

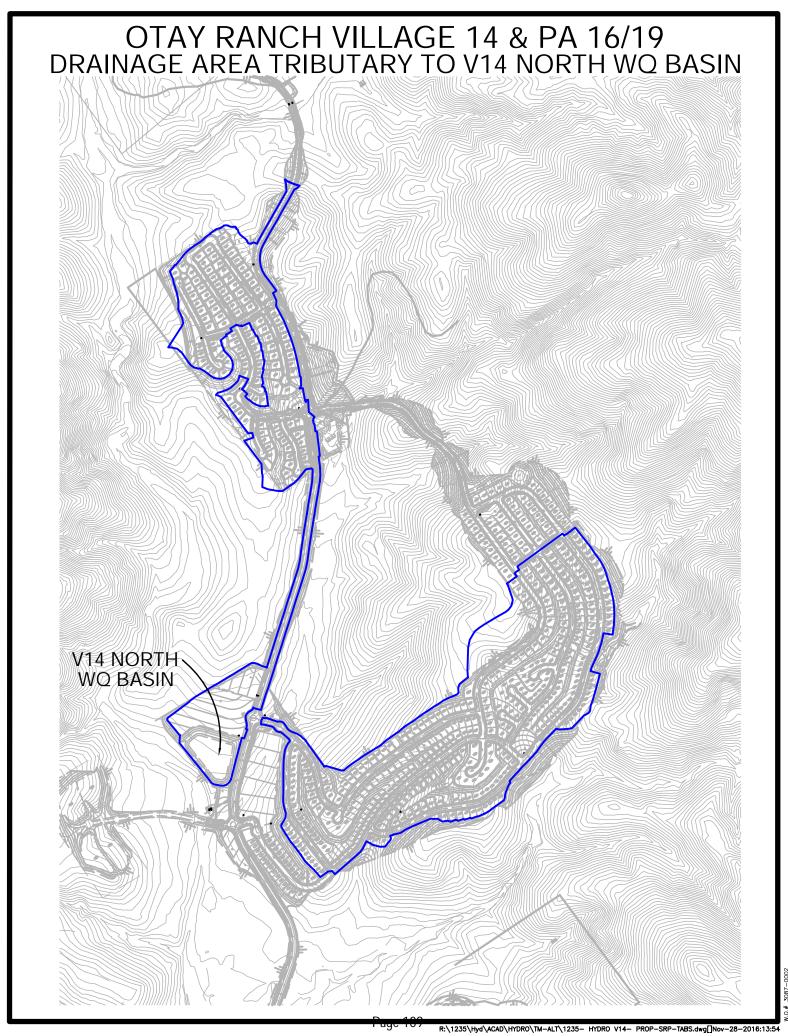
CHAPTER 5

Rational Method Hydrologic Model for Proposed Condition

CHAPTER 5

5.1.1 – Rational Method Hydrologic Analysis (AES 2015)

Drainage Area Tributary to V14 North WQ Basin



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Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT 2003,1985,1981 HYDROLOGY MANUAL
                                                                                                              ELEVATION DATA: UPSTREAM(FEET) = 941.50 DOWNSTREAM(FEET) = 916.00
                                                                                                              ELEVATION DATA: OPSITREAM[FEET] = 941.50 DOWNSIT
FLOW LENGTH(FEET) = 628.00 MANNING'S N = 0.01
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
             (c) Copyright 1982-2015 Advanced Engineering Software (aes)
                                                                                                             ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.2 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 12.27

ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 12.69

PIPE TRAVEL TIME(MIN.) = 0.85 TC(MIN.) = 11.90

LONGEST FLOWPATH FROM NODE 400.00 TO NODE 407.00 = 1407.00 FEET.
                  Ver. 22.0 Release Date: 07/01/2015 License ID 1239
                                      Analysis prepared by:
                          HUnsaker & Associates San Diego, Inc.
                                      9707 Waples Street
San Diego CA 92121
                                                                                                              FLOW PROCESS FROM NODE 407.00 TO NODE 407.00 IS CODE = 1
                                                                                                              >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
   FILE NAME: R:\1235\HYD\CALCS\AES\SRP\V14N.DAT
                                                                                                           - TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
  TIME/DATE OF STUDY: 11:59 10/07/2016
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
                                                                                                             TIME OF CONCENTRATION(MIN.) = 11.90
RAINFALL INTENSITY(INCH/HR) = 4.67
  2003 SAN DIEGO MANUAL CRITERIA
                                                                                                              TOTAL STREAM AREA(ACRES) =
                                                                                                                                                          4.98
                                                                                                              PEAK FLOW RATE(CFS) AT CONFLUENCE =
  USER SPECIFIED STORM EVENT(YEAR) = 100.00
                                                                                                                                                                      12.69
   6-HOUR DURATION PRECIPITATION (INCHES) =
  HEIGHT WIDTH LIP HIKE FACTOR
(FT) (FT) (FT) (FT) (n)
                                                                                                             RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
                               IN- / OUT-/PARK-
SIDE / SIDE/ WAY
       WIDTH CROSSFALL
               (FT)
                                ===========
===
                                                                                                              UPSTREAM ELEVATION(FEET) = 950.15

DOWNSTREAM ELEVATION(FEET) = 949.45

ELEVATION DIFFERENCE(FEET) = 0.70
                            0.020/0.020/0.020
0.020/0.020/0.020
                                                          0.50
                                                                    2.00 0.0312 0.125 0.0150
1.50 0.0312 0.125 0.0130
                      8 N
  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
                                                                                                              SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
                                                                                                              TOTAL AREA(ACRES) = 0.17 TOTAL RUNOFF(CFS) =
   2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
    OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
 FLOW PROCESS FROM NODE 406.00 TO NODE 407.00 IS CODE = 61
  FLOW PROCESS FROM NODE 400.00 TO NODE 401.00 IS CODE = 21
                                                                                                             >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                        >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
   *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
                                                                                                              DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  UPSTREAM ELEVATION(FEET) = 1000.05

DOWNSTREAM ELEVATION(FEET) = 999.35

ELEVATION DIFFERENCE(FEET) = 0.70
                                                   0.70
  ELEVATION DIFFERENCE(FFET) = 0.70
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
SUBAREA RUNOFF(CFS) = 0.59
TOTAL AREA(ACRES) = 0.20 TOTAL RUNOFF(CFS) =
                                                                                                              SPECIFIED NUMBER OF HALFSTREETS 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 = 0.0
                                                                                                                                                                                                   0 0200
                                                                                                                **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                                                                                                  4.61
                                                                                                                STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.26
HALFSTREET FLOOD WIDTH(FEET) = 6.57
  FLOW PROCESS FROM NODE 401.00 TO NODE 402.00 IS CODE = 61
   >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                             HADFSIRES FLOOD WIDTH(FEET) = 0.57

AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.20

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.08

STREET FLOW TRAVEL TIME(MIN.) = 2.46 Tc(MIN.) = 11.20

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.856
                                                                                                              *USER SPECIFIED(SUBAREA):
                                                                                                              CUSEK 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
SUBAREA AREA(ACRES) = 3.24
SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 3.4
PEAK FLOW RATE(CFS) =
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                                                                             SUBAREA RUNOFF(CFS) =
PEAK FLOW RATE(CFS) =
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
  SPECIFIED NUMBER OF HARFSTREETS CARRIED NORTH STREET PARKWAY (ROSSFALL(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
                                                                                                             DEPTH*VELOCITY(FT*FT/SEC.) =
                                                                                                                                                                                                     690.00 FEET.
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.27
HALFSTREET FLOOD WIDTH(FEET) = 7.33
AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.12
PRODUCT OF DEPTH&VELOCITY(FT*TF/SEC.) = 1.40
STREET FLOW TRAVEL TIME(MIN.) = 2.31 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.899
***UCCPD COMPOTETPIC(SURAPEA):
                                                                                                             FLOW PROCESS FROM NODE 407.00 TO NODE 407.00 IS CODE = 1
                                                                                                              >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE << < <
                                                                                                              >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                                              .....
                                                                                                              TOTAL NUMBER OF STREAMS = 2
   *USER SPECIFIED(SUBAREA):
                                                                                                              CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.520
SUBAREA AREA(ACRES) = 4.78 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 5.0 PEAK FLOW RATE(CFS) =
                                                                                                              TIME OF CONCENTRATION(MIN.) = 11.20
RAINFALL INTENSITY(INCH/HR) = 4.86
                                                                                                              TOTAL STREAM AREA(ACRES) =
                                                SUBAREA RUNOFF(CFS) = 12.18
                                                                                                              PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                        8.61
                                                       PEAK FLOW RATE(CFS) =
                                                                                                              ** CONFLUENCE DATA **
  END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                              STREAM
                                                                                                                             RUNOFF
                                                                                                                                                            INTENSITY
                                                                                                                                                                                 AREA
  DEPTH(FEET) = 0.32 HALFSTREET FLOOD WIDTH(FEET) = 9.74
FLOW VELOCITY(FEET/SEC.) = 5.95 DEPTH*VELOCITY(FT*FT/SEC.)
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 402.00 = 7.
                                                                                                                              (CFS)
12.69
                                                                                                                                                                                (ACRE)
4.98
                                                                                                              NUMBER
                                                                                                                                             (MIN.) (INCH/HOUR)
                                                                                                                                           11.90
                                                                                                                                         11.20
                                                                                         779.00 FEET.
                                                                                                                               8.61
                                                                                                                                                              4.856
                                                                                                                                                                                    3.41
                                                                                                             RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  FLOW PROCESS FROM NODE 402.00 TO NODE 407.00 IS CODE = 31
                                                                                                              CONFLUENCE FORMULA USED FOR 2 STREAMS.
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TOTAL NUMBER OF STREAMS = 3

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 13.70

RAINFALL INTENSITY(INCH/HR) = 4.26

TOTAL STREAM AREA(ACRES) = 6.15

PEAK FLOW RATE(CFS) AT CONFLUENCE = 13.64
  ** PEAK FLOW RATE TABLE **
            RUNOFF
(CFS)
                            Tc (MIN.)
                                        (INCH/HOUR)
 NUMBER
                                         4.856
                 20 55
                             11.20
                            11.90
                 20.97
                                            4.670
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 20.97 Tc(MIN.) = TOTAL AREA(ACRES) = 8.4
                                                                                                .....
                                                             11.90
                                                                                                 FLOW PROCESS FROM NODE 415.00 TO NODE 416.00 IS CODE = 21
  LONGEST FLOWPATH FROM NODE 400.00 TO NODE 407.00 = 1407.00 FEET.--
                                                                                                  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
    ELEVATION DATA: UPSTREAM(FEET) = 911.00 DOWNSTREAM(FEET) = 866.50 FLOW LENGTH(FEET) = 1241.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 21.0 INCH PIPE IS 13.2 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 13.22 ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
                                                                                                  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                  SUBARRA CVERLAND TIME OF FLOW(MIN.) = 8.000
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.003
SUBARRA RUNOFF(CFS) = 0.27
TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF(CFS) =
 ............
                                                                                               == ELEVATION DATA: UPSTREAM(FEET) = 477.50 DOWNSTREAM
FLOW LENGTH(FEET) = 191.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 13.46
RAINFALL INTENSITY(INCH/HR) = 4.31
TOTAL STREAM AREA(ACRES) = 8.39
                                                                                                  DEPTH OF FLOW IN 18.0 INCH PIPE IS 1.6 INCHES
PIPE-FLOW VELOCITY(FEBT/SEC.) = 3.35
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.27
                                                                                                  PIPE TRAVEL TIME(MIN.) = 0.27
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                    20.97
                                                                                                                                            Tc(MIN.) = 9.01
261.00 FEET.
 FLOW PROCESS FROM NODE 410.00 TO NODE 411.00 IS CODE = 21
                                                                                             .....
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                 FLOW PROCESS FROM NODE 416.00 TO NODE 417.00 IS CODE = 81
                                                                                                  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
 RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
                                                                                                                                                               ______
                                                                                                 UPSTREAM ELEVATION(FEET) = 915.85

