA
 STREAM
                                                                                 ********************
             (CFS)
                      (MIN.)
                               (INCH/HOUR)
4.555
                                             (ACRE)
                                                                                   FLOW PROCESS FROM NODE 242.00 TO NODE 243.00 IS CODE = 81
                      12.36
                                              44.78
             81.02
 LONGEST FLOWPATH FROM NODE
                               200.00 TO NODE
                                                229.00 =
                                                             3779.00 FEET.
                                                                                   >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
```

```
STREET LENGTH (FEET) = 879.00 CURB HEIGHT (INCHES) = 6.0
______
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.520
                                                                                      STREET HALFWIDTH(FEET) = 14.00
  *USER SPECIFIED(SUBAREA):
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                      DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 7.00
 S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                      INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
 SUBAREA AREA(ACRES) = 1.30 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 1.4 TOTAL RUNOFF(CFS) =
                                                                                      SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                              3.26
                                                                                      STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
 TC(MIN.) = 7.09
                                                                                                                                                           0.0150
                                                                                      Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
 FLOW PROCESS FROM NODE 243.00 TO NODE 243.00 IS CODE = 1
                                                                                         *TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                                                   5.04
                                                                                        STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                        STREET FLOW DEPTH(FEET) = 0.28
HALFSTREET FLOOD WIDTH(FEET) = 7.68
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
 -----
                                                                                        AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.56
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.00
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 7.09
RAINFALL INTENSITY(INCH/HR) = 6.52
                                                                                      STREET FLOW TRAVEL TIME(MIN.) = 4.12 Tc(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.338
                                                                                       *USER SPECIFIED(SUBAREA):
 TOTAL STREAM AREA(ACRES) =
                                 1.43
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                      NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
                                           3.26
                                                                                      S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                      AREA-AVERAGE RUNOFF COEFFICIENT = 0.790
SUBAREA AREA(ACRES) = 1.60
SUBAREA TOTAL AREA(ACRES) = 1.8
PEA
 ** CONFLUENCE DATA **
                                                                                                                         SUBAREA RUNOFF(CFS) =
 STREAM
           RUNOFF
                          Tc
                                  INTENSITY
                                                  AREA
             (CFS)
93.79
                        (MIN.) (INCH/HOUR)
                                                                                                                            PEAK FLOW RATE(CFS) =
                                                                                                                                                          8 76
                                 4.494
                       12.62
                                                   55.85
     2
                        7.09
              3.26
                                    6.520
                                                                                      END OF SUBAREA STREET FLOW HYDRAULICS:
                                                    1.43
                                                                                      DEPTH(FEET) = 0.32 HALFSTREET FLOOD WIDTH(FEET) = FLOW VELOCITY(FEET/SEC.) = 4.05 DEPTH*VELOCITY(FT LONGEST FLOWPATH FROM NODE 245.00 TO NODE 247.
                                                                                                                                             9.82
                                                                                                                          DEPTH*VELOCITY(FT*FT/SEC.) =
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                   245.00 TO NODE 247.00 = 949.00 FEET.
                                                                                     **********************
 ** PEAK FLOW RATE TABLE **
                                                                                      FLOW PROCESS FROM NODE 247.00 TO NODE 247.00 IS CODE = 1
 STREAM
            RUNOFF
                       Tc
                                 INTENSITY
              (CFS)
                       (MIN.)
                                (INCH/HOUR)
                                 6.520
                                                                                      >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE <---
              55 94
                        7.09
                                                                                      >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                   4.494
              96.04
                                                                                      TOTAL NUMBER OF STREAMS = 2
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                      CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 7.41
RAINFALL INTENSITY(INCH/HR) = 6.34
 PEAK FLOW RATE(CFS) = 96.04 Tc(MIN.) =
  TOTAL AREA(ACRES) = 57.3
LONGEST FLOWPATH FROM NODE 200.00 TO NODE
 TOTAL AREA(ACRES) =
                                                 243.00 = 4000.00 FEET.
                                                                                      TOTAL STREAM AREA(ACRES) =
                                                                                                                      1.75
*************************
                                                                                      PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                8.76
 FLOW PROCESS FROM NODE 243.00 TO NODE 247.00 IS CODE = 31
                                                                                      ** CONFLUENCE DATA **
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                      STREAM
                                                                                               RUNOFF
                                                                                                                       INTENSITY
                                                                                                            (MIN.) (INCH/HOUR)
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
                                                                                      NUMBER
                                                                                                  (CFS)
                                                                                                                                      (ACRE)
 13.19
 ELEVATION DATA: UPSTREAM(FEET) = 880.00 DOWNSTREAM(FEET) = 878.00 FLOW LENGTH(FEET) = 330.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 48.0 INCH PIPE IS 35.0 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 9.79 ESTIMATED PIPE DIAMETER(INCH) = 48.00 NUMBER OF PIPES = 1
                                                                                          2
                                                                                                   8.76
                                                                                                            7.41
                                                                                                                         6.338
                                                                                                                                         1 75
                                                                                      RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                      CONFLUENCE FORMULA USED FOR 2 STREAMS.
 ** PEAK FLOW RATE TABLE **
                                                                                                 RUNOFF
                                                                                                                      INTENSITY
                                                                                                            (MIN.)
                                                                                                  (CFS)
74.99
                                                                                      NUMBER
                                                                                                                    (INCH/HOUR)
                                                                                                             7.41
                                                                                                                      6.338
*********************
                                                                                                           13.19
                                                                                          2
                                                                                                 102.09
                                                                                                                        4.370
 FLOW PROCESS FROM NODE 247.00 TO NODE 247.00 IS CODE = 1
                                                                                      COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE<>
                                                                                      PEAK FLOW RATE(CFS) = 102.09 Tc(MIN.) = TOTAL AREA(ACRES) = 59.0
                                                                                                                                       13.19
______
 TOTAL NUMBER OF STREAMS = 2
                                                                                      LONGEST FLOWPATH FROM NODE 200.00 TO NODE
                                                                                                                                      247.00 = 4330.00 FEET.
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 13.19
RAINFALL INTENSITY(INCH/HR) = 4.37
                                                                                      FLOW PROCESS FROM NODE 247.00 TO NODE 248.00 IS CODE = 31
                               57.28
 TOTAL STREAM AREA(ACRES) =
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                           96 04
                                                                                      >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                      >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
*************************
                                                                                      ______
                                                                                      ELEVATION DATA: UPSTREAM(FEET) = 878.00 DOWNSTREF
FLOW LENGTH(FEET) = 124.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 45.0 INCH PIPE IS 35.5 INCHES
 FLOW PROCESS FROM NODE 245.00 TO NODE 246.00 IS CODE = 21
                                                                                                                          878.00 DOWNSTREAM(FEET) = 877.00
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                      PIPE-FLOW VELOCITY(FEET/SEC.) = 10.92
-----
                                                                                      ESTIMATED PIPE DIAMETER(INCH) = 45.00 NUMBER OF PI
PIPE-FLOW(CFS) = 102.09
PIPE TRAVEL TIME(MIN.) = 0.19 Tc(MIN.) = 13.37
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 248.00
  *USER SPECIFIED(SUBAREA):
                                                                                                                                 NUMBER OF PIPES = 1
 NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
 S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
                                                                                                                                       248.00 = 4454.00 FEET.
 UPSTREAM ELEVATION(FEET) = 914.00
DOWNSTREAM ELEVATION(FEET) = 912.00
ELEVATION DIFFERENCE(FEET) = 2.00
                                                                                      FLOW PROCESS FROM NODE 248.00 TO NODE 248.00 IS CODE = 1
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                           3.290
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 3.290
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
NOTE: RAINFALL INTENSITY IS BASED ON TC = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 0.97
TOTAL ABREA (ACRES) = 0.15 TOTAL BUNOFF(CFS) =
                                                                                      >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<<
                                                                                      TOTAL NUMBER OF STREAMS = 2
                           0.15 TOTAL RUNOFF(CFS) =
                                                                                      CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TOTAL AREA(ACRES) =
                                                                                      TIME OF CONCENTRATION(MIN.) = 13.37
RAINFALL INTENSITY(INCH/HR) = 4.33
TOTAL STREAM AREA(ACRES) = 59.03
************************
 FLOW PROCESS FROM NODE 246.00 TO NODE 247.00 IS CODE = 61
                                                                                      PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                              102.09
 >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<>>>>>(STANDARD CURB SECTION USED)<
                                                                                    .....
                                                                                      FLOW PROCESS FROM NODE 250.00 TO NODE 251.00 IS CODE = 21
______
 UPSTREAM ELEVATION(FEET) = 912.00 DOWNSTREAM ELEVATION(FEET) = 883.00
```

```
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
------
  *HISER SPECIFIED(SHBAREA):
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
                                                                                                     FLOW PROCESS FROM NODE 255.00 TO NODE 256.00 IS CODE = 21
 UPSTREAM ELEVATION(FEET) = 960.00

DOWNSTREAM ELEVATION(FEET) = 950.00

ELEVATION DIFFERENCE(FEET) = 10.00
                                                                                                     >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                     *USER SPECIFIED(SUBAREA):
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
                                                                                                     CHAPARRAL(BROADLEAF) GOOD COVER RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                     INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
 SUBAREA RUNOFF(CFS) =
                                 0.20
                                                                                                     UPSTREAM ELEVATION(FEET) = 960.00
DOWNSTREAM ELEVATION(FEET) = 955.0
                                                                                                                                        955.00
                               0.08 TOTAL RUNOFF(CFS) =
  TOTAL AREA(ACRES) =
                                                                                                    ELEVATION DIFFERENCE(FEET) = 5
SUBAREA OVERLAND TIME OF FLOW(MIN.)
                                                                                                                                            5.00
FLOW PROCESS FROM NODE 251.00 TO NODE 252.00 IS CODE = 53
                                                                                                     100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.083
                                                                                                     SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) =
                                                                                                                                     0.64
                                                                                                                                   0.30 TOTAL RUNOFF(CFS) =
  >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<
 >>>>TRAVELTIME THRU SUBAREA<
               _____
                                                                                                   *********************
 ELEVATION DATA: UPSTREAM(FEET) = 950.00 DOWNSTREAM(FEET) = 885. CHANNEL LENGTH THRU SUBAREA(FEET) = 752.00 CHANNEL SLOPE = 0.0864
                                                                                885.00
                                                                                                    FLOW PROCESS FROM NODE 256.00 TO NODE 257.00 IS CODE = 53
 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
                                                                                                     >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<
 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VEHICLE CHANNEL FLOW THRU SUBAREA(CFS) = 0.20

CHANNEL FLOW THRU SUBAREA(CFS) = 0.20

FLOW VELOCITY(FEET/SEC) = 1.65 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)

TRAVEL TIME(MIN.) = 7.61 TC(MIN.) = 13.88

LONGEST FLOWPATH FROM NODE 250.00 TO NODE 252.00 = 852.00 FEET
                                                                                                     >>>>TRAVELTIME THRU SUBAREA<
                                                                                                                _____
                                                                                                    ELEVATION DATA: UPSTREAM(FEET) = 955.00 DOWNSTREAM(FEET) = 911.0
CHANNEL LENGTH THRU SUBAREA(FEET) = 741.00 CHANNEL SLOPE = 0.0594
                                                                                                    CHANNEL LENGTH THRU SUBAREA [FEET] = 41.00 CHANNEL SLOPE = 0.0594
NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
CHANNEL FLOW THRU SUBAREA(CFS) = 0.64
FLOW VELOCITY(FEET/SEC) = 1.36 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 9.05 Tc(MIN.) = 16.95
LONGEST FLOWPATH FROM NODE 255.00 TO NODE 257.00 = 841.00 FEET
 FLOW PROCESS FROM NODE 251.00 TO NODE 252.00 IS CODE = 81
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.228
  *HISER SPECIFIED(SHBAREA):
                                                                                                     FLOW PROCESS FROM NODE 256.00 TO NODE 257.00 IS CODE = 81
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                                     >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>
 SUBAREA AREA(ACRES) = 8.70 SUBAREA RUNOFF(CFS) = 12.87
TOTAL AREA(ACRES) = 8.8 TOTAL RUNOFF(CFS) = 12.9
                                                                                                     100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.717
                                                                      12.99
                                                                                                     *USER SPECIFIED(SUBAREA):
                                                                                                     DESERT SHRUB GOOD COVER RUNOFF COEFFICIENT = .3500
  TC(MIN.) =
                13.88
                                                                                                     S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
*****************
 FLOW PROCESS FROM NODE 252.00 TO NODE 248.00 IS CODE = 31
                                                                                                     SUBAREA AREA(ACRES) = 13.54 SUBAREA RUNOFF(CFS) = 17.61
TOTAL AREA(ACRES) = 13.8 TOTAL RUNOFF(CFS) = 18.
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                     TC(MIN.) = 16.95
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<>>>>
-----
 ELEVATION DATA: UPSTREAM(FEET) = 885.00 DOWNSTREAM(FEET) = 880.00 FLOW LENGTH(FEET) = 50.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMSTER(INCH) INCREASED TO 18.000 DEPTH OF FLOW IN 18.0 INCH PIPE IS 7.9 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 17.32 ESTIMATED PIPE DIAMSTER(INCH) = 18.00 NUMBER OF PIPES = 1 PIPE-FLOW(CFS) = 12.99 PIPE TRAVEL TIME(MIN.) = 0.05 TC(MIN.) = 13.93 LONGEST FLOWPATH FROM NODE 250.00 TO NODE 248.00 = 902.00 FEE
                                                                                                     FLOW PROCESS FROM NODE 260.00 TO NODE 261.00 IS CODE = 21
                                                                                                     >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                        902.00 FEET.
                                                                                                   *USER SPECIFIED(SUBAREA):
 FLOW PROCESS FROM NODE \phantom{-}248.00 TO NODE \phantom{-}248.00 IS CODE = \phantom{-}1
                                                                                                     DESERT SHRUB GOOD COVER RUNOFF COEFFICIENT = .3500
                                                                                                     S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                                     UPSTREAM ELEVATION(FEET) = 1430.00

DOWNSTREAM ELEVATION(FEET) = 1420.00

ELEVATION DIFFERENCE(FEET) = 10.00
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES << < <
 -----
 TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                                           10.00
                                                                                                     SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                                                     6.267
 COMPLOENCE VALUES SIZE FOR THE CONCENTRATION(MIN.) = 13.93
RAINFALL INTENSITY(INCH/HR) = 4.22
TOTAL STREAM AREA(ACRES) = 8.78
                                                                                                    WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION! 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
                                                                                                    TOTAL AREA(ACRES) = 0.54

TOTAL AREA(ACRES) = 0.22

TOTAL RUNOFF(CFS) =
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                 12.99
                                                                                                                                                                        0.54
                                                                                                   *************************
  ** CONFLUENCE DATA **
           RUNOFF
                              Tc
                                        INTENSITY
                                                          AREA
                                                                                                    FLOW PROCESS FROM NODE 261.00 TO NODE 262.00 IS CODE = 52
 STREAM
                           (MIN.)
                                                         (ACRE)
 NUMBER
                (CFS)
                                     (INCH/HOUR)
              102.09
                          13.37
                                          4.330
                                                           59.03
                                                                                                     >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
      1
               12.99
                          13.93
                                          4.218
                                                             8.78
                                                                                                     >>>>TRAVELTIME THRU SUBAREA
                                                                                                   _____
                                                                                                    ELEVATION DATA: UPSTREAM(FEET) = 1420.00 DOWNSTREAM(FEET) = 890.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 4480.00 CHANNEL SLOPE = 0.1183 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
  ** PEAK FLOW RATE TABLE **
              RUNOFF
                                                                                                     CHANNEL FLOW THRU SUBAREA(CFS) =
 STREAM
                           Tc
                                       INTENSITY
                                                                                                                                               0.54
                                                                                                    CHANNEL FLOW THRO SUBARBA(CFS) = 0.54
FLOW VELOCITY(FEET/SEC) = 4.74 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 15.74 TC(MIN.) = 22.01
LONGEST FLOWPATH FROM NODE 260.00 TO NODE 262.00 = 4580.00 FEET.
                (CFS)
                          (MIN.)
 NUMBER
                                     (INCH/HOUR)
                                      4.330
              114.56
                          13.37
                        13.93
              112.44
                                         4.218
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 TOTAL AREA(ACRES) = 67.8
                                                                                                    FLOW PROCESS FROM NODE 261.00 TO NODE 262.00 IS CODE = 81
 LONGEST FLOWPATH FROM NODE 200.00 TO NODE
                                                                                                     >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                           248.00 =
                                                                         4454.00 FEET.
                                                                                                      100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.140
                                                                                                     *USER SPECIFIED(SUBAREA):
                                                                                                    DESERT SHRUB GOOD COVER RUNOFF COEFFICIENT = .3500
```