DOWNSTREAM ELEVATION(FEET) = 915.15

ELEVATION DIFFERENCE(FEET) = 0.70
                                             0.70
 ELEVATION DIFFERENCE (FEET) = 0.70
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 70.00
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!
100 YEAR RAINFALL INTENSITY (INCH/HOUR) = 5.699
CUBAREA DIMODEF (FES) - 0.50
                                                                                                  FLOW PROCESS FROM NODE 417.00 TO NODE 412.00 IS CODE = 31
  SUBAREA RUNOFF(CFS) = 0.50
TOTAL AREA(ACRES) = 0.17 TOTAL RUNOFF(CFS) =
                                                                                                  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                               >>>>>USING COMPUTER_ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 868.00 DOWNSTREAM(FEET) = 866.0

-- FLOW LENGTH(FEET) = 70.00 MANNING'S N = 0.013

ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000

DEPTH OF FLOW IN 18.0 INCH PIPE IS 4.8 INCHES

=- PIPE-FLOW VELOCITY(FEET/SEC.) = 7.17

ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 2.75

PIPE TRAVEL TIME(MIN.) = 0.16 TC(MIN.) = 9.17

LONGEST FLOWPATH FROM NODE 415.00 TO NODE 412.00 = 331.00 F
  FLOW PROCESS FROM NODE 411.00 TO NODE 412.00 IS CODE = 61
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                  LONGEST FLOWPATH FROM NODE 415.00 TO NODE 412.00 =
                                                                                                                                                                              331.00 FEET.
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.0
                                                                                                  FLOW PROCESS FROM NODE 412.00 TO NODE 412.00 IS CODE = 1
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
                                                                                       >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                                                                 TOTAL NUMBER OF STREAMS = 3
CONPLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
TIME OF CONCENTRATION(MIN.) = 9.17
RAINFALL INTENSITY(INCH/HR) = 5.52
TOTAL STREAM AREA(ACRES) = 1.20
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                             7.22
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.30
HALFSTREET FLOOD WIDTH(FEET) = 8.85
                                                                                                  PEAK FLOW RATE(CFS) AT CONFLUENCE =
 HALFSTREET FLOOD WILDTH(FEET) = 8.85
AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.00
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.21
STREET FLOW TRAVEL TIME(MIN.) = 4.96 Tc(MIN.) = 13.70
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.264
*USER SPECIFIED(SUBAREA):
                                                                                                  ** CONFLUENCE DATA **
                                                                                                  STREAM
                                                                                                               RUNOFF
                                                                                                                                           INTENSITY
                                                                                                                                                               AREA
                                                                                                  NUMBER
                                                                                                                  (CFS)
                                                                                                                              (MIN.) (INCH/HOUR)
                                                                                                                                                             (ACRE)
                                                                                                                                          4.312
                                                                                                                             13.46
                                                                                                                  20.97
                                                                                                                                                                 8.39
                                                                                                       1
 TODAL AREA(ACRES) = 5.20

TODAL AREA(ACRES) = 6.2

TODAL AREA(ACRES) = 6.2

TODAL AREA(ACRES) = 6.2
                                                                                                       2
                                                                                                                 13 64
                                                                                                                             13 70
                                                                                                                                              4 264
                                                                                                                                                                 6 15
                                             SUBAREA RUNOFF(CFS) = 13.26
                                                                                                  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  TOTAL AREA(ACRES) =
                                  6.2
                                                 PEAK FLOW RATE(CFS) =
                                                                                                  CONFLUENCE FORMULA USED FOR 3 STREAMS.
                                                                                                   ** PEAK FLOW RATE TABLE **
  END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.36 HALFSTREET FLOOD WIDTH(FEET) = 11.64 FLOW VELOCITY(FEET/SEC.) = 4.63 DEPTH*VELOCITY(FT*FT/SEC. LONGEST FLOWPATH FROM NODE 410.00 TO NODE 412.00 =
                                                                                                  STREAM
                                                                                                                RUNOFF
                                                                                                                             (MIN.)
                                              DEPTH*VELOCITY(FT*FT/SEC.) =
                                                                                                  NUMBER
                                                                                                                 (CFS)
                                                                                                                                        (TNCH/HOUR)
                                                                                                                             9.17
13.46
                                                                                                                                            5.522
                                                                              1261.00 FEET.
                                                                                                                 28 25
                                                                                                                  36.52
                                                                                                                 36.49
                                                                                                                            13.70
                                                                                                                                            4.264
 FLOW PROCESS FROM NODE 412.00 TO NODE 412.00 IS CODE = 1
                                                                                               -- COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                                  PEAK FLOW RATE(CFS) = 36.52 Tc(MIN.) =
```

```
4.43
   FLOW PROCESS FROM NODE 412 00 TO NODE 422 00 IS CODE - 31
                                                                                                                                RUNOFF TC (CFS) (MIN.) 44.69 13.71
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                     STREAM
                                                                                                                                                                    INTENSITY
   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                     NUMBER
                                                                                                                                                                  (INCH/HOUR)
4.260
                                                                                                                        1 2
                                                                                                                                                               4.200
  ELEVATION DATA: UPSTREAM(FEET) = 866.00 DOWNSTREAM(FEET) = 859.00

FLOW LENGTH(FEET) = 701.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 30.0 INCH PIPE IS 22.5 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 9.23

ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 36.52

PIPE TRAVEL TIME(MIN.) = 1.27 TC(MIN.) = 14.73
                                                                                                                                      44.69 13.71
45.89 14.73
                                                                                                                     COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                    PEAK FLOW RATE(CFS) = 45.89 Tc(MIN.) = 14.73 TOTAL AREA(ACRES) = 20.2 LONGEST FLOWPATH FROM NODE 400.00 TO NODE 422.00 = 3349.00 FEET.
   FLOW PROCESS FROM NODE 422.00 TO NODE 427.00 IS CODE = 31
  FLOW PROCESS FROM NODE 422.00 TO NODE 422.00 IS CODE = 1
                                                                                                                     >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
                                                                                                                    >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
       >>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<>>> ELEVATION DATA: UPSTREAM(FEET) = 859.00 DOWNSTREAM(FEET) =
   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE<
TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

DEPTH OF FLOW LENGTH(FEET) = 986.00 MANNING'S N = 0.013

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

DEPTH OF FLOW N 21.0 INCH PIPE IS 14.9 INCHES

TIME OF CONCENTRATION(MIN.) = 14.73

RAINFALL INTENSITY(INCH/HR) = 4.07

TOTAL STREAM AREA(ACRES) = 15.74

PEAR FLOW RATE(CFS) AT CONFLUENCE = 36.52

DIPH OF FLOW VALUES (SET 1.0 NUMBER OF PIPES = 1)

FLOW RATE(CFS) AT CONFLUENCE = 36.52

LONGEST FLOWPATH FROM NODE 420.00 TO NODE 427.00 = 4335.00 FEET.
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
   *HIGER SDECTETED (SHRAPEA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0
  S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
UPSTREAM ELEVATION(FEET) = 883.95
DOWNSTREAM ELEVATION(FEET) = 883.25
ELEVATION DIFFERENCE(FEET) = 0.70
                                                                                                                    CONFLUENCE VALUES USED FOR INSTITUTE OF CONCENTRATION(MIN.) = 15.38
RAINFALL INTENSITY(INCH/HR) = 3.96
TOTAL STREAM AREA(ACRES) = 20.17
  ELEVATION DIFFERENCE(FEET) = 0.70
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                     PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                                45.89
                                                                8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
SUBAREA RUNOFF(CFS) = 0.59
TOTAL AREA(ACRES) = 0.20 TOTAL RUNOFF(CFS) =
                                                                                                                   FLOW PROCESS FROM NODE 425.00 TO NODE 426.00 IS CODE = 21
                                                                                    0.59
                                                                                                                    >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
·····
  FLOW PROCESS FROM NODE 421.00 TO NODE 422.00 IS CODE = 61
                                                                                                                     *USER SPECIFIED(SUBAREA):
                                                                                                    RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
   >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
   >>>>(STANDARD CURB SECTION USED) << <<
  UPSTREAM ELEVATION(FEET) = 882.00 DOWNSTREAM ELEVATION(FEE STREET LENGTH(FEET) = 895.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                                    UPSTREAM ELEVATION(FEET) = 880.00

DOWNSTREAM ELEVATION(FEET) = 866.00

ELEVATION DIFFERENCE(FEET) = 14.00
                                                                                                                    ELEVATION DIFFERENCE(FEET) = 866.00

ELEVATION DIFFERENCE(FEET) = 14.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.055

WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TC CALCULATION!

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168

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

SUBAREA RUNOFF(CFS) = 0.89

TOTAL AREA(ACRES) = 0.21 TOTAL RUNOFF(CFS) = 0.89
                                                        DOWNSTREAM ELEVATION(FEET) = 864.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 9.00
  UNSIDE 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) =
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
                                                                                                                   *****************
                                                                                                       0.0150 FLOW PROCESS FROM NODE 426.00 TO NODE 427.00 IS CODE = 61
                                                                                                                     >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
      **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.30
HALFSTREET FLOOW DIDTH(FEET) = 8.79
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.00
                                                                                                                  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<>>>>> (STANDARD CURB SECTION USED)
    3745.00

    UPSTREAM ELEVATION (FEET) = 865.00 DOWNSTREAM ELEVATION (FEET) = 745.00
    3745.00

    STREET LENGTH (FEET) = 983.00 CURB HEIGHT (INCHES) = 6.0
    3745.00

    STREET HALFWIDTH (FEET) = 18.00
    18.00

  AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.00
PRODUCT OF DEPTHEVELOCITY(FT*FT/SEC.) = 0.91
STREET FLOW TRAVEL TIME(MIN.) = 4.98 Tc(MIN.) = 13.71
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.260
                                                                                                                     DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
   *USER SPECIFIED(SUBAREA):
  *USER SPECIFIED(SUBARBA):
RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
S.C.S. CURVE NUMBER (AMC II) = 0
ARBA-AVERAGE RUNOFF COEFFICIENT = 0.520
SUBARBA ARBA(ACRES) = 4.23
SUBARBA RABA(ACRES) = 4.23
TOTAL ARBA(ACRES) = 4.4
PEAK FLOW RATE(CFS) =
                                                                                                                     SPECIFIED NUMBER OF HALFSTREETS 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 = 0.02
                                                      SUBAREA RUNOFF(CFS) = 9.37
PEAK FLOW RATE(CFS) =
                                                                                                                                                                                                               0.0200
                                                                                                      9.81
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                 **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.29

. HALFSTREET FLOOD WIDTH(FEET) = 7.97

AVERAGE FLOW VELOCITY(FEET/SEC.) = 7.01

** PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 2.00

STREET FLOW TRAVEL TIME(MIN.) = 2.34 TC(MIN.) =
-- 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.970

**INEPD_SDECTIFIED(SUBAPPA):
 **********************
  FLOW PROCESS FROM NODE 422.00 TO NODE 422.00 IS CODE = 1
                                                                                                                    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.970
*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
SUBAREA AREA(ACRES) = 5.30 SUBAREA RUNOFF(CFS) = 19.21
TOTAL AREA(ACRES) = 5.5 PEAK FLOW RATE(CFS) =
   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  TIME OF CONCENTRATION(MIN.) = 13.71
RAINFALL INTENSITY(INCH/HR) = 4.26
TOTAL STREAM AREA(ACRES) = 4.43
                                                                                                                     END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                    END OF SUBARKA SIRBET FLOW RIDARDLICS.