```
S.C.S. CURVE NUMBER (AMC II) =
                                          0
                                                                                                         100 YEAR RAINFALL INTENSITY (INCH/HOUR) = 8.168
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                                         NOTE: RAINFALL INTENSITY IS BASED ON To = 5-MINUTE.
  SUBAREA REA(ACRES) = 180.52 SUBAREA RUNOFF(CFS) = 198.41 TOTAL AREA(ACRES) = 180.7 TOTAL RUNOFF(CFS) = 198.6
                                                                                                        SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) =
                                                                                                                                        0.45
                                                                                                                                       0.07 TOTAL RUNOFF(CFS) =
                                                                                                                                                                                0.45
  TC(MIN.) = 22.01
                                                                                                      *****
                                                                                                         FLOW PROCESS FROM NODE 271.00 TO NODE 272.00 IS CODE = 61
                                                                                                         >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                         >>>>(STANDARD CURB SECTION USED) < < < <
                                                                                                        UPSTREAM ELEVATION(FEET) = 1315.50 DOWNSTREAM ELEVATION(FEET) = 1308.00 STREET LENGTH(FEET) = 833.00 CURB HEIGHT(INCHES) = 6.0
                                                                                                         STREET HALFWIDTH(FEET) = 14.00
  FLOW PROCESS FROM NODE 265.00 TO NODE 266.00 IS CODE = 21
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                         DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 7.00
                                                                                                         INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
______
  *USER SPECIFIED(SUBAREA):
  DESERT SHRUB GOOD COVER RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                         SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 S.C.S. CURVE NUMBER (AMC 11) = 0
INITIAL SUBARBA FLOW-LENDTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 988.00
DOWNSTREAM ELEVATION(FEET) = 980.00
ELEVATION DIFFERENCE(FEET) = 8.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.75
                                                                                                         STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
                                                                                                                                                                                           0.0150
                                                                                                         Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
                                                   6.750
                                                                                                           **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                           STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.28
HALFSTREET FLOOD WIDTH(FEET) = 7.68
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.730
  SUBAREA RUNOFF(CFS) =
                                  0.92
                               0.39 TOTAL RUNOFF(CFS) =
  TOTAL AREA(ACRES) =
                                                                        0.92
                                                                                                        HALFSTREET FLOOD WIDTH(FEET) = 7.68
AVERAGE FLOW VELOCITY(FEET/SEC.) = 1.88
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.53
STREET FLOW TRAVEL TIME(MIN.) = 7.40 Tc(MIN.) = 12.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.644
 FLOW PROCESS FROM NODE 266.00 TO NODE 267.00 IS CODE = 52
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
                                                                                                         *USER SPECIFIED(SUBAREA):
  >>>>TRAVELTIME THRU SUBAREA
                                                                                                         NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
                                                                                                         S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.790
  ELEVATION DATA: UPSTREAM(FEET) = 980.00 DOWNSTREAM(FEET) = 900.0
CHANNEL LENGTH THRU SUBAREA(FEET) = 1124.00 CHANNEL SLOPE = 0.0712
                                                                                   900 00
                                                                                                         SUBAREA AREA(ACRES) = 1.16
TOTAL AREA(ACRES) = 1.2
                                                                                                                                                    SUBAREA RUNOFF(CFS) =
 CHANNEL LENGH IRRO SUBAREA(FEET) = 1124.00 CHANNEL SLOPE = 0.0/12 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION CHANNEL FLOW THRU SUBAREA(CFS) = 0.92 FLOW VELOCITY(FEET/SEC) = 4.00 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME(MIN.) = 4.68 TC(MIN.) = 11.43 LONGEST FLOWPATH FROM NODE 265.00 TO NODE 267.00 = 1224.00 FEET.
                                                                                                                                                       PEAK FLOW RATE(CFS) =
                                                                                                        903.00 FEET.
 *****************
                                                                                                       ************************
 FLOW PROCESS FROM NODE 266.00 TO NODE 267.00 IS CODE = 81
                                                                                                         FLOW PROCESS FROM NODE 272.00 TO NODE 277.00 IS CODE = 31
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
______
                                                                                                         >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.791
                                                                                                         >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <---
  *USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4000
                                                                                                         ELEVATION DATA: UPSTREAM(FEET) = 1303.00 DOWNSTREAM(FEET) = 1205.00
  S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3984
                                                                                                         FLOW LENGTH(FEET) = 1000.00 MANNING'S N = 0.013
                                                                                                         ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  SUBAREA AREA(ACRES) = 11.84 SUBAREA RUNOFF(CFS) = 22.69
TOTAL AREA(ACRES) = 12.2 TOTAL RUNOFF(CFS) = 23.3
                                                                                                        DEPTH OF FLOW IN 18.0 INCH PIPE IS 4.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 12.81
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                                         23.35
  TC(MIN.) =
                 11.43
                                                                                                        ESTIMALED FIFE DIAGNAL CALLS,

PIPE-FLOW(CFS) = 4.51

PIPE TRAVEL TIME(MIN.) = 1.30 Tc(MIN.) = 13.30

LONGEST FLOWPATH FROM NODE 270.00 TO NODE 277.00 = 1903.00 FEET.
**********************
  FLOW PROCESS FROM NODE 267.00 TO NODE 268.00 IS CODE = 31
                                                                                                      ******************
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
                                                                                                        FLOW PROCESS FROM NODE 277.00 TO NODE 277.00 IS CODE = 1
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<
 ELEVATION DATA: UPSTREAM(FEET) = 895.00 DOWNSTREAM(FEET) = 890.00 FLOW LENGTH(FEET) = 674.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 27.0 INCH PIPE IS 20.0 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 7.40 ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
                                                                                                         >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                                      ______
                                                                                                         TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                         TIME OF CONCENTRATION(MIN.) = 13.30
RAINFALL INTENSITY(INCH/HR) = 4.35
TOTAL STREAM AREA(ACRES) = 1.23
  PIPE-FLOW(CFS) = 23.35

PIPE TRAVEL TIME(MIN.) = 1.52 Tc(MIN.) = 12.95

LONGEST FLOWPATH FROM NODE 265.00 TO NODE 268.00 = 1898.00 FEET.
                                                                                                         PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                          4 51
                                                                                                        FLOW PROCESS FROM NODE 274.00 TO NODE 275.00 IS CODE = 21
                                                                                                         >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                         *USER SPECIFIED(SUBAREA):
                                                                                                         NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  FLOW PROCESS FROM NODE 270.00 TO NODE 271.00 IS CODE = 21
                                                                                                        S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
                                                                                                                                                        70.00
                                                                                                        UPSTREAM ELEVATION(FEET) = 1343.50
DOWNSTREAM ELEVATION(FEET) = 1343.00
ELEVATION DIFFERENCE(FEET) = 0.50
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
------
  *USER SPECIFIED(SUBAREA):
                                                                                                                                                  0.50
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
                                                                                                        SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.599
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
                                                                                                                    THE MAXIMUM OVERLAND FLOW LENGTH = 54.29 (Reference: Table 3-1B of Hydrology Manual)
 UNITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
UPSTREAM ELEVATION(FEET) = 1315.50

DOWNSTREAM ELEVATION(FEET) = 1315.00

ELEVATION DIFFERENCE(FFET) = 0.50

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.599

WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

THE MAXIMUM OVERLAND FLOW LENGTH = 54.29
                                                                                                                    THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION!
                                                                                                         100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
NOTE: RAINFALL INTENSITY IS BASED ON TC = 5-MINUTE.
                                                                                                         SUBAREA RUNOFF(CFS) = 1.03
TOTAL AREA(ACRES) = 0.16 TOTAL RUNOFF(CFS) =
             (Reference: Table 3-1B of Hydrology Manual)
             THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION!
```

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FLOW PROCESS FROM NODE 275.00 TO NODE 276.00 IS CODE = 61
                                                                                                                                    PIPE-FLOW VELOCITY (FEET/SEC.) =
                                                                                                                                                                                         8.96
                                                                                                                                    ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1
                                                                                                                                    ESTIMALED FIFE DAMPHIS CONTROL OF STREET CONTROL
   >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
   >>>>(STANDARD CURB SECTION USED) << < <
  UPSTREAM ELEVATION(FEET) = 1343.00 DOWNSTREAM ELEVATION(FEET) = 1211.00
  STREET LENGTH(FEET) = 1424.00
STREET HALFWIDTH(FEET) = 14.00
                                                    CURB HEIGHT(INCHES) = 6.0
                                                                                                                                    FLOW PROCESS FROM NODE 278.00 TO NODE 279.00 IS CODE = 31
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 7.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                                                    >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                                    >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                                                                  -----
                                                                                                                                    ELEVATION DATA: UPSTREAM(FEET) = 1204.00 DOWNSTREAM(FEET) = 1170.00 FLOW LENGTH(FEET) = 465.00 MANNING'S N = 0.013
                                                                                                                                    FLOW LENGTH(FEET) = 465.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 24.0 INCH PIPE IS 15.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 20.99
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
  STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
                                                                                                                                    ESTIMATED PIPE DIAMETER(INCH) = 24.00
PIPE-FLOW(CFS) = 46.53
PIPE TRAVEL TIME(MIN.) = 0.37 Tc(M
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
                                                                                                                                                                                                      NUMBER OF PIPES = 1
                                                                                                                                    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.36
HALFSTREET FLOOD WIDTH(FEET) = 11.84
      AVERAGE FLOW VELOCITY(FEET/SEC.) = 7.54
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 2.74

STREET FLOW TRAVEL TIME(MIN.) = 3.15 Tc(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.158

*USER SPECIFIED(SUBAREA):
                                                                                       7.75
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.790
                                                                                                                                    FLOW PROCESS FROM NODE 282.00 TO NODE 283.00 IS CODE = 21
  SUBAREA AREA(ACRES) = 8.86
TOTAL AREA(ACRES) = 9.0
                                                     SUBAREA RUNOFF(CFS) = 43.10
PEAK FLOW RATE(CFS) =
                                                                                                                                    >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                                                 ______
                                                                                                                                    *USER SPECIFIED(SUBAREA):
  END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                                    RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600
  END OF SUBARRA STREE! FLOW HIDRAULICS.

DEPTH(FEET) = 0.43 HALFSTREET FLOOD WIDTH(FEET) = 14.00

FLOW VELOCITY(FEET/SEC.) = 9.10 DEPTH*VELOCITY(FT*FT/SEC.) = 3.91

LONGEST FLOWPATH FROM NODE 274.00 TO NODE 276.00 = 1494.00 FEET.
                                                                                                                                    S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
                                                                                                                                                                                                70.00
                                                                                                                                    UPSTREAM ELEVATION(FEET) = 1310.00
DOWNSTREAM ELEVATION(FEET) = 1309.00
ELEVATION DIFFERENCE(FEET) = 1.00
 ********************
                                                                                                                                                                                         1.00
  FLOW PROCESS FROM NODE 276.00 TO NODE 277.00 IS CODE = 31
                                                                                                                                    SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.558
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.775
                                                                                                                                    TOTAL AREA(ACRES) = 0.09 TOTAL RUNOFF(CFS) =
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << < <
                                                                                                                                                                                                                             0.24
 _____
                                                                                                                                 ******************
  ELEVATION DATA: UPSTREAM(FEET) = 1206.00 DOWNSTREAM(FEET) = 1205.00 FLOW LENGTH(FEET) = 50.00 MANNING'S N = 0.013
  FLOW LENGTH(FEET) = 50.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 30.0 INCH PIPE IS 19.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 12.73
ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER
                                                                                                                                    FLOW PROCESS FROM NODE 283.00 TO NODE 284.00 IS CODE = 61
                                                                                                                                    >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                   NUMBER OF PIPES =
                                                                                                                                     >>>>(STANDARD CURB SECTION USED) <---
  PIPE-FLOW(CFS) = 43.88

PIPE TRAVEL TIME(MIN.) = 0.07 Tc(MIN.) = 7.81

LONGEST FLOWPATH FROM NODE 274.00 TO NODE 277.00 = 1544.00 FEET.
                                                                                                                                    UPSTREAM ELEVATION(FEET) = 1310.00 DOWNSTREAM ELEVATION(FEET) = 1270.00
                                                                                                                                    STREET LENGTH(FEET) = 1263.00
STREET HALFWIDTH(FEET) = 14.00
                                                                                                                                                                                       CURB HEIGHT(INCHES) = 6.0
********************
  FLOW PROCESS FROM NODE 277.00 TO NODE 277.00 IS CODE = 1
                                                                                                                                    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 7.00
                                                                                                                                    INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE<
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                                                                                                    SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
 TOTAL NUMBER OF STREAMS = 2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  TIME OF CONCENTRATION(MIN.) = 7.81
RAINFALL INTENSITY(INCH/HR) = 6.13
TOTAL STREAM AREA(ACRES) = 9.02
                                                                                                                                    Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
                                                                                                                                        **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                                                                                                                                 7.17
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                       STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                43.88
                                                                                                                                       STREET FLOW DEPTH(FEET) = 0.31
HALFSTREET FLOOD WIDTH(FEET) = 9.11
  ** CONFLUENCE DATA **
                                                                                                                                    HALFSTREET FLOOD WIDTH(FEET) = 9.11
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.78
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.17
STREET FLOW TRAVEL TIME(MIN.) = 5.57 Tc(MIN.) = 14.12
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.180
                                                     INTENSITY
  STREAM
                   RUNOFF
                                      Tc
                                                                             AREA
                                     (MIN.) (INCH/HOUR)
  NUMBER
                     (CFS)
                                                                           (ACRE)
                                    13.30 4.345
7.81 6.125
                                  13.30
                       4.51
                     43 88
                                                                                9 02
                                                                                                                                     *USER SPECIFIED(SUBAREA):
                                                                                                                                    RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.460
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
   ** PEAK FLOW RATE TABLE **
                                                                                                                                    SUBAREA AREA(ACRES) = 7.07 SUBAREA RUNOFF(CFS) = 13.60
TOTAL AREA(ACRES) = 7.2 PEAK FLOW RATE(CFS) = 13.77
                   RUNOFF
  STREAM
                                      Tc
                                                   INTENSITY
                                   (MIN.)
  NUMBER
                     (CFS)
                                                 (INCH/HOUR)
                                                                                                                                    END OF SUBAREA STREET FLOW HYDRAULICS:
                      46.53
                                     7.81
                                                      6.125
                                                                                                                                    DEPTH(FEET) = 0.37 HALFSTREET FLOOD WIDTH(FEET) = 12.00 FLOW VELOCITY(FEET/SEC.) = 4.42 DEPTH*VELOCITY(FT*FT/SEC.) = 1.62 LONGEST FLOWPATH FROM NODE 282.00 TO NODE 284.00 = 1333.00 FEET.
                     35.64
                                  13.30
                                                      4.345
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) = 46.53 Tc(MIN.) = TOTAL AREA(ACRES) = 10.2
                                                                               7.81
  LONGEST FLOWPATH FROM NODE 270.00 TO NODE 277.00 = 1903.00 FEET.
                                                                                                                                    FLOW PROCESS FROM NODE 284.00 TO NODE 285.00 IS CODE = 31