DEPTH(FEET) = 0.34 HALFSTREET FLOOD WIDTH(FEET) = 10.58

FLOW VELOCITY(FEET/SEC.) = 8.07 DEPTH*VELOCITY(FT*FT/SEC.) = 2.73

LONGEST FLOWPATH FROM NODE 425.00 TO NODE 427.00 = 1053.00 FEET.
   PEAK FLOW RATE(CFS) AT CONFLUENCE =
   ** CONFLUENCE DATA *
                RUNOFF Tc
(CFS) (MIN.)
36.52 14.73
                                                    INTENSITY
   STREAM
                                                                          APFA
                                                                                                                  *******************
   NUMBER
                                                (INCH/HOUR)
                                                                        (ACRE)
                                                    4.069
                                                                           15.74
                                                                                                                    FLOW PROCESS FROM NODE 427.00 TO NODE 427.00 IS CODE = 1
```

```
5.5
                                                                                                                                                                                       PEAK FLOW RATE(CFS) =
                                                                                                                                                                                                                                  21.20
                                                                                       ----- TOTAL AREA(ACRES) =
  TIME OF CONCENTRATION(MIN.) = 6.39
RAINFALL INTENSITY(INCH/HR) = 6.97
TOTAL STREAM AREA(ACRES) = 5.51
                                                                                                                         ******************
                                                                                                                           FLOW PROCESS FROM NODE 442.00 TO NODE 447.00 IS CODE = 31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                  19.97
                                                                                                                            >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
   ** CONFLUENCE DATA **
                RUNOFF
(CFS)
   STREAM
                                         тс
                                                      INTENSITY
                                                                              AREA
                                                                                                                         _____
                                                                                                                           ELEVATION DATA: UPSTREAM(FEET) = 926.00 DOWNSTREAM(FEET) = 883.00 FLOW LENGTH(FEET) = 612.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 18.0 INCH PIPE IS 12.0 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 16.99 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                     (MIN.) (INCH/HOUR)
15.38 3.957
                                                                             (ACRE)
                                    15.38
                                                                             20.17
                       45.89
        2
                      19.97
                                     6.39
                                                         6.970
                                                                                 5.51
   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                                           ESTIMATED PAPE DIAMETER(INCH) - 1000 DEPER-FLOW(CFS) = 21.20
PIPE TRAVEL TIME(MIN.) = 0.60 TC(MIN.) = 6.41
LONGEST FLOWPATH FROM NODE 440.00 TO NODE 447.00 = 1293.00 FEET.
   CONFLUENCE FORMULA USED FOR 2 STREAMS.
   ** PEAK FLOW RATE TABLE **
   STREAM
                    RUNOFF
                                        TC
                                                     TNTFNSTTV
                                                                                                                         *****************************
                      (CFS)
                                   (MIN.)
   NUMBER
                                                  (INCH/HOUR)
                                 6.39
15.38
                      46.02
                                                   6.970
3.957
                                                                                                                            FLOW PROCESS FROM NODE 447.00 TO NODE 447.00 IS CODE = 1
                      57.23
                                                                                                                            >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIDENCE<
   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                         ______
   PEAK FLOW RATE(CFS) = 57.23 Tc(MIN.) = TOTAL AREA(ACRES) = 25.7
                                                                                                                           TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                              15.38
  FLOW PROCESS FROM NODE 427.00 TO NODE 428.00 IS CODE = 31
                                                                                                                         PEAK FLOW RATE(CFS) AT CONFLUENCE =
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<>>>>ELEVATION DATA: UPSTREAM(FEET) = 740.00 DOWNSTREAM(FEET) = FLOW LENGTH(FEET) = 251.00 MANNING'S N = 0.013
                                                                                                                        FLOW PROCESS FROM NODE 445.00 TO NODE 446.00 IS CODE = 21
                                                                                                                           >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                        724.00
  ELEVATION DATA: UPSTREAM (FEET) = 740.00 DOWNST
FLOW LENGTH(FEET) = 251.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 27.0 INCH PIPE IS 17.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 21.04
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER
PIPE-FLOW(CFS) = 57.23
PIPE TRAVEL TIME(MIN.) = 0.20 TC(MIN.) = 1
                                                                                                                            *USER SPECIFIED(SUBAREA):
                                                                                                                           RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
                                                                      NUMBER OF PIPES = 1
                                                                                                                           S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
   PIPE-FLOW(CFS) = 57.23

PIPE TRAVEL TIME(MIN.) = 0.20 Tc(MIN.) = 15.58

LONGEST FLOWPATH FROM NODE 400.00 TO NODE 428.00 = 4586.00 FEET. DOWNSTREAM ELEVATION(FEET) = 931.25

ELEVATION DIFFERNCE(FEET) = 0.70
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                                           *USER SPECIFIED(SUBAREA):
   RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0
  S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
UPSTREAM ELEVATION(FEET) = 989.00
DOWNSTREAM ELEVATION(FEET) = 976.00
ELEVATION DIFFERENCE(FEET) = 12.00
                                                               70.00
                                                                                                                           DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  DOWNSTREAM ELEVATION (FEET) = 976.00

ELEVATION DIFFERENCE(FEET) = 13.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.055

WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TC CALCULATION! SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

100 YEAR RAINFALL INTENSITY (INCH/HOUR) = 8.168

STREET PARKWAY CROSSFALL(DECIMAL) = 0.020

STREET PARKWAY CROSSFALL(DECIMAL) = 0.020

Manning's FRICTION FACTOR for Streetflow Section(curk Manning's FRICTION FACTOR for Back-of-Walk Flow Section Courk Manning's FRICTION FACTOR FOR Back-of-Walk Flow Section Cour
                                                                                                                           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 = 0.0
                                                                                                                                                                                                                           0.0200
                                                                                                                               **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                      *** STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.27

--- HALFSTREET FLOOD WIDTH(FEET) = 7.33

AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.99

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.36

=== STREET FLOW TRAVEL TIME(MIN.) = 2.06 Tc(MIN.) =
   FLOW PROCESS FROM NODE 441.00 TO NODE 442.00 IS CODE = 61
   >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                            100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.973
*USER SPECIFIED(SUBAREA):
                                                                                                                            RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
                                                                                                                           RESIDENTIAL (4.3 DU/AC UK LESS) KUNGEF COL

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

AREA-AVERAGE RUNOFF COEFFICIENT = 0.520

SUBAREA AREA(ACRES) = 4.49 SUBAREA

TOTAL AREA(ACRES) = 4.7 PEAK
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                                                                                                SUBAREA RUNOFF(CFS) =
                                                                                                                                                                                        PEAK FLOW RATE(CFS) =
   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                                            END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                           DEPTH(FEET) = 0.32 HALFSTREET FLOOD WIDTH(FEET) = 9.74

FLOW VELOCITY(FEET/SEC.) = 5.73 DEPTH*VELOCITY(FT*FT/SEC.) = 1.84

LONGEST FLOWPATH FROM NODE 445.00 TO NODE 447.00 = 685.00 FEET.
  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) =
                                                                                               11.29
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.31

HALFSTREET FLOOD WIDTH(FEET) = 9.25

AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.80

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.80

STREET FLOW TRAVEL TIME(MIN.) = 1.76

TC(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.413

*USER SPECIFIED(SUBAREA):
                                                                                                                           FLOW PROCESS FROM NODE 447.00 TO NODE 447.00 IS CODE = 1
                                                                                                                            >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE << < <
                                                                                                                         >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                          5.81
                                                                                                                           TOTAL NUMBER OF STREAMS = 2
                                                                                                                           TOTAL NUMBER OF SIKEAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 10.79
RAINFALL INTENSITY(INCH/HR) = 4.97
TOTAL STREAM AREA(ACRES) = 4.73
   RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.520

SUBAREA AREA(ACRES) = 5.22

SUBAREA
                                                                                                                           TOTAL STREAM AREA(ACRES) = 4.73
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                                           12.23
                                                         SUBAREA RUNOFF(CFS) = 20.12
```

```
** CONFLUENCE DATA **
                                                                                              LONGEST FLOWPATH FROM NODE 450.00 TO NODE 452.00 =
                                                                                                                                                                     784.00 FEET.
  STREAM
               RUNOFF
                              TC
                                         INTENSITY
                                                           AREA
                 (CFS)
                           (MIN.)
                                     (INCH/HOUR)
                                                                                            .....
                                                         (ACRE)
  NUMBER
                                                                                              FLOW PROCESS FROM NODE 452.00 TO NODE 452.00 IS CODE = 1
                                       6.958
4.973
                 21.20
                             6.41
                                                             5.50
      2
                12.23
                          10.79
                                                             4 73
                                                                                              >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIDENCE<
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                              >>>>AND COMPUTE VARIOUS CONFIDENCED STREAM VALUES <<< <
                                                                                              TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
     PEAK FLOW RATE TABLE **
                                                                                              CONFLUENCE VALUES USED FOR TABLE TIME OF CONCENTRATION (MIN.) = 9.50 RAINFALL INTENSITY (INCH/HR) = 5.40 $5.40 $1.54
                                        TNTFNSTTV
  STREAM
               RUNOFF
                              TC
  NUMBER
                 (CFS)
                           (MIN.)
                                      (INCH/HOUR)
                                       6.958
                           6.41
10.79
                 28 47
                                                                                              PEAK FLOW RATE(CFS) AT CONFLUENCE =
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 28.47 Tc(MIN.) = TOTAL AREA(ACRES) = 10.2
                                                                                              ** CONFIGUENCE DATA **
                                                                                                         RUNOFF
(CFS)
                                                                                                                                     INTENSITY
                                                                                                                                                       AREA
                                                                                                                        (MIN.) (INCH/HOUR)
                                                                                              NUMBER
                                                                                                                                                      (ACRE)
                                                                                                                                                       10.23
                                                                                                                        7.35
  LONGEST FLOWPATH FROM NODE 440.00 TO NODE 447.00 = 1293.00 FEET.
                                                                                                            28 47
                                                                                                                                       6.368
 **************
                                                                                             RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR 2 STREAMS.
  FLOW PROCESS FROM NODE 447.00 TO NODE 452.00 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) < < <
                                                                                              ** DEAK ELOW PATE TABLE **
  ELEVATION DATA: UPSTREAM(FEET) = 883,00 DOWNST
FLOW LENGTH(FEET) = 507.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 27.0 INCH PIPE IS 20.1 INCHES
                                                                                              STREAM
                                                                                                           RUNOFF
                                                                                                                       (MTN.)
                                            883.00 DOWNSTREAM(FEET) = 877.50
                                                                                             NUMBER
                                                                                                           (CFS)
                                                                                                                                (TNCH/HOUR)
                                                                                                            36.16
34.07
                                                                                                                      7.35
                                                                                                                                      6.368
  PIPE-FLOW VELOCITY(FEET/SEC.) = 8.96
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
  PIPE-FLOW VELOCITY(FEET/SEC.) = 8.96

ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PIPE-FLOW(CFS) = 28.47

PEAK FLOW RATE(CFS) = 36.16 Tc(MIN.) = 7.35

PIPE TRAVEL TIME(MIN.) = 0.94 Tc(MIN.) = 7.35

LONGEST FLOWPATH FROM NODE 440.00 TO NODE 452.00 = 1800.00 FEET. LONGEST FLOWPATH FROM NODE 440.00 TO NODE 452.00 = 1800.00 FEET.
 .....
  FLOW PROCESS FROM NODE 452.00 TO NODE 452.00 IS CODE = 1
                                                                                             FLOW PROCESS FROM NODE 452.00 TO NODE 457.00 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                              >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                            ______
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 7.35
RAINFALL INTENSITY(INCH/HR) = 6.37
TOTAL STREAM AREA(ACRES) = 10.23
PEAK FLOW RATE(CFS) AT CONFLUENCE = 28.47
                                                                                             ELEVATION DATA: UPSTREAM(FEET) = 877.50 DOWNSTREAM(FEET) = 875.00 FLOW LENGTH(FEET) = 253.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 30.0 INCH PIPE IS 22.5 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 9.17 ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                           .....
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                              >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
 S.C.S. CURVE NUMBER (AMC II) = 0

INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00

UPSTREAM ELEVATION(FEET) = 910.00

DOWNSTREAM ELEVATION(FEET) = 900.00

ELEVATION DIFFERENCE(FEET) = 10.00
                                                                                                        TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                              TIME OF CONCENTRATION(MIN.) = 7.81
RAINFALL INTENSITY(INCH/HR) = 6.12
TOTAL STREAM AREA(ACRES) = 13.77
  ELEVATION DIFFERENCE(FEET) = 10.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                   4.846
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION! PEAK FLOW RATE(CFS) AT CONFLUENCE = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
NOTE: RAINFALL INTENSITY IS BASED ON To = 5-MINUTE.
                                                                                                                                              36.16
                                                                                           ******************
  NOISE RAINFAILE INTERNST TO SUBARBA RUNOFF (CFS) = 1.70

TOTAL AREA(ACRES) = 0.40 TOTAL RUNOFF (CFS) = 1.70
                                                                                             FLOW PROCESS FROM NODE 450.00 TO NODE 451.00 IS CODE = 21
                                                                                              >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
 IA3/<//>
  FLOW PROCESS FROM NODE 451.00 TO NODE 452.00 IS CODE = 61
                                                                                              *USER SPECIFIED(SUBAREA):
                                                                                           -- RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
 >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                             UPSTREAM ELEVATION(FEET) = 900.00

DOWNSTREAM ELEVATION(FEET) = 890.00

ELEVATION DIFFERENCE(FEET) = 10.00
  UPSTREAM ELEVATION(FEET) = 890.00 DOWNSTREAM ELEVATION(FEET) = 882.50 STREET LENGTH(FEET) = 684.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                                                      10.00
                                                                                              ELEVATION DIFFERENCE(FEET) = 10.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.846
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 TO = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 1.49
TOTAL AREA(ACRES) = 0.35 TOTAL RUNOFF(CFS) = 1.49
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
  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 456.00 TO NODE 457.00 IS CODE = 61
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =
                                                                           0.0200
                                                                                              >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                          6.21
                                                                                              >>>>(STANDARD CURB SECTION USED)<
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.34
HALFSTREET FLOOD WIDTH(FEET) = 10.72
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.45
PRODUCT OF DEPTH&VELOCITY(FF*FT/SEC.) = 0.83
STREET FLOW TRAVEL TIME(MIN.) = 4.66 Tc(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.397
**USER SPECIFIED(SURAPEA):
                                                                                              UPSTREAM ELEVATION(FEET) = 885.00 DOWNSTREAM ELEVATION(FEET) = 880.00
                                                                                              STREET LENGTH(FEET) = 409.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                     9.50
                                                                                              DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
                                                                                              INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  *USER SPECIFIED(SUBAREA):
  TOTAL AREA(ACRES) = 3.14 SUBAREA RUNOFF (CFS) = 8.81

TOTAL AREA(ACRES) = 3.5 PEAK FLOW RATE(CFS) = 8.81
                                                                                              SPECIFIED NUMBER OF HALFSTREETS 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
                                                                                                                                                                               0.0150
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  DEPTH(FEET) = 0.39 HALFSTREET FLOOD WIDTH(FEET) = 13.04
FLOW VELOCITY(FEET/SEC.) = 2.73 DEPTH*VELOCITY(FT*FT/SEC.) = 1.06
                                                                                                STREET FLOW DEPTH(FEET) = 0.33
```

```
HALFSTREET FLOOD WIDTH(FEET) =
                                                                                                                                        STREET LENGTH(FEET) = 961.00 CURB HEIGHT(INCHES) = 6.0
                                                               10.16
   HALFSTREET FLOOD WIDTH(FEET) = 10.16
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.50
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.82
STREET FLOW TRAVEL TIME(MIN.) = 2.73 TC(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.247
                                                                                                                                        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
   *USER SPECIFIED(SUBAREA):
   RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
   RESIDENTIAL (4.5 BO/AC OR LESS) RUNOFF COEFFICIENT = .520

AREA-AVERAGE RUNOFF COEFFICIENT = 0.520

SUBAREA AREA (ACRES) = 2.59

SUBAREA RUNOFF (CFS) = 2.59

SUBAREA RUNOFF (CFS) = 2.59
                                                                                                                                        SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                                                        STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb):
                                                                   PEAK FLOW RATE(CFS) = 8.41
   TOTAL AREA(ACRES) =
                                                                                                                                        Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
   END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                                             **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                                     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.36
HALFSTREET FLOOD WIDTH(FEET) = 11.85
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.71
* PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.98
STREET FLOW TRAVEL TIME(MIN.) = 5.91 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.984
*USER SPECIFIED(SUBAREA):
   END OF SUBAREA STREET FLOW HYDRAGULES.

DEPTH(FEET) = 0.38 HALFSTREET FLOOD WIDTH(FEET) = 12.55

FLOW VELOCITY(FEET/SEC.) = 2.82 DEPTH*VELOCITY(FT*FT/SEC.) = 1.06

LONGEST FLOWPATH FROM NODE 450.00 TO NODE 457.00 = 509.00 FEET.
 FLOW PROCESS FROM NODE 457.00 TO NODE 457.00 IS CODE = 1
   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIDENCE<
          **SDESIGNATE INDEPENDENT STREAM FOR CONFLUENCES<**

**SDESIGNATE INDEPENDENT STREAM FOR CONFIDENCES

**SPACIFIED(SUBAREA):

**SPACIFIED(SUBAREA):

**SDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SPACIFIED(SUBAREA):

**SDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE INDEPENDENT = .5200

**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE INDEPENDENT = .5200

**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

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**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

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**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE | 4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

**SDESIGNATE | 4.3 DU/AC O
    >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
   TOTAL NUMBER OF STREAMS = 2
   TOTAL NOTION OF STREAMS - 2 ARE:
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 7.58
RAINFALL INTENSITY(INCH/HR) = 6.25
                                                                                                                                                                                                     SUBAREA RUNOFF(CFS) = 13.69
PEAK FLOW RATE(CFS) =
                                                                                                                                        TOTAL STREAM AREA(ACRES) = 2.94
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                           9.55
   ** CONFLUENCE DATA **
                                            Tc
                                                            INTENSITY
   STREAM
                    RUNOFF
                                                                                      AREA
                                       (MIN.) (INCH/HOUR)
7.81 6.124
7.58 6.247
                                                                                                                                     ************************
                                                                                   (ACRE)
                        (CFS)
                                                                                    ...CRE)
13.77
   NUMBER
                                                                                                                                        FLOW PROCESS FROM NODE 462.00 TO NODE 462.00 IS CODE = 1
         2
                         9.55
                                                                                        2.94
                                                                                                                                        >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE <---
   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                                                        >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
   CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                                     TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 10.75

RAINFALL INTENSITY (INCH/HR) = 4,98

TOTAL STREAM AREA(ACRES) = 5.56
   ** PEAK FLOW RATE TABLE **
                      RUNOFF Tc (CFS) (MIN.)
   STREAM
                                                          INTENSITY
   NUMBER
                                                        (INCH/HOUR)
                       45.00 7.58
45.52 7.81
                                                    6.247
6.124
                                                                                                                                        PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                                                             14.41
                                                                                                                                        ** CONFLUENCE DATA **
   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) = 45.52 Tc(MIN.) = TOTAL AREA(ACRES) = 16.7
                                                                                        7.81
                                                                                                                                        STREAM RUNOFF TC NUMBER (CFS) (MIN.)
                                                                                                                                                                                                 INTENSITY
                                                                                                                                                                                                                           AREA
                                                                                                                                                                                           (INCH/HOUR)
                                                                                                                                                                                                                          (ACRE)
   LONGEST FLOWPATH FROM NODE 440.00 TO NODE 457.00 = 2053.00 FEET.
                                                                                                                                                                                               5.900
                                                                                                                                                                                                                          16.71
                                                                                                                                            1 2
                                                                                                                                                              45.52
                                                                                                                                                                               8.28
                                                                                                                                                             14.41
                                                                                                                                                                           10.75
                                                                                                                                                                                                    4.984
.....
                                                                                                                    RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   FLOW PROCESS FROM NODE 457.00 TO NODE 462.00 IS CODE = 31
    >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
                                                                                                                                        ** PEAK FLOW RATE TABLE **
    >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                                                                       STREAM
                                                                                                                                                           RUNOFF TC (CFS) (MIN.)
   ELEVATION DATA: UPSTREAM(FEET) = 875.00 DOWNSTREAM(FEET) = 871.50
                                                                                                                                                                                               INTENSITY
                                                                                                                                       NUMBER
                                                                                                                                                                                           (INCH/HOUR)
                                                                                                                                                                                             5.900
   ELEVATION DATA: OPSIREAM(FEEI) = 87.
FLOW LENGTH(FEET) = 294.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 33.0 INCH PIPE IS 22.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.54
ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 45.52
                                                                                                                                        1
                                                                                                                                                             56.62
                                                                                                                                                                               8.28
                                                                                                                                                             52.87
                                                                                                                                                                         10.75
                                                                                                                                        COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PIPE-FLOW(CFS) = 45.52
PIPE TRAVEL TIME(MIN.) =
                                                                                                                                        PEAK FLOW RATE(CFS) = 56.0
TOTAL AREA(ACRES) = 22.3
                                                                                                                                                                                        56.62 Tc(MIN.) =
                                                                                                                                                                                                                              8.28
   PIPE TRAVEL TIME(MIN.) = 0.46 Tc(MIN.) = 8.28 TOTAL AREA (ACRES) = 22.3 LONGEST FLOWPATH FROM NODE 440.00 TO NODE 462.00 = 2347.00 FEET. LONGEST FLOWPATH FROM NODE 440.00 TO NODE
                                                                                                                                                                                                                         462.00 = 2347.00 FEET.
     FLOW PROCESS FROM NODE 462.00 TO NODE 467.00 IS CODE = 31
   FLOW PROCESS FROM NODE 462.00 TO NODE 462.00 IS CODE = 1
                                                                                                                                        >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
   >>>>DESIGNATE INDEPENDENT STREAM FOR CUNFIDENCEKCCC >>>>>DESIGNATE INDEPENDENT STREAM FOR CUNFIDENCECCCC >>>>>UNING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)CCCCCC TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE: ELEVATION DATA: UPSTREAM(FEET) = 872.00 DOWNSTREAM(FEET) = 871.00
                                                                                                                                        ELEVATION DATA: UPSTREAM(FEb1) - 5.1.
FLOW LENGTH(FEET) = 382.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 45.0 INCH PIPE IS 34.6 INCHES
- 5.00 WEIGGITV(FRET/SEC.) = 6.21
   TIME OF CONCENTRATION(MIN.) = 8.28
RAINFALL INTENSITY(INCH/HR) = 5.90
    TOTAL STREAM AREA(ACRES) =
                                                                                                                                                                                                            NUMBER OF PIPES = 1
   PEAK FLOW RATE(CFS) AT CONFLUENCE =
   _
   >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                         EA):
   *USER SPECIFIED(SUBAREA):
   RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                                                       >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                                                                     -----
   S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
                                                                                                                                       TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 9.30
RAINFALL INTENSITY(INCH/HR) = 5.47
TOTAL STREAM AREA(ACRES) = 22.27
  INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00

UPSTREAM ELEVATION(FEET) = 900.00

DOWNSTREAM ELEVATION(FEET) = 890.00

ELEVATION DIFFERENCE(FEET) = 10.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.846

WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION! PEAK FLOW RATE(CFS) AT CONFLUENCE = 100 YEAR RAINFALL INTENSITY (INCH/HOUR) = 8.168