*****
                                                                                                                                     >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
  FLOW PROCESS FROM NODE 277.00 TO NODE 278.00 IS CODE = 31
                                                                                                                                    >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << < <
                                                                                                                                    ELEVATION DATA: UPSTREAM(FEET) = 1270.00 DOWNSTREAM(FEET) = 1040.00 FLOW LENGTH(FEET) = 1141.00 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
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
  ELEVATION DATA: UPSTREAM(FEET) = 1205.00 DOWNSTREAM(FEET) = 1204.00
                                                                                                                                    PIPE-FLOW VELOCITY (FET'SEC.) = 22.73
ESTIMATED PIPE DIAMETER (INCH) = 18.00 NUMBER OF PIPES = 1
  FLOW LENGTH(FEET) = 122.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 33.0 INCH PIPE IS 27.0 INCHES
```

```
PIPE-FLOW(CFS) = 13.77
PIPE TRAVEL TIME(MIN.) = 0.84 Tc(MIN.) = 14.96
LONGEST FLOWPATH FROM NODE 282.00 TO NODE 285.00 =
                                                                                             >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                            2474.00 FEET.
                                                                                             *HISER SPECIFIED(SHBAREA):
                                                                                             URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
*******************
                                                                                             S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
 FLOW PROCESS FROM NODE 284.00 TO NODE 285.00 IS CODE = 81
                                                                                             UPSTREAM ELEVATION(FEET) = 1230.00

DOWNSTREAM ELEVATION(FEET) = 1220.00

ELEVATION DIFFERENCE(FEET) = 10.00
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>
                                                                                             SUBAREA OVERLAND TIME OF FLOW(MIN.) =
______
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.028
                                                                                                                                          6.267
                                                                                             WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
                                                                                              100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
 S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                             SUBAREA RUNOFF(CFS) =
                                                                                                                           0.57
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3668
                                                                                                                         0.23 TOTAL RUNOFF(CFS) =
                                                                                             TOTAL AREA(ACRES) =
 SUBAREA AREA(ACRES) = 39.72 SUBAREA RUNOFF(CFS) = 56.00
TOTAL AREA(ACRES) = 46.9 TOTAL RUNOFF(CFS) = 69.2
                                                                                            FLOW PROCESS FROM NODE 291.00 TO NODE 292.00 IS CODE = 31
               14.96
 TC(MIN.) =
                                                                                             >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
                                                                                             >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) < < < <
                                                                                             -----
                                                                                             ELEVATION DATA: UPSTREAM(FEET) = 1230.00 DOWNSTREAM(FEET) = 1130.00 FLOW LENGTH(FEET) = 725.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000 DEPTH OF FLOW IN 18.0 INCH PIPE IS 1.5 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 7.81 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
 FLOW PROCESS FROM NODE 294.00 TO NODE 295.00 IS CODE = 21
                                                                                             PIPE-FLOW(CFS) = 0.57
PIPE TRAVEL TIME(MIN.) = 1.55 Tc(MIN.) = 7.81
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 292.00 =
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
------
  *USER SPECIFIED(SUBAREA):
 RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600 S.C.S. CURVE NUMBER (AMC II) = 0
  UNITIAL SUBAREA FLOW-LENGTH(FEET) =
                                                                                             FLOW PROCESS FROM NODE 291.00 TO NODE 292.00 IS CODE = 81
 UPSTREAM ELEVATION(FEET) = 1263.00
DOWNSTREAM ELEVATION(FEET) = 1262.00
ELEVATION DIFFERENCE(FEET) = 1.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                              >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                           ______
                                                                                              100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.124
                                               8.558
                                                                                             *USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.775
 SUBAREA RUNOFF(CFS) = 0.24
TOTAL AREA(ACRES) = 0.09 TOTAL RUNOFF(CFS) =
                                                                                             S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
*****
                                                                                                                        4.66 SUBAREA RUNOFF(CFS) =
4.9 TOTAL RUNOFF(CFS) =
                                                                                              SUBAREA AREA(ACRES) =
 FLOW PROCESS FROM NODE 295.00 TO NODE 296.00 IS CODE = 61
                                                                                             TOTAL AREA(ACRES) =
                                                                                                                                                              10.48
                                                                                             TC(MIN.) = 7.81
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
  >>>>(STANDARD CURB SECTION USED) << <<
 UPSTREAM ELEVATION(FEET) = 1262.00 DOWNSTREAM ELEVATION(FEET) = 1076.00
                                                                                             FLOW PROCESS FROM NODE 292.00 TO NODE 296.00 IS CODE = 31
  STREET LENGTH(FEET) = 1629.00
                                     CURB HEIGHT(INCHES) = 6.0
                                                                                             >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
 STREET HALFWIDTH(FEET) = 14.00
                                                                                           >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 7.00
                                                                                             ELEVATION DATA: UPSTREAM(FEET) = 1130.00 DOWNSTREAM(FEET) = 1075.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                             FLOW LENGTH(FEET) = 483.00 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.) = 17.14 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
                                                                                                                                           NUMBER OF PIPES = 1
                                                                                             PIPE-FLOW(CFS) =
                                                                                             PIPE-FLOW(CFS) = 10.48
PIPE TRAVEL TIME(MIN.) = 0.47 Tc(MIN.) =
LONGEST FLOWPATH FROM NODE 290.00 TO NODE
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
                                                                                                                            290.00 TO NODE 296.00 = 1308.00 FEET.
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW: STREET FLOW DEPTH(FEET) = 0.25
                                                                                             FLOW PROCESS FROM NODE 296.00 TO NODE 296.00 IS CODE =
 SIREDI FLOW DEFIRI(FEET) = 0.25

HALFSTREET FLOOD WIDTH(FEET) = 6.36

AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.22

PRODUCT OF DEPTHEVELOCITY(FT*FT/SEC.) = 1.58

STREET FLOW TRAVEL TIME(MIN.) = 4.37 TC(MIN.) = 12.92

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.427
                                                                                             >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
                                                                                            TOTAL NUMBER OF STREAMS = 3
                                                                                             CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 *USER SPECIFIED(SUBAREA): RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600
                                                                                             TIME OF CONCENTRATION(MIN.) = 8.28
RAINFALL INTENSITY(INCH/HR) = 5.90
 S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.460
                                                                                             TOTAL STREAM AREA(ACRES) = 4.89
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                          10.48
 SUBAREA AREA(ACRES) = 6.09
TOTAL AREA(ACRES) = 6.2
                                      SUBAREA RUNOFF(CFS) = 12.40
PEAK FLOW RATE(CFS) =
                                                                          12 58
                                                                                            *************
                                                                                             FLOW PROCESS FROM NODE 297.00 TO NODE 298.00 IS CODE = 21
 END OF SUBAREA STREET FLOW HYDRAULICS: DEPTH(FEET) = 0.30 HALFSTREET FLOOD WIDTH(FEET) = 8.78 FLOW VELOCITY(FEET/SEC.) = 7.08 DEPTH*VELOCITY(FT*FT/SEC.) = 2.14 LONGEST FLOWPATH FROM NODE 294.00 TO NODE 296.00 = 1699.00 FEI
                                                                                             >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                            ------
                                 294.00 TO NODE 296.00 = 1699.00 FEET.
                                                                                              *USER SPECIFIED(SUBAREA):
                                                                                             NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
                                                                                             S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
 FLOW PROCESS FROM NODE \, 296.00 TO NODE \, 296.00 IS CODE = \, 1
                                                                                             UPSTREAM ELEVATION(FEET) = 1150.00
DOWNSTREAM ELEVATION(FEET) = 1140.00
ELEVATION DIFFERENCE(FEET) = 10.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
                                                                                                                                 10.00
 TOTAL NUMBER OF STREAMS = 3
                                                                                                                                          6.267
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                             WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION! 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
 TIME OF CONCENTRATION(MIN.) = 12.92
RAINFALL INTENSITY(INCH/HR) = 4.43
TOTAL STREAM AREA(ACRES) = 6.18
                                                                                             SUBAREA RUNOFF(CFS) =
                                                                                                                           1.48
                                                                                             TOTAL AREA(ACRES) =
                                                                                                                         0.60 TOTAL RUNOFF(CFS) =
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                              12.58
                                                                                            *************************
.....
                                                                                             FLOW PROCESS FROM NODE 298.00 TO NODE 299.00 IS CODE = 31
 FLOW PROCESS FROM NODE 290.00 TO NODE 291.00 IS CODE = 21
                                                                                             >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
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S.C.S. CURVE NUMBER (AMC II) =
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << < <
                                                                                                                 0