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

SUBAREA RUNOFF(CFS) = 1.19

TOTAL AREA(ACRES) = 0.28 TOTAL RUNOFF(CFS) = 1.19

TOTAL AREA(ACRES) = 0.28 TOTAL RUNOFF(CFS) = 1.19

TOTAL STREAM S. 2

TOTAL NUMBER OF STREAMS = 2

TIME OF CONCENTRATION(MIN.) = 9.30

TIME OF CONCENTRATION(MIN.) = 9.30

TOTAL NUMBER OF STREAMS = 2

TOTAL NUMBER OF STREAMS = 2

TIME OF CONCENTRATION(MIN.) = 9.30

TOTAL NUMBER OF STREAMS = 2

TIME OF CONCENTRATION(MIN.) = 9.30

TOTAL NUMBER OF STREAMS = 2

TOTAL NUMBER OF CONCENTRATION(MIN.) = 9.30

TIME OF CONCENTRATION(MIN.) = 9.30

TOTAL NUMBER OF CONCENTRATION(MIN.) = 9.30

TIME OF CONCENTRATION(MIN.) = 9.30

TIME OF CONCENTRATION(MIN.) = 9.30

TOTAL NUMBER OF CONCENTRATION(MIN.) = 9.3
                                                                                                                                                                                                            56.62
                                                                                                                                   **********************
                                                                                                                                      FLOW PROCESS FROM NODE 465.00 TO NODE 466.00 IS CODE = 21
                                                                                                                                        >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
   RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0
>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
```

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CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
  ELEVATION DIFFERENCE(FEET) =
                                                0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 70.00
                                                        8.735
                                                                                                        TIME OF CONCENTRATION(MIN.) = 9.80
RAINFALL INTENSITY(INCH/HR) = 5.29
TOTAL STREAM AREA(ACRES) = 25.46
              (Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION!
                                                                                                        PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                              62.42
  100 YEAR RAINFALL INTENSITY (INCH/HOUR) = 5.699
SUBAREA RUNOFF(CFS) = 0.74
TOTAL AREA(ACRES) = 0.25 TOTAL RUNOFF(CFS) =
                                                                                                        FLOW PROCESS FROM NODE 470.00 TO NODE 471.00 IS CODE = 21
                                                                                                        >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
********************
  FLOW PROCESS FROM NODE 466.00 TO NODE 467.00 IS CODE = 61
                                                                                                        *USER SPECIFIED(SUBAREA):
                                                                                                        RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  UPSTREAM ELEVATION(FEET) = 896.00 DOWNSTREAM ELEVATION(FEET) = 888.00 STREET LENGTH(FEET) = 530.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                        UPSTREAM ELEVATION(FEET) = 898.15
DOWNSTREAM ELEVATION(FEET) = 897.45
ELEVATION DIFFERENCE(FEET) = 0.70
                                                                                                                                                     0.70
                                                                                                        SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
                                                                                                        SUBAREA RUNOFF(CFS) = 0.56
TOTAL AREA(ACRES) = 0.19 TOTAL RUNOFF(CFS) =
  UNSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  SDECTETED MIMBER OF HALESTREETS CARRYING PINOFF - 2
                                                                                                        FLOW PROCESS FROM NODE 471.00 TO NODE 472.00 IS CODE = 61
  STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb):
                                                                                            0.0150 >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
                                                                                                     >>>>(STANDARD CURB SECTION USED)<
                                                                                                        UPSTREAM ELEVATION(FEET) = 896.00 DOWNSTREAM ELEVATION(FEET) = 806.00 STREET LENGTH(FEET) = 1113.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CES) =
                                                                                  4 28
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.30

HALFSTREET FLOW UDTH(FEET) = 8.50

AVERAGE FLOW VELOCITY(FFET/SEC.) = 2.54
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.75

STREET FLOW TRAVEL TIME(MIN.) = 3.47 Tc(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.593
**USERS EMPLIFIED(SURDER)."
                                                                                                        DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =
                                                                                                        INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.0
                                                                          12 21
                                                                                                                                                           0 020
  *USER SPECIFIED(SUBAREA):
                                                                                                        SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
  *USER SPECIFIED(SUBARBA):
RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
S.C.S. CURVE NUMBER (AMC II) = 0
ARBA-AVERAGE RUNOFF COEFFICIENT = 0.520
SUBARBA ARBA(ACRES) = 2.94
SUBARBA RABA(ACRES) = 2.94
TOTAL ARBA(ACRES) = 3.2
PEAK FLOW RATE(CFS) =
                                                                                                        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 = 0.0
                                                                                                                                                                                                  0.0150
                                                                                                                                                                                         0.0200
                                            SUBAREA RUNOFF(CFS) = 7.02
PEAK FLOW RATE(CFS) =
                                                                                                       **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.28
HALFSTREET FLOW DIDTH(FEET) = 7.86
AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.61
PRODUCT OF DEPTHAVELOCITY(FT*FT/SEC.) = 1.59
STREET FLOW TRAVEL TIME(MIN.) = 3.30 TC(MIN.) = 12.04
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.634
**USER SPECIFIED(SUBARRA):
RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
S.C.S. CURVE NUMBER (AMC II) = 0
ARREA-AVERAGE RUNOFF COEFFICIENT = 0.520
SUBAREA AREA(ACRES) = 6.34 SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 6.5 PEAK FLOW RATE(CFS) =
                                                                                                           **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
  ***************
  FLOW PROCESS FROM NODE 467.00 TO NODE 467.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
  ______
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                                                           PEAK FLOW RATE(CFS) =
  TIME OF CONCENTRATION(MIN.) = 12.21
RAINFALL INTENSITY(INCH/HR) = 4.59
TOTAL STREAM AREA(ACRES) = 3.19
                                                                                                        END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                        END OF SUBARKA SIRREI FLOW RIDAGOLICS.

DEPTH(FEET) = 0.34 HALFSTREET FLOOD WIDTH(FEET) = 10.44

FLOW VELOCITY(FEET/SEC.) = 6.51 DEPTH*VELOCITY(FT*FT/SEC.) = 2.18

LONGEST FLOWPATH FROM NODE 470.00 TO NODE 472.00 = 1183.00 FEET.
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                         7 62
  ** CONFLUENCE DATA **
                                                                                                      *****************
  STREAM
             RUNOFF
(CFS)
                                  Tc
                                              INTENSITY
                                                                 AREA
                                                                                                        FLOW PROCESS FROM NODE 472.00 TO NODE 472.00 IS CODE = 1
  NUMBER
                              (MIN.)
                                          (INCH/HOUR)
                                                                 (ACRE)
                                            5.472
                                9.30
                                                                                                        >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE << < <
                  56.62
                                                                   22.27
                                                                                                      >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                              12.21
                                                4.593
                   7.62
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR \ 2\ STREAMS.
                                                                                                        TOTAL NUMBER OF STREAMS =
                                                                                                        TOTAL NUMBER OF SIREAMS - 2 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 12.04
RAINFALL INTENSITY(INCH/HR) = 4.63
  ** PEAK FLOW RATE TABLE **
                                                                                                        TOTAL STREAM AREA(ACRES)
                RUNOFF
(CFS)
                             Tc (MIN.)
                                            INTENSITY
                                                                                                        PEAK FLOW RATE(CFS) AT CONFLUENCE =
  NUMBER
                                          (INCH/HOUR)
                                                                                                                                                             15 73
                           9.30
                                          5.472
4.593
                  62.42
                                                                                                        ** CONFLUENCE DATA **
                                                                                                                                       Tc
                                                                                                        STREAM
                                                                                                                     RUNOFF
                                                                                                                                                    INTENSITY
                                                                                                                                                                        AREA
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 62.42 Tc(MIN.) = TOTAL AREA(ACRES) = 25.5
                                                                                                        NUMBER
                                                                                                                        (CFS)
                                                                                                                                    (MIN.)
9.80
                                                                                                                                                 (INCH/HOUR)
                                                                                                                                                                       (ACRE)
                                                                                                                       62.42
                                                                    9.30
                                                                                                                                                 4.634
                                                                                                                                 12.04
                                                                                                                                                                          6.53
  LONGEST FLOWPATH FROM NODE 440.00 TO NODE 467.00 = 2729.00 FEET.
   FLOW PROCESS FROM NODE 467.00 TO NODE 472.00 IS CODE = 31
                                                                                                        ** PEAK FLOW RATE TABLE **
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<CCC
>>>>SUSING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<CCC

ELEVATION DATA: UPSTREAM(FEET) = 883.00 DOWNSTREAM(FEET) = 802.40
FLOW LENGTH(FEET) = 765.00 MANNING'S N = 0.013
                                                                                                        STREAM
                                                                                                                  RUNOFF Tc (CFS) (MIN.)
                                                                                                                                                  INTENSITY
                                                                                                        NUMBER
                                                                                                                                                (INCH/HOUR)
                                                                                                                                      9.80
                                                                                                                        75.23
                                                                                                                                                     5.291
                                                                                                          1 2
                                                                                                                                  12.04
                                                                                                                        70.40
                                                                                                                                                     4 634
  ELEVATION DATA: UPSTREAM(FEET) = 883.00 DOWNST
FLOW LENGTH(FEET) = 765.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 24.0 INCH PIPE IS 17.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 25.67
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER
                                                                                                        COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                        PEAK FLOW RATE(CFS) = 75.1
TOTAL AREA(ACRES) = 32.0
                                                                                                                                            75.23 Tc(MIN.) =
                                                                                                                                                                         9.80
                                                          NUMBER OF PIPES = 1
  LONGEST FLOWPATH FROM NODE 440.00 TO NODE 472.00 = 3494.00 FEET.
FLOW PROCESS FROM NODE 472.00 TO NODE 476.00 IS CODE = 31
  FLOW PROCESS FROM NODE 472.00 TO NODE 472.00 IS CODE = 1 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
```

```
DEPTH OF FLOW IN 24.0 INCH PIPE IS 18.2 INCHES
                                                                                                                                              CONFLUENCE FORMULA USED FOR 2 STREAMS.
   PIPE-FLOW VELOCITY(FEET/SEC.) = 29.48
ESTIMATED PIPE DIAMETER(INCH) = 24.00
PIPE-FLOW(CFS) = 75.23
                                                                                NUMBER OF PIPES = 1
                                                                                                                                              STREAM RUNOFF
NUMBER (CFS)
                                                                                                                                                                                                       INTENSITY
   PIPE-FLOW(CFS) = 75.23
PIPE TRAVEL TIME(MIN.) = 0
                                                                                                                                                                                         Tc
                                                                                                                                                                   (CFS)
   PIPE TRAVEL TIME(MIN.) = 0.22 Tc(MIN.) = 10.02
LONGEST FLOWPATH FROM NODE 440.00 TO NODE 476.00 = 3888.00 FEET.
                                                                                                                                                                                     (MIN.) (INCH/HOUR)
                                                                                                                                                                   80.69 10.02
                                                                                                                                                                                                           5.215
.....
TOTAL NUMBER OF STREAMS = 2
   TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 10.02
RAINFALL INTENSITY(INCH/HR) = 5.22
TOTAL STREAM AREA (ACRES) = 31.99
                                                                                                                                          FLOW PROCESS FROM NODE 476.00 TO NODE 479.00 IS CODE = 31
   TOTAL STREAM AREA(ACRES) = 31.99
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                              >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                         75.23
                                                                                                                                               >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) < < < <
ESTIMATED FIFE DIAMETER(INCH) - 5.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.0000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.0000
   *USER SPECIFIED(SUBAREA):
   RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
  S.C.S. CURVE NUMBER (AMC II) = 0

INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00

UPSTREAM ELEVATION(FEET) = 890.00

DOWNSTREAM ELEVATION(FEET) = 880.00

ELEVATION DIFFERENCE(FEET) = 10.00
                                                                                                                                           *******************
                                                                                                                                             FLOW PROCESS FROM NODE 479.00 TO NODE 479.00 IS CODE = 1
   ELEVATION DIFFERENCE(FEET) = 10.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                                               >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                             5.765
   WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION ===== 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.451
                                                                                                                                              TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
   SUBAREA RUNOFF(CFS) = 0.64
TOTAL AREA(ACRES) = 0.21 TOTAL RUNOFF(CFS) =
                                                                                                                                              CONFLUENCE VALUES USED FOR INSTANCE.

TIME OF CONCENTRATION(MIN.) = 10.29

RAINFALL INTENSITY(INCH/HR) = 5.13

TOTAL STREAM AREA(ACRES) = 34.50
                                                                                                      0.64
  **********************
                                                                                                                                              TOTAL STREAM AREA(ACRES) =
   FLOW PROCESS FROM NODE 474.00 TO NODE 475.00 IS CODE = 31
                                                                                                                                        PEAK FLOW RATE(CFS) AT CONFLUENCE =