_____
                                                                                 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
                                                                                 UPSTREAM ELEVATION(FEET) = 1240.00
DOWNSTREAM ELEVATION(FEET) = 1230.00
ELEVATION DIFFERENCE(FEET) = 10.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
 ELEVATION DATA: UPSTREAM(FEET) = 1140.00 DOWNSTREAM(FEET) = 1080.00
 FLOW LENGTH(FEET) = 495.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.5 INCHES
                                                                                                                        6.267
 PIPE-FLOW VELOCITY(FEET/SEC.) = 9.93
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                                                  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN To CALCULATION!
                                                                                  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
 PIPE-FLOW(CFS) = 1.48
PIPE TRAVEL TIME(MIN.) = 0
                                                                                                         0.54
0.22 TOTAL RUNOFF(CFS) =
                                                                                 SUBAREA RUNOFF(CFS) =
 PIPE TRAVEL TIME(MIN.) = 0.83 Tc(MIN.) = 7.10
LONGEST FLOWPATH FROM NODE 297.00 TO NODE 299.00 =
                                                                                 TOTAL AREA(ACRES) =
                                                          595.00 FEET.
                                                                                ******************
                                                                                 FLOW PROCESS FROM NODE 301.00 TO NODE 302.00 IS CODE = 31
 FLOW PROCESS FROM NODE 298.00 TO NODE 299.00 IS CODE = 81
                                                                                 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
______
                                                                                ______
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.516
                                                                                 ELEVATION DATA: UPSTREAM(FEET) = 1230.00 DOWNSTREAM(FEET) = 1050.00
                                                                                 FLOW LENGTH(FEET) = 1075.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  *USER SPECIFIED(SUBAREA):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
                                                                                 DEPTH OF FLOW IN 18.0 INCH PIPE IS 1.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.24
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
 S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
 ARBA-AVERAGE KUNUFF CUEFFLIEDI - 5.5505
SUBAREA AREA (ACRES) = 3.42 SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 4.0 TOTAL RUNOFF(CFS) =
                                                           9 17
                                                                                 PIPE-FLOW(CFS) = 0.54
PIPE TRAVEL TIME(MIN.) = 2.17 Tc(MIN.) =
 TC(MIN.) = 7.10
                                                                                 LONGEST FLOWPATH FROM NODE 300.00 TO NODE 302.00 = 1175.00 FEET.
**********************
 FLOW PROCESS FROM NODE 299.00 TO NODE 296.00 IS CODE = 1
                                                                                FLOW PROCESS FROM NODE 301.00 TO NODE 302.00 IS CODE = 81
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
______
                                                                                ______
                                                                                  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.827
 TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
                                                                                  *USER SPECIFIED(SUBAREA):
 COMPLUENCE VALUES USED FOR INSTITUTE.

TIME OF CONCENTRATION(MIN.) = 7.10

RAINFALL INTENSITY(INCH/HR) = 6.52

TOTAL STREAM AREA(ACRES) = 4.02
                                                                                 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                 S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                 SUBAREA AREA(ACRES) = 8.81 SUBAREA RUNOFF(CFS) = 17.97
TOTAL AREA(ACRES) = 9.0 TOTAL RUNOFF(CFS) = 18.
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                         9.17
 ** CONFLUENCE DATA **
                                                                                 TC(MIN.) = 8.44
 STREAM
           RUNOFF
                        Tc
                                INTENSITY
                                               AREA
                       (MIN.)
 NUMBER
             (CFS)
                              (INCH/HOUR)
                                              (ACRE)
                                4.427
                                               6.18
                                                                                 FLOW PROCESS FROM NODE 302.00 TO NODE 303.00 IS CODE = 31
             12.58
                     12.92
     1
             10.48
                     8.28
                                  5.898
                                                 4.89
                                                                                  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
     3
              9.17
                       7.10
                                  6.516
                                                                                 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                -----
                                                                                 ELEVATION DATA: UPSTREAM(FEET) = 1050.00 DOWNSTREAM(FEET) = 1049.00
 CONFLUENCE FORMULA USED FOR 3 STREAMS.
                                                                                 DEPTH OF FLOW IN 21.0 INCH PIPE IS 14.8 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 10.18 ESTIMATED PIPE DIAMETER (INCH) = 21.00 NUMBER
 ** PEAK FLOW RATE TABLE **
 STREAM
                       Tc
                               INTENSITY
           RUNOFF
 NUMBER
             (CES)
                     (MIN.)
                              (INCH/HOUR)
                                                                                                                         NUMBER OF PIPES = 1
                              6.516
                                                                                 PIPE-FLOW(CFS) = 18.42
PIPE TRAVEL TIME(MIN.) = 0.08 Tc(MIN.) = 8.52
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 303.00 = 1225.00 FEET.
     1
             25.06
                       7.10
             26.85
                                 5.898
                    12.92
     3
             26.68
                                 4.427
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 TOTAL AREA(ACRES) = 26.85 TO(MIN.) = 15.1
                                                                                 FLOW PROCESS FROM NODE 303.00 TO NODE 303.00 IS CODE = 1
 LONGEST FLOWPATH FROM NODE 294.00 TO NODE 296.00 = 1699.00 FEET.
                                                                                 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<-
                                                                                  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
  *****************
                                                                                ______
 FLOW PROCESS FROM NODE 296.00 TO NODE 303.00 IS CODE = 31
                                                                                 TOTAL NUMBER OF STREAMS = 2
                                                                                 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 8.52
RAINFALL INTENSITY(INCH/HR) = 5.79
TOTAL STREAM AREA(ACRES) = 9.03
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <---
______
 ELEVATION DATA: UPSTREAM(FEET) = 1075.00 DOWNSTREAM(FEET) = 1046.00
                                                                                  PEAK FLOW RATE(CFS) AT CONFLUENCE =
 FLOW LENGTH(FEET) = 722.00 MANNI
DEPTH OF FLOW IN 21.0 INCH PIPE IS
                              MANNTNG'S N = 0.013
                                    15.1 INCHES
                                                                                 ** CONFLUENCE DATA **
 PIPE-FLOW VELOCITY(FEET/SEC.) = 14.49
ESTIMATED PIPE DIAMETER(INCH) = 21.00
                                                                                            RUNOFF
                                                                                 STREAM
                                                                                                        TC
                                                                                                                INTENSITY
                                                                                                                               AREA
                                          NUMBER OF PIPES = 1
                                                                                 NUMBER
                                                                                             (CFS)
                                                                                                       (MIN.) (INCH/HOUR)
                                                                                                                              (ACRE)
 PTPE-FLOW(CFS) =
 PIPE-FLOW(CFS) = 26.85
PIPE TRAVEL TIME(MIN.) = 0.83 Tc(MIN.) =
                                                                                             26.85
                                                                                                       9.11
                                                                                                                  5.546
                                                                                                                                15.09
                                                 9 11
                                                                                             18.42
                                                                                                      8.52
                                                                                                                  5.791
                                                                                                                                 9.03
 LONGEST FLOWPATH FROM NODE 294.00 TO NODE 303.00 = 2421.00 FEET.
                                                                                 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR \phantom{-}2\phantom{+} STREAMS.
 FLOW PROCESS FROM NODE 303.00 TO NODE 303.00 IS CODE = 1
                                                                                  ** PEAK FLOW RATE TABLE **
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                            RUNOFF
                                                                                  STREAM
                                                                                                       Tc
                                                                                                                INTENSITY
                                                                                                      (MIN.)
 .______
                                                                                 NUMBER
                                                                                             (CFS)
                                                                                                              (INCH/HOUR)
 TOTAL NUMBER OF STREAMS = 2
                                                                                                      8.52
 CONFIGURACE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                             44.48
                                                                                                      9.11
                                                                                                                 5.546
 CONFLUENCE VALUES USED FOR THE TIME OF CONCENTRATION (MIN.) = 9.11 RAINFALL INTENSITY(INCH/HR) = 5.55 TOTAL STREAM AREA(ACRES) = 15.09
                                                                                 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                 TOTAL AREA(ACRES) = 24.1
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                 LONGEST FLOWPATH FROM NODE 294.00 TO NODE
                                                                                                                               303.00 =
                                                                                                                                           2421.00 FEET.
*****
 FLOW PROCESS FROM NODE 300.00 TO NODE 301.00 IS CODE = 21
                                                                                *****************
                                                                                 FLOW PROCESS FROM NODE 303.00 TO NODE 304.00 IS CODE = 31
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
               .-----
  *USER SPECIFIED(SUBAREA):
                                                                                  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                               ______
```