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                                           *****************
   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <---
                                                                                                                                             FLOW PROCESS FROM NODE 477.00 TO NODE 478.00 IS CODE = 21
   ______
   ELEVATION DATA: UPSTREAM(FEET) = 890.00 DOWNSTF
FLOW LENGTH(FEET) = 770.00 MANNING'S N = 0.01
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                   890.00 DOWNSTREAM(FEET) = 770.00
                                                                                                                                             >>>>RATIONAL METHOD INITIAL SUBARRA ANALYSIS
                                                                                                                                               *USER SPECIFIED(SUBAREA):
                                                                                                                                              USBA SPECIFICIOUSARB). RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0
   DEPTH OF FLOW IN 18.0 INCH PIPE IS 1.6 INCHES
PIPE-FLOW VELOCITY (FEET/SEC.) = 8.45
ESTIMATED PIPE DIAMETER (INCH) = 18.00 NUMBER
PIPE-FLOW (CFS) = 0.64
                                                                                                                                              S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
                                                                                NUMBER OF PIPES = 1
   UPSTREAM ELEVATION(FEET) = 803.45
DOWNSTREAM ELEVATION(FEET) = 802.75
                                                                                                                                                                                                             0.70
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.408
*USER SPECIFIED(SUBAREA):
                                                                                                                                             FLOW PROCESS FROM NODE 478.00 TO NODE 479.00 IS CODE = 61
   "GUBAKEA]:

RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100

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

AREA-AVERAGE RUNOFF COEFFICIENT = 0.4100

SUBAREA AREA(ACRES) = 2.30 SUBAREA RUNOFF(CFS) = 6.04

TOTAL AREA(ACRES) = 2.5 TOTAL RUNOFF(CFS) = 6.59
                                                                                                                                              >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                                          >>>>(STANDARD CURB SECTION USED)<
                                                                                                                                           UPSTREAM ELEVATION(FEET) = 803.00 DOWNSTREAM ELEVATION(FEET) = 730.00 STREET LENGTH(FEET) = 639.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
   TC(MIN.) =
FLOW PROCESS FROM NODE 475.00 TO NODE 476.00 IS CODE = 31 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
    >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
                                                                                                                                               SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
    >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                                        LOW)<a href="Low">Low</a> | Low | Lo
   ELEVATION DATA: UPSTREAM(FEET) = 765.00 DOWNSTREAM
                                                                                 DOWNSTREAM(FEET) =
                                                                                                                                                                                                                                                                         0.0150
   ELEVATION DATA: UPSTREAM (FEET) = 765.00 DOWNSTI
FLOW LENGTH(FEET) = 163.00 MANNING'S N = 0.0:
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 5.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 13.62
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER (
                                                                                                                                                                                                                                                             0.0200
                                                                                        0.013
                                                                                                                                                  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                                                  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW: STREET FLOW DEPTH(FEET) = 0.27 HALFSTREET FLOOD WIDTH(FEET) = 7.04
                                                                           NUMBER OF PIPES = 1
   PIPE-FLOW(CFS) = 6.59

PIPE TRAVEL TIME(MIN.) = 0.20 Tc(MIN.) = 7.48

LONGEST FLOWPATH FROM NODE 473.00 TO NODE 476.00 = 1033.00 FEET.
                                                                                                                                             HALFSTREET FLOOD WIDTH(FEET) = 7.04
AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.39
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.70
STREET FLOW TRAVEL TIME(MIN.) = 1.67 Tc(MIN.) = 10.40
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.092
*USER SPECIFIED(SUBAREA):
************************
                                                                                 476.00 IS CODE = 1
   FLOW PROCESS FROM NODE 476.00 TO NODE
                                                                                                                                             *USBR 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
SUBAREA AREA(ACRES) = 5.39
SUBAREA AREA(ACRES) = 5.6 PEAK FLOW RATE(CFS) =
   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
   _____
   TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
   CONFLUENCE VALUES USED FOR THE OF CONCENTRATION (MIN.) = 7.48
RAINFALL INTENSITY(INCH/HR) = 6.30
2.51
                                                                                                                                               END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                7.48
                                                                                                                                              END OF SUBAKEA STREET FLOW HIDRAULICS.

DEPTH(FEET) = 0.32 HALFSTREET FLOOD WIDTH(FEET) = 9.46

FLOW VELOCITY(FEET/SEC.) = 7.35 DEPTH*VELOCITY(FT*FT/SEC.) :

LONGEST FLOWPATH FROM NODE 477.00 TO NODE 479.00 = 7.00
   PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                              6.59
                                                                                                                                                                                                                                                               709.00 FEET.
   ** CONFIGUENCE DATA **
                  RUNOFF
(CFS)
   STREAM
                                              ТС
                                                              INTENSITY
                                                                                          AREA
                                                                                                                                             FLOW PROCESS FROM NODE 479.00 TO NODE 479.00 IS CODE = 1
   NUMBER
                                            (MIN.)
                                                          (INCH/HOUR)
                                                                                         (ACRE)
                                                      5.215
                                                                                         31.99
                         75.23
                                          10.02
                                                                                                                                               >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<<
                                            7.48
                                                                                                                                               >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                                                                           ______
   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                                                              TOTAL NUMBER OF STREAMS = 2
```

```
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                      FLOW PROCESS FROM NODE
                                                                                                                  480.00 TO NODE
                                                                                                                                      481.00 IS CODE = 21
 TIME OF CONCENTRATION(MIN.) = 10.40
RAINFALL INTENSITY(INCH/HR) = 5.09
TOTAL STREAM AREA(ACRES) = 5.62
                                                                                      >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                              14 88
                                                                                      *USER SPECIFIED(SUBAREA):
                                                                                      RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
                                                                                      RESIDENTIAL (4.5 DU/AC OR LESS) KUNVOF

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

INITIAL SUBAREA FLOW-LENGTH(FEET) =

UPSTREAM ELEVATION(FEET) = 738.35

DOWNSTREAM ELEVATION(FEET) = 737.65

ELEVATION DIFFERENCE(FEET) = 0.70
  ** CONFLUENCE DATA **
           RUNOFF
(CFS)
                         TC INTENSITY (MIN.) (INCH/HOUR)
 стоглм
                                                      אספא
                                                     (ACRE)
                                     5.128
                                                      34.50
               80.69
                         10.29
                                                                                      DONNSTREAM ELEVATION(FEET) = 737.65
ELEVATION DIFFERENCE(FEET) = 0.70
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 70.00
(Reference: Table 3-1B of Hydrology Manual)
                         10.40
                                        5.092
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 2 STREAMS.
  ** PEAK FLOW RATE TABLE **
                                                                                      (Reference: name 3-18 of hydrology manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION!

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
SUBAREA RUNOFF(CFS) = 0.65

TOTAL AREA(ACRES) = 0.22 TOTAL RUNOFF(CFS) = 0.65
             RUNOFF
(CFS)
                        Tc (MIN.)
                                     INTENSITY
 NUMBER
                                   (INCH/HOUR)
               95.41
95.01
                       10.29
                                   5.128
5.092
                                                                                    *******************
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 95.41 Tc(MIN.) = TOTAL AREA(ACRES) = 40.1
                                                                                      FLOW PROCESS FROM NODE 481.00 TO NODE 482.00 IS CODE = 61
 **** UPSTREAM ELEVATION(FEET) = 737.50 DOWNSTREAM ELEVATION(FEET) = 712.00 STREET LENGTH(FEET) = 707.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
 FLOW PROCESS FROM NODE 479.00 TO NODE 428.00 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                      DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
 ELEVATION DATA: UPSTREAM(FEET) = 725.00 DOWNSTREAM(FEET) = 724.00 FLOW LENGTH(FEET) = 60.00 MANNING'S N = 0.013
 ELEVATION DATA: UPSTREAM(FEET) = 725.00 DOWNST
FLOW LENGTH(FEET) = 60.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 39.0 INCH PIPE IS 29.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 14.21
ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER
PIPE-FLOW(CFS) = 95.41
                                                                                      SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                      STREET PARKWAY COROSSFALL(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
  PIPE-FLOW(CFS) = 95.41
PIPE TRAVEL TIME(MIN.) = 0
                                      Tc(MIN.) = 10.36
 PIPE TRAVEL TIME(MIN.) = 0.07 Tc(MIN.) = 10.36
LONGEST FLOWPATH FROM NODE 440.00 TO NODE 428.00 = 4252.00 FEET.
                                                                                         **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                        STREETFLOW MODEL RESULTS USING ESTIMATED FLOW: STREET FLOW DEPTH(FEET) = 0.28 HALFSTREET FLOOD WIDTH(FEET) = 7.45
.....
 FLOW PROCESS FROM NODE 428.00 TO NODE 428.00 IS CODE = 11
                   >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY
  ** MAIN STREAM CONFLUENCE DATA **
                                                                                      *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
           RUNOFF Tc (CFS) (MIN.)
                                    INTENSITY
  STREAM
                                                     AREA
 NUMBER
                                  (INCH/HOUR)
                                                  (ACRE)
40.12
                                       5.105
                                                                                                                                PEAK FLOW RATE(CFS) = 8.61
                                                                                                                          SUBAREA RUNOFF(CFS) =
                                  440.00 TO NODE
                                                       428.00 = 4252.00 FEET.
                                                                                      SUBAREA AREA(ACRES) = 3.55
TOTAL AREA(ACRES) = 3.8
 LONGEST FLOWPATH FROM NODE
                                                                                                                    3.8
                                                                                                                                                                9 14
  ** MEMORY BANK # 1 CONFLUENCE DATA **
            RUNOFF TC INTENSITY
(CFS) (MIN.) (INCH/HOUR)
57.23 15.58 3.924
                                                                                      END OF SUBAREA STREET FLOW HYDRAULICS:
 STREAM
                                                    AREA
                                                       NUMBER
                                                  (ACRE)
                                                    25.68
                                   400.00 TO NODE
                                                                                                                                                           777.00 FEET.
 LONGEST FLOWPATH FROM NODE
  ** PEAK FLOW RATE TABLE **
                                                                                    ******************
            RUNOFF TC (CFS) (MIN.)
                                                                                      FLOW PROCESS FROM NODE 482.00 TO NODE 482.00 IS CODE = 1
  STREAM
                                     INTENSITY
  NUMBER
                                   (INCH/HOUR)
             133.47
                                   5.105
                                                                                      >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<-
                          10.36
                      15.58
            130.56
                                        3.924
                                                                                      >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                      TOTAL NUMBER OF STREAMS = 2
 PEAK FLOW RATE(CFS) =
TOTAL AREA(ACRES) =
                                                                                      CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 11.92
RAINFALL INTENSITY(INCH/HR) = 4.66
                              133.47
                                        Tc(MIN.) = 10.36
                              65.8
FLOW PROCESS FROM NODE 428.00 TO NODE 428.00 IS CODE = 12
>>>>CLEAR MEMORY BANK # 1 <<<< STREAM RUNOFF NUMBER (CFS)
                                                                                                                           INTENSITY
                                                                                                                                           AREA
                                                                                                              (MIN.) (INCH/HOUR)
                                                                                                                                          (ACRE)
10.83
 FLOW PROCESS FROM NODE 428.00 TO NODE 482.00 IS CODE = 31
                                                                                                    9.14
                                                                                                             11.92
                                                                                                                             4.664
     >>>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) = 724.00 DOWNSTREAM(FEET) = 707.00 FLOW LENGTH(FEET) = 547.00 MANNING'S N = 0.013
                                                                                      ** PEAK FLOW RATE TABLE **
 FLOW LENGTH(FEET) = 547.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 39.0 INCH PIPE IS 30.1 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 19.45

ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 133.47

PIPE TRAVEL TIME(MIN.) = 0.47 Tc(MIN.) = 10.83
                                                                                      STREAM
                                                                                                  RUNOFF
                                                                                                                Tc
                                                                                                                         INTENSITY
                                                                                                  RUNOFF Tc
(CFS) (MIN.)
141.77 10.83
                                                                                      NUMBER
                                                                                                                        (INCH/HOUR)
                                                                                      1 2
                                                                                                  134.61 11.92
                                                                                                                           4.664
 PTPE-FLOW(CFS) = 133.47

PIPE TRAVEL TIME(MIN.) = 0.47 Tc(MIN.) = 10.83

LONGEST FLOWPATH FROM NODE 400.00 TO NODE 482.00 = 5133.00 FEET. PEAK FLOW RATE(CFS) = 141.77 Tc(MIN.) = TOTAL AREA(ACRES) = 69.6
                                                                                                                                            10 83
482.00 = 5133.00 FEET.
 FLOW PROCESS FROM NODE 482.00 TO NODE 482.00 IS CODE = 1
                                                                                    ********************
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE << < <
                                                                                      FLOW PROCESS FROM NODE 482.00 TO NODE 487.00 IS CODE = 31
TOTAL NUMBER OF STREAMS = 2
                                                                                      >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
 CONFIGURNCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                      >>>>IISING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) < < < <
     TIME OF CONCENTRATION(MIN.) = 10.83
RAINFALL INTENSITY(INCH/HR) = 4.96
 TOTAL STREAM AREA(ACRES) =
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
```

```
PIPE-FLOW(CFS) =
                              141.77
                                                                                                           LONGEST FLOWPATH FROM NODE 400.00 TO NODE 487.00 = 5233.00 FEET.
FLOW PROCESS FROM NODE 487.00 TO NODE 492.00 IS CODE = 31
FLOW PROCESS FROM NODE 487.00 TO NODE 487.00 IS CODE = 1
                                                                                                           >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                       -- >>>>ISING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<
                                                                                                        == ELEVATION DATA: UPSTREAM(FEET) = 703.00 DOWNSTREAM(FEET) = 695.00
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                                          ELEVATION DATA: UPSTREAM(FEET) = 703.00 DOWNSTREAM(FEET) = 695.00 FLOW LENGTH(FEET) = 676.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 48.0 INCH PIPE IS 37.8 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 13.80 ESTIMATED PIPE DIAMETER(INCH) = 48.00 NUMBER OF PIPES = 1 PIPE-FLOW(CFS) = 146.34 PIPE TRAVEL TIME(MIN.) = 0.82 Tc(MIN.) = 11.73 LONGEST FLOWPATH FROM NODE 400.00 TO NODE 492.00 = 5909.00 FEET.
TOTAL NUMBER OF STREAMS = 2
TOTAL NUMBER OF STRAMS - 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 10.91
RAINFALL INTENSITY(INCH/HR) = 4.94
TOTAL STREAM AREA(ACRES) = 69.57
PEAK FLOW RATE(CFS) AT CONFLUENCE =
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
TOTAL NUMBER OF STREAMS = 1
                                                                                                           CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                           CONFLUENCE VALUES USED FOR INDICATION TIME OF CONCENTRATION(MIN.) = 11.73 RAINFALL INTENSITY(INCH/HR) = 4.71 TOTAL STREAM AREA(ACRES) = 71.35
ELEVATION DIFFERENCE(FEET) = 0.70
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                           PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                 146.34
                                                                                                        ******************
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
SUBAREA RUNOFF(CFS) = 0.44
TOTAL AREA(ACRES) = 0.15 TOTAL RUNOFF(CFS) =
                                                                                                          FLOW PROCESS FROM NODE 490.00 TO NODE 491.00 IS CODE = 21
                                                                                                           >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
FLOW PROCESS FROM NODE 486.00 TO NODE 487.00 IS CODE = 61
                                                                                                           *USER SPECIFIED(SUBAREA):
                                                                                                           RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
 >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
 >>>>(STANDARD CURB SECTION USED) << <<
>>>>(STANDARD CUMB SECTION USED)<<<<<

UPSTREAM ELEVATION(FEET) = 713.00 DOWNSTREAM ELEVATION(FEET) = 708.00

STREET LENGTH(FEET) = 257.00 CURB HEIGHT(INCHES) = 6.0

STREET HALFWIDTH(FEET) = 18.00
                                                                                                          UPSTREAM ELEVATION(FEET) = 714.05
DOWNSTREAM ELEVATION(FEET) = 713.35
                                                                                                           ELEVATION DIFFERENCE(FEET) =
                                                                                                                                                           0.70
                                                                                                           ELEVATION DIFFERENCE (FEDI) - 0..0
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                           SUBAREA RUNOFF(CFS) = 0.39
TOTAL AREA(ACRES) = 0.13 TOTAL RUNOFF(CFS) =
                                                                                                         ************************
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                           FLOW PROCESS FROM NODE 491.00 TO NODE 492.00 IS CODE = 61
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 >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
                                                                                                           >>>>(STANDARD CURB SECTION USED)<
                                                                                                         ·
------
   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = STREETFLOW MODEL RESULTS USING ESTIMATED FLOW: STREET FLOW DEPTH(FEET) = 0.25
                                                                                                           UPSTREAM ELEVATION(FEET) = 712.50 DOWNSTREAM ELEVATION(FEET) = 706.00 STREET LENGTH(FEET) = 348.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
STREET FLOW DEPTH(FEET) = 0.25
HALFSTREET FLOOD WIDTH(FEET) = 6.28
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.54
PRODUCT OF DEPTHEVELOCITY(FT*FT/SEC.) = 0.64
STREET FLOW TRAVEL TIME(MIN.) = 1.69 Tc(MIN.) = 10.42
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.086
                                                                                                           DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
                                                                                                           INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
TOU TEAR RAINFALL INTENSITY (INCH/HOUR) = 5.000
*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
SUBAREA AREA(ACRES) = 1.63 SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 1.8 PEAK FLOW RATE(CFS) =
                                                                                                           SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                           SPECIFIED NUMBER OF HARFSTREETS 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 = 0.0
                                                                                                                                                                                                          0.0150
                                                                                                                                                                                                0.0200
                                                 SUBAREA RUNOFF(CFS) = PEAK FLOW RATE(CFS) =
                                                                                                           **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = STREETFLOW MODEL RESULTS USING ESTIMATED FLOW: STREET FLOW DEPTH(FEET) = 0.27

HALFSTREET FLOW DIDTH(FEET) = 7.21

AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.60

PRODUCT OF DEPTHAVELOCITY(FT*FT/SEC.) = 0.70

STREET FLOW TRAVEL TIME(MIN.) = 2.23 TC(MIN.) = 10.97

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.921

*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 = 0.550

SUBAREA AREA(ACRES) = 2.28 SUBAREA RUNOFF(CFS) =
                                                                                                              **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
 END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.29 HALFSTREET FLOOD WIDTH(FEET) = 8.38
FLOW VELOCITY(FEET/SEC.) = 2.87 DEPTH*VELOCITY(FT*FT/SEC.) =
LONGEST FLOWPATH FROM NODE 485.00 TO NODE 487.00 = 32'
FLOW PROCESS FROM NODE 487.00 TO NODE 487.00 IS CODE = 1
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
TOTAL NUMBER OF STREAMS = 2
                                                                                                           SUBAREA AREA(ACRES) = 2.28
TOTAL AREA(ACRES) = 2.4
                                                                                                                                                        SUBAREA RUNOFF(CFS) = 5.83
PEAK FLOW RATE(CFS) =
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 10.42
RAINFALL INTENSITY(INCH/HR) = 5.09
                                                                                                           END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                           DEPTH(FEET) = 0.32 HALFSTREET FLOOD WIDTH(FEET) = 9.53
FLOW VELOCITY(FEET/SEC.) = 3.01 DEPTH*VELOCITY(FT*FT/SEC.) = LONGEST FLOWPATH FROM NODE 490.00 TO NODE 492.00 = 41
 TOTAL STREAM AREA(ACRES) =
                                            1.78
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                          4.71
 ** CONFLUENCE DATA **
              RUNOFF
                                  ТС
                                              INTENSITY
                                                                   AREA
                                                                                                           FLOW PROCESS FROM NODE 492.00 TO NODE 492.00 IS CODE = 1
STREAM
                 (CFS)
                                (MIN.)
                                           (INCH/HOUR)
                                                                  (ACRE)
NUMBER
                             10.91
10.42
                                            4.937
5.086
                                                                     69.57
                141 77
                                                                                                           >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE
                  4.71
                                                                                                           TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                           CONFLUENCE VALUES USED FOR INDICATION TIME OF CONCENTRATION(MIN.) = 10.97
RAINFALL INTENSITY(INCH/HR) = 4.92
TOTAL STREAM AREA(ACRES) = 2.41
CONFLUENCE FORMULA USED FOR 2 STREAMS.
 ** PEAK FLOW RATE TABLE **
               RUNOFF
(CFS)
                                                                                                           PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                    6.17
                              (MIN.)
NUMBER
                                          (INCH/HOUR)
                                            5.086
                                                                                                         ************************
                              10.42
                142 32
                                                                                                           FLOW PROCESS FROM NODE 483.00 TO NODE 483.10 IS CODE = 21
COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 146.34 Tc(MIN.) = TOTAL AREA(ACRES) = 71.3
                                                                                                           >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                  Tc(MIN.) = 10.91
                                                                                                                                          _____
                                                                                                           *USER SPECIFIED(SUBAREA):
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RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENCTH(FEET) = 100.00 UPSTREAM ELEVATION(FEET) = 740.00 DOWNSTREAM ELEVATION(FEET) = 730.00
                                                                                                                        ESTIMATED PIPE DIAMETER(INCH) = 51.00 NUMBER OF PIPES = 1
                                                                                                                        ELEVATION DIFFERENCE(FEET)
  SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.765
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION:
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.451
                                                                                                                       FLOW PROCESS FROM NODE 497.00 TO NODE 497.00 IS CODE = 1
                                                                                                                        >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
  SUBAREA RUNOFF(CFS) = 0.27
TOTAL AREA(ACRES) = 0.09 TOTAL RUNOFF(CFS) =
                                                                                                                     ______
                                                                                                                       TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                         0.27
     COMPUDENCE VALUES USED TO RIGHT TO REPORT TO R
  FLOW PROCESS FROM NODE 483.10 TO NODE 484.00 IS CODE = 31
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                        PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                                    156.09
     >>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 1.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.78
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                                                                                        *USER SPECIFIED(SUBAREA):
                                                                                                                        RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
0.70
  FLOW PROCESS FROM NODE 483.10 TO NODE 484.00 IS CODE = 81 SUBARBA OVERLAND TIME OF FLOW(MIN.) = 8.735

WARNING: INITIAL SUBARBA FLOW PATH LENGTH IS GREATER THAN

>>>>ADDITION OF SUBARBA TO MAINLINE PEAK FLOW<<<< THE MAXIMUM OVERLAND FLOW LENGTH = 70.00
                                                                                                                                                                                       8.735
                                                                                                                                      (Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION!
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.836
  **USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CUYEN DIMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4100
                                                                                                                         100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
                                                                                                                       SUBAREA RUNOFF(CFS) = 0.71
TOTAL AREA(ACRES) = 0.24 TOTAL RUNOFF(CFS) =
  SUBAREA AREA(ACRES) = 1.86 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 2.0 TOTAL RUNOFF(CFS) =
                                                                                                                    FLOW PROCESS FROM NODE 496.00 TO NODE 497.00 IS CODE = 61
                       = (د.
8.42
                                                                                             4.67
  TC(MIN.) =
---- UPSTREAM ELEVATION(FEET) = 705.00 DOWNSTREAM ELEVATION(FEE

STREET LENGTH(FEET) = 750.00 CURB HEIGHT(INCHES) = 6.0

STREET HALFWIDTH(FEET) = 18.00
                                                                                                                                                                               DOWNSTREAM ELEVATION(FEET) = 697.00
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
         ELEVATION DATA: UPSTREAM(FEET) = 705.00 DOWNSTRE. FLOW LENGTH(FEET) = 140.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                                       DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
                                                         705.00 DOWNSTREAM(FEET) = 700.00
                                                                                                                        INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  DEPTH OF FLOW IN 18.0 INCH PIPE IS 6.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 9.02
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 4.67
                                                                                                                        SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                                        SPECIFIED NUMBER OF HALFSTREETS 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 = 0.02
  PIPE TRAVEL TIME (MIN.) = (LONGEST FLORIDA
                                                                                                                                                                                                                                0.0150
  PIPE TRAVEL TIME(MIN.) = 0.26 Tc(MIN.) = 8.68

LONGEST FLOWPATH FROM NODE 483.00 TO NODE 492.00 =
                                                      Tc(MIN.) = 8.68
                                                                                                                                                                                                                      0.0200
                                                                                              842.00 FEET.
                                                                                                                            **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                                                                                                                   3.67
 .....
                                                                                                                           STREETFLOW MODEL RESULTS USING ESTIMATED FLOW: STREET FLOW DEPTH(FEET) = 0.30
  FLOW PROCESS FROM NODE 492.00 TO NODE 492.00 IS CODE = 1
                                                                                                                       SIREST FLOW DEFTH(FEET) = 0.30

HALFSTREET FLOOD WIDTH(FEET) = 8.62

AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.13

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.64

STREET FLOW TRAVEL TIME(MIN.) = 5.86 Tc(MIN.) = 14.60

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.093

*USER SPECIFIED(SUBAREA):
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
  _____
  TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
  CONFLUENCE VALUES USED FOR TAXABLE STREAM
TIME OF CONCENTRATION(MIN.) = 8.68
RAINFALL INTENSITY(INCH/HR) = 5.72
TOTAL STREAM AREA(ACRES) = 1.95
                                                                                                                        RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.520
                                                                                                                                                                          SUBAREA RUNOFF(CFS) =
                                                                                                                        SUBAREA AREA(ACRES) = 2.74
TOTAL AREA(ACRES) = 3.0
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                 4 67
                                                                                                                                                                 3.0
                                                                                                                                                                                  PEAK FLOW RATE(CFS) =
  ** CONFLUENCE DATA **
                                                                                                                        RUNOFF
                                                     INTENSITY
                                                                            AREA
                                     (MIN.)
  NUMBER
                     (CFS)
                                                (INCH/HOUR)
                                                                         (ACRE)
                                                   4.713
                                  11.73
                   146.34
                                                                             71.35
                      4.67
                                     8.68
                                                       5.723
                                                                                                                        FLOW PROCESS FROM NODE 497.00 TO NODE 497.00 IS CODE = 1
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR 3 STREAMS.
                                                                                                                        >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
   ** PEAK FLOW RATE TABLE **
  STREAM
                   RUNOFF
                                      Tc
                                                   INTENSITY
                                                                                                                      (CFS)
130.05
                                  (MIN.)
8.68
                                                 (INCH/HOUR)
5.723
                                                                                                                        TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  NUMBER
                                                                                                                        TIME OF CONCENTRATION(MIN.) = 14.60
RAINFALL INTENSITY(INCH/HR) = 4.09
TOTAL STREAM AREA(ACRES) = 2.98
                   150.32
                                10.97
11.73
                                                      4.921
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FI
PEAK FLOW RATE(CFS) = 156.09 Tc(MIN.) = 11.73

TOTAL AREA(ACRES) = 75.7 **CONF
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 492.00 = 5909.00 FEET. STREAM NIMMERE
                                                                                                                        PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                                        6 34