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ELEVATION DATA: UPSTREAM(FEET) = 1049.00 DOWNSTREAM(FEET) = 1043.00 FLOW LENGTH(FEET) = 130.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 24.0 INCH PIPE IS 18.5 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 17.14

ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1

PIPE-FLOW(GFS) = 44.40
                                                                                                        LONGEST FLOWPATH FROM NODE 305.00 TO NODE
                                                                                                                                                                   304.00 =
                                                                                                                                                                                     900.00 FEET.
                                                                                                      *****
                                                                                                         FLOW PROCESS FROM NODE 304.00 TO NODE 304.00 IS CODE = 1
  PIPE-FLOW(CFS) = 44.48
PIPE TRAVEL TIME(MIN.) = 0
                                                                                                         >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<-<
  PIPE TRAVEL TIME(MIN.) = 0.13 Tc(MIN.) = 9.24
LONGEST FLOWPATH FROM NODE 294.00 TO NODE 304.00 = 2551.00 FEET.
                                           Tc(MIN.) =
                                                                                                         >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                                       TOTAL NUMBER OF STREAMS = 2
                                                                                                         CONFIDENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                         TIME OF CONCENTRATION(MIN.) = 13.44
RAINFALL INTENSITY(INCH/HR) = 4.32
TOTAL STREAM AREA(ACRES) = 3.53
  FLOW PROCESS FROM NODE 304.00 TO NODE 304.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
                                                                                                         PEAK FLOW RATE(CFS) AT CONFLUENCE =
-----
  TOTAL NUMBER OF STREAMS = 2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                         ** CONFLUENCE DATA **
  TIME OF CONCENTRATION(MIN.) = 9.24
RAINFALL INTENSITY(INCH/HR) = 5.50
                                                                                                                      RUNOFF
                                                                                                         STREAM
                                                                                                                                       Tc
                                                                                                                                                 INTENSITY
                                                                                                                                                                    AREA
                                                                                                         NUMBER
                                                                                                                        (CFS)
                                                                                                                                    (MIN.) (INCH/HOUR)
                                                                                                                                                                  (ACRE)
                                                                                                                                                5.496
  TOTAL STREAM AREA(ACRES) =
                                      24.12
                                                                                                                        44.48
                                                                                                                                    9.24
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                   44.48
                                                                                                                         7.04
                                                                                                                                  13.44
                                                                                                                                                   4.317
                                                                                                         RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  FLOW PROCESS FROM NODE 305.00 TO NODE 306.00 IS CODE = 21
                                                                                                         CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                         ** PEAK FLOW RATE TABLE **
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
   .....
                                                                                                         STREAM
                                                                                                                      RUNOFF
                                                                                                                                     TC
                                                                                                                                                INTENSITY
  *USER SPECIFIED(SUBAREA):
                                                                                                                                   (MIN.) (INCH/HOUR)
                                                                                                         NUMBER
                                                                                                                       (CFS)
  RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600
                                                                                                                        49.33
                                                                                                                                    9.24
  S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
                                                                                                                        41.98 13.44
                                                                                                                                                  4.317
  UPSTREAM ELEVATION(FEET) = 1078.50

DOWNSTREAM ELEVATION(FEET) = 1078.00

ELEVATION DIFFERENCE(FEET) = 0.50
                                                                                                         COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 49.33 Tc(MIN.) = TOTAL AREA(ACRES) = 27.7
                                                                                                                                                                     9.24
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 9.863
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 58.57
(Reference: Table 3-1B of Hydrology Manual)
                                                                                                         LONGEST FLOWPATH FROM NODE 294.00 TO NODE 304.00 = 2551.00 FEET.
                                                                                                         FLOW PROCESS FROM NODE 304.00 TO NODE 308.00 IS CODE = 31
             THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.270
                                                                                                         >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
 SUBAREA RUNOFF(CFS) = 0.22
TOTAL AREA(ACRES) = 0.09 TOTAL RUNOFF(CFS) =
                                                                                                         >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <---
                                                                     0.22
                                                                                                         ELEVATION DATA: UPSTREAM(FEET) = 1044.00 DOWNSTREAM(FEET) = 1040.00
*******************
                                                                                                         FLOW LENGTH(FEET) = 75.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 19.0 INCHES
  FLOW PROCESS FROM NODE 306.00 TO NODE 307.00 IS CODE = 61
                                                                                                         PIPE-FLOW VELOCITY(FEET/SEC.) = 18.47
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                         PIPE-FLOW(CFS) = 49.33
PIPE TRAVEL TIME(MIN.) = 0.07 Tc(MIN.) = 9.31
LONGEST FLOWPATH FROM NODE 294.00 TO NODE 308.00
>>>>(STANDARD CURB SECTION USED)<
  UPSTREAM ELEVATION(FEET) = 1078.00 DOWNSTREAM ELEVATION(FEET) = 1044.00
                                                                                                                                             294.00 TO NODE 308.00 = 2626.00 FEET.
  STREET LENGTH(FEET) = 780.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 14.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 7.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  SPECIFIED NUMBER OF HALESTREETS CARRYING RUNOFF = 2
  STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
                                                                                                         FLOW PROCESS FROM NODE 310.00 TO NODE 311.00 IS CODE = 21
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
                                                                                                         >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                       -----
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                           3.67
                                                                                                         *USER SPECIFIED(SUBAREA):
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                                         NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  STREET FLOW DEPTH/FEET) = 0.25

HALFSTREET FLOW VELOCITY(FEET/SEC.) = 3.74

PRODUCT OF DEPTH/VELOCITY(FT*T/SEC.) = 0.93

STREET FLOW TRAVEL TIME(MIN.) = 3.47 TC(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.338
                                                                                                         S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
                                                                                                         UPSTREAM ELEVATION(FEET) = 1160.00

DOWNSTREAM ELEVATION(FEET) = 1150.00

ELEVATION DIFFERENCE(FEET) = 10.00
                                                                                                                                                 10.00
                                                                                                         SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                                                           6.267
                                                                                                         SUBAREA OVERLAND TIME OF FLOW (MIN.) = 0.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TC CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
SUBAREA RUNOFF(CFS) = 0.86
TOTAL AREA(ACRES) = 0.35 TOTAL RUNOFF(CFS) = 0.86
  *USER SPECIFIED(SUBAREA):
 "GUBAR SPECIFIZED (SUBAREA):
RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.460
SUBAREA AREA (ACRES) = 3.44
SUBAREA RUNOFF (CFS) =
TOTAL AREA (ACRES) = 3.5
PEAK FIGW RATE (CFS)
                                                                            6.87
                                                                                                       3.5
  TOTAL AREA(ACRES) =
                                                PEAK FLOW RATE(CFS) =
                                                                                                         FLOW PROCESS FROM NODE 311.00 TO NODE 312.00 IS CODE = 53
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.29 HALFSTREET FLOOD WIDTH(FEET) = 8.39
FLOW VELOCITY(FEET/SEC.) = 4.28 DEPTH*VELOCITY(FT*FT/SEC.) = 1.26
LONGEST FLOWPATH FROM NODE 305.00 TO NODE 307.00 = 850.00 FEET.
                                                                                                         >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<>>>>>>TRAVELTIME THRU SUBAREA<>>>>
                                                                                                         -----
                                                                                                         ELEVATION DATA: UPSTREAM(FEET) = 1150.00 DOWNSTREAM(FEET) = 1045.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 972.00 CHANNEL SLOPE = 0.1080
                                                                                                                                                                                          1045.00
*****************
                                                                                                         CHANNEL LENGTH THRU SUBAREA(FEET) = 9/2.00 CHANNEL SLOPE = 0.1080 NOTE: CHANNEL FLOW OF 1. (PS WAS ASSUMED IN VELOCITY ESTIMATION CHANNEL FLOW THRU SUBAREA(CFS) = 0.86 FLOW VELOCITY(FEET/SEC) = 1.84 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME(MIN.) = 8.80 TC(MIN.) = 15.07 LONGEST FLOWPATH FROM NODE 310.00 TO NODE 312.00 = 1072.00 FEET.
  FLOW PROCESS FROM NODE 307.00 TO NODE 304.00 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
 ELEVATION DATA: UPSTREAM(FEET) = 1045.00 DOWNSTREAM(FEET) = 1044.00 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 8.9 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 8.14 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1 PIPE-FLOW(CFS) = 7.04 PIPE TRAVEL TIME(MIN.) = 0.10 TC(MIN.) = 13.44
                                                                                                       *******************
                                                                                                         FLOW PROCESS FROM NODE 311.00 TO NODE 312.00 IS CODE = 81
                                                                                                         >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                       100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.009
                                                                                                         *USER SPECIFIED(SUBAREA):
```

```
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT - .5555

S.C.S. CURVE NUMBER (AMC II) = 0

SUBAREA AREA(ACRES) = 20.75

SUBAREA RUNOFF(CFS) = 29.12

TOTAL AREA(ACRES) = 21.1

TOTAL RUNOFF(CFS) = 29.6
                                                                     29.61
 TC(MIN.) =
                15.07
 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) <---
------
  ELEVATION DATA: UPSTREAM(FEET) = 1045.00 DOWNSTREAM(FEET) = 1043.00
 FLOW LENGTH(FEET) = 123.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 17.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 10.68
ESTIMATED PIPE DIAMETER(INCH) = 27.00
                                                 NUMBER OF PIPES =
 PIPE-FLOW(CFS) = 29.61
PIPE TRAVEL TIME(MIN.) = 0.19 TC(MIN.) = 15.26
LONGEST FLOWPATH FROM NODE 310.00 TO NODE 313.00 =
*****
 FLOW PROCESS FROM NODE 312.00 TO NODE 313.00 IS CODE = 81
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.977
  *USER SPECIFIED(SUBAREA):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
 SUBAREA AREA(ACRES) = 4.30 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 25.4 TOTAL RUNOFF(CFS) =
                                                                    5.99
                                                                     35.35
  TC(MIN.) =
                15.26
*****
 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:
 CONFLUENCE VALUES USED FOR ARTHUR OF CONCENTRATION(MIN.) = 15.26 RAINFALL INTENSITY(INCH/HR) = 3.98 TOTAL STREAM AREA(ACRES) = 25.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                35.35
FLOW PROCESS FROM NODE 315.00 TO NODE 316.00 IS CODE = 21
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
         _______
  *USER SPECIFIED(SUBAREA):
 NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8500
 S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
                                               85 00
 INITIAL SUBAREA FLOW-LENGIR(FEET) -
UPSTREAM ELEVATION(FEET) = 1075.00
DOWNSTREAM ELEVATION(FEET) = 1072.00
 ELEVATION DIFFERENCE(FEET) = 3.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                2.725
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
 NOTE: RAINFALL INTENSITY IS BASED ON To = 5-MINUTE.
 NOTE: RAINFALL INIL...
SUBAREA RUNOFF(CFS) =
                                2.01
                              0.29 TOTAL RUNOFF(CFS) =
*************************
 FLOW PROCESS FROM NODE 316.00 TO NODE 317.00 IS CODE = 61
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
 >>>>COMPOTE STREET FLOW TRAVEL TIME THRU SUBARBACK
>>>>(STANDARD CURB SECTION USED) <<<<>

UPSTREAM ELEVATION(FEET) = 1072.00 DOWNSTREAM ELEVATION(FEET) = 1050.00

STREET LENGTH(FEET) = 547.00 CURB HEIGHT(INCHES) = 6.0

STREET HALFWIDTH(FEET) = 15.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 7.50
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
                                                                               0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                      6 80
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) = 0.29
    HALFSTREET FLOOD WIDTH(FEET) =
    AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.12
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.21
 STREET FLOW TRAVEL TIME(MIN.) = 2.21 Tc(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
 NOTE: RAINFALL INTENSITY IS BASED ON To = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
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NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8500
 S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.850
 SUBAREA AREA(ACRES) = 1.38
TOTAL AREA(ACRES) = 1.7
                                     SUBAREA RUNOFF(CFS) =
                                        PEAK FLOW RATE(CFS) =
 END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 0.34 HALFSTREET FLOOD WIDTH(FEET) = 10.63

FLOW VELOCITY(FEET/SEC.) = 4.64 DEPTH*VELOCITY(FT*FT/SEC.) = LONGEST FLOWPATH FROM NODE 315.00 TO NODE 317.00 = 632
                                                                632 00 FEET
******************
 FLOW PROCESS FROM NODE 317.00 TO NODE 313.00 IS CODE = 31
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
______
 ELEVATION DATA: UPSTREAM(FEET) = 1044.00 DOWNSTREAM(FEET) = 1043.00
 DEPTH OF FLOW LENGTH(FEET) = 70.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 14.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.88
 ESTIMATED PIPE DIAMETER(INCH) = 18.00
                                           NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 11.59
PIPE TRAVEL TIME(MIN.) = (
 PIPE TRAVEL TIME(MIN.) = 0.15 Tc(MIN.) = LONGEST FLOWPATH FROM NODE 315.00 TO NODE
                                                    5 08
                                                 313.00 =
                                                                702.00 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:
 CONFLUENCE VALUES USED FOR INSTITUTE OF CONCENTRATION(MIN.) = 5.08
RAINFALL INTENSITY(INCH/HR) = 8.08
                                1.67
 TOTAL STREAM AREA(ACRES) =
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                           11.59
  ** CONFLUENCE DATA **
                          Tc
 STREAM
            RUNOFF
                                  INTENSITY
                                                  AREA
                        (MIN.) (INCH/HOUR)
 NUMBER
              (CFS)
                                 3.977
              35.35
                      15.26
                                                  25.40
                       5.08
             11.59
                                    8.080
                                                   1.67
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 2 STREAMS.
  ** PEAK FLOW RATE TABLE **
 STREAM
            RUNOFF
                        TC
                                 INTENSITY
                       (MIN.)
                                (INCH/HOUR)
             (CFS)
              23.37
                        5.08
                                   8.080
                     15.26
             41.06
                                   3.977
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 41.0
TOTAL AREA(ACRES) = 27.1
                             41.06 Tc(MIN.) =
 LONGEST FLOWPATH FROM NODE
                                310.00 TO NODE
-----
 END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 27.1 TC(MIN.) = 15.26

PEAK FLOW RATE(CFS) = 41.06
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END OF RATIONAL METHOD ANALYSIS