                                                                                                                        ** CONFLUENCE DATA **
                                                                                                                                         RUNOFF
                                                                                                                                                             Tc
                                                                                                                                                                          INTENSITY
                                                                                                                                                                                                  AREA
                                                                                                                                                          (MIN.) (INCH/HOUR)
                                                                                                                                                                       4.473
 ******************
                                                                                                                                         156.09
                                                                                                                                                      12.72
                                                                                                                                                        12.72
                                                                                                                                                                                                   75.71
                                                                                                                            2
  FLOW PROCESS FROM NODE 492.00 TO NODE 497.00 IS CODE = 31
                                                                                                                                           6.34
                                                                                                                                                                             4.093
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                       RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRE SUBARDANSSS
>>>>SUSING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<
                                                                                                                        CONFLUENCE FORMULA USED FOR 2 STREAMS.
  ELEVATION DATA: UPSTREAM(FEET) = 700.50 DOWNST
FLOW LENGTH(FEET) = 789.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 51.0 INCH PIPE IS 39.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 13.28
                                                                                                                        ** PEAK FLOW RATE TABLE **
                                                         700.50 DOWNSTREAM(FEET) = 692.50
                                                                                                                        STREAM
NUMBER
                                                                                                                                      RUNOFF
(CFS)
                                                                        0.013
                                                                                                                                                                         INTENSITY
                                                                                                                                                        (MIN.)
                                                                                                                                                                      (INCH/HOUR)
                                                                                                                                         161.62
                                                                                                                                                        12.72
                                                                                                                                                                           4.473
```

```
2
                      149.17 14.60
                                                                4.093
                                                                                                                                                  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                                                                              ______
   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 161.62 Tc(MIN.) = 12.72
TOTAL AREA(ACRES) = 78.7
                                                                                                                                                  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
    TOTAL AREA(ACRES) = 78.7

LONGEST FLOWPATH FROM NODE 400.00 TO NODE 497.00 = 6698.00 FEET. RAINFALL INTENSITY(INCH/HR) = 4.77
                                                                                                                                                 TOTAL STREAM AREA(ACRES) =
                                                                                                                                                                                                            3.78
  9.87
    FLOW PROCESS FROM NODE 497.00 TO NODE 498.00 IS CODE = 31
                                                                                                                                                  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                                                 FLOW PROCESS FROM NODE 503.00 TO NODE 504.00 IS CODE = 21
ELEVATION DATA. UPSIKRAM(FBEI) = 032.30 DONNSTREAM(FBEI) = 6
FLOW LENGTH(FEET) = 50.00 MANING'S N = 0.013
DEPTH OF FLOW IN 45.0 INCH PIPE IS 35.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 17.20
ESTIMATED PIPE DIAMETER(INCH) = 45.00 NUMBER OF PIPES = 1
                                                                                                                                                  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
                                                                                                                                                                                                                0 100.00
   UPSTREAM ELEVATION(FEET) = 990.00
DOWNSTREAM ELEVATION(FEET) = 990.00
                                                                                                                                                                                                               10.00
_____
   FLOW PROCESS FROM NODE 500.00 TO NODE 501.00 IS CODE = 21
                                                                                                                                                  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
    >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                                                                  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                                                                                  ELEVATION DATA: UPSTREAM(FEET) = 980.00 DOWNSTREAM(FEET) =
                                                                                                                                                 ELEVATION DATA: UPSTREAM(FEET) = 980.00 DOWNSTREAM(FEET) =
FLOW LENGTH(FEET) = 652.00 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.) = 7.17
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
   RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
  INITIAL SUBAREA FLOW-LENGTH(FEET) = UPSTREAM ELEVATION(FEET) = 991.45

DOWNSTREAM ELEVATION(FEET) = 990.75

ELEVATION DIFFERENCE(FEET) = 0.70

SUBAREA OVERLAND TIME OF THE SUBAREA OVERLAND TIME OVERLAND TIME OVER THE SUBAREA OVER THE SUB
                                                                                                                                                 ESTIMATED FIFE DIRECTION, 1 CO. 1 CO. 1 CO. 1 CO. 1 CO. 1 CO. 2 CO
                                                                   0.70
                                                                                8.735
     100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
                                                                                                                                                                                                                                                                752.00 FEET.
   SUBAREA RUNOFF(CFS) = 0.68

TOTAL AREA(ACRES) = 0.23 TOTAL RUNOFF(CFS) =
                                                                                                         0.68
 FLOW PROCESS FROM NODE 504.00 TO NODE 505.00 IS CODE =
   FLOW PROCESS FROM NODE 501.00 TO NODE 502.00 IS CODE = 61
                                                                                                                                                >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                                                                   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.409
                                                                                                                                            100 YEAR RAINFALL INTENSITY(INCH/HOCK),
*USER SPECIFIED(SUBAREA):
== RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4100
SUBAREA AREA(ACRES) = 6.48 SUBAREA RUNOFF(CFS) = 17.03
TOTAL AREA(ACRES) = 6.6 TOTAL RUNOFF(CFS) = 17.03
    >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  >>>>COMPUTE STREET FLOW TRAVEL TIME THAU SUBAREA<
   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 505.00 TO NODE 506.00 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) = Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
                                                                                                                                                  >>>>COMPILE PIPE-FLOW TRAVEL TIME THRU SURAREA
                                                                                                                                                  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
                                                                                                                                 0.0150
                                                                                                                                              ______
                                                                                                                                                  ELEVATION DATA: UPSTREAM(FEET) = 905.00 DOWNSTREAM(FEET) = 903.00 FLOW LENGTH(FEET) = 75.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 21.0 INCH PIPE IS 12.8 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 11.32 ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
       **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.25
HALFSTREET FLOOD WIDTH(FEET) = 6.10
AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.44
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.35
STREET FLOW TRAVEL TIME(MIN.) = 1.89 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.023
                                                                                                                                                  PIPE TRAVEL TIME(MIN.) = (LONGEST PIONE)
                                                                                                                                                  PIPE TRAVEL TIME(MIN.) = 0.11 Tc(MIN.) = 7.39
LONGEST FLOWPATH FROM NODE 503.00 TO NODE 506.00 =
                                                                                                                                                                                                                Tc(MIN.) = 7.39
    *USER SPECIFIED(SUBAREA):
  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

SUBAREA AREA(ACRES) = 3.55 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 3.8 PEAK FLOW RATE(CFS) =
                                                                                                                                                  FLOW PROCESS FROM NODE 506.00 TO NODE 506.00 IS CODE = 1
                                                                                                                                                  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
                                                                SUBAREA RUNOFF(CFS) = 9.27
                                                                         PEAK FLOW RATE(CFS) =
                                                                                                                                              TOTAL NUMBER OF STREAMS = 2
    END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                                                  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
   DEPTH(FEET) = 0.29 HALFSTREET FLOOD WIDTH(FEET) = 8.21 FLOW VELOCITY(FEET/SEC.) = 6.23 DEPTH*VELOCITY(FT*FT/SEC.) LONGEST FLOWPATH FROM NODE 500.00 TO NODE 502.00 = 6
                                                                                                                                                  TIME OF CONCENTRATION(MIN.) = 7.39
RAINFALL INTENSITY(INCH/HR) = 6.35
                                                                                                                       686.00 FEET.
                                                                                                                                                  TOTAL STREAM AREA(ACRES) =
                                                                                                                                                                                                            6.64
                                                                                                                                                  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                  ** CONFLUENCE DATA **
   FLOW PROCESS FROM NODE 502.00 TO NODE 506.00 IS CODE = 31
                                                                                                                                                  STREAM
                                                                                                                                                                RUNOFF Tc (CFS) (MIN.)
                                                                                                                                                                                                              THTENSITY
                                                                                                                                                                                                                                           AREA
    >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                                                                                                         (INCH/HOUR)
                                                                                                                                                  NUMBER
                                                                                                                                                                                                                                         (ACRE)
   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<
                                                                                                                                                                                        11.51
7.39
                                                                                                                                                                          9 87
                                                                                                                                                                                                                 4 770
                                                                                                                                                                                                                                              3 78
                                                                                                                                                                       17.45
                                                                                                                                                                                                                  6.347
                                                                                   DOWNSTREAM(FEET) = 902.50
    FLOW LENGTH(FEET) = 618.00 MANNING'S N = 0.00 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                          0.013
                                                                                                                                                  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                                                                  CONFLUENCE FORMULA USED FOR 2 STREAMS.
   DEPTH OF FLOW IN 18.0 INCH PIPE IS 8.7 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 11.62 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
                                                                                                                                                  ** PEAK FLOW RATE TABLE **
                                                                                NUMBER OF PIPES = 1
                                                                                                                                                  STREAM
                                                                                                                                                                      RUNOFF
    PIPE TRAVEL TIME(MIN.) = (
                                                                                                                                                                                        (MIN.)
    NUMBER
                                                                                                                                                                        (CFS)
                                                                                                                                                                                                         (TNCH/HOUR)
                                                                                                                                                                                         7.39
                                                                                                                                                                        23 79
Tc(MIN.) =
```

```
FLOW PROCESS FROM NODE 506.00 TO NODE 509.00 IS CODE = 31
                                                                                                                       ** DEAK ELOW DATE TABLE **
                                                                                                                                  RUNOFF TC INTENSITY (CFS) (MIN.) (INCH/HOUR) 31.23 8.12 5.976 29.48 13.23 4.360
     >>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<
                                                                                                                       NUMBER
   ELEVATION DATA: UPSTREAM(FEET) = 903.00 DOWNSTREAM(FEET) = 892.00 FLOW LENGTH(FEET) = 495.00 MANNING'S N = 0.013
  FLOW LENGTH(FEET) = 495.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 15.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 11.40
ESTIMATED PIPE DIAMETER (INCH) = 24.00 NUMBER OF PIPES = 1
                                                                                                                      COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 31.23 Tc(MIN.) = 8.12
TOTAL AREA(ACRES) = 15.8
LONGEST FLOWPATH FROM NODE 500.00 TO NODE 509.00 = 1799.00 FEET.
  FLOW PROCESS FROM NODE 509.00 TO NODE 512.00 IS CODE = 31
  FLOW PROCESS FROM NODE 509.00 TO NODE 509.00 IS CODE = 1 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                                                    ------
  TOTAL NUMBER OF STREAMS = 2 FLOW LENGTH(FEET) = 826.00 MANNING'S N = 0.013
                                                                                                                       ELEVATION DATA: UPSTREAM(FEET) = 892.00 DOWNSTREAM(FEET) = FLOW LENGTH(FEET) = 826.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 14.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 17.63
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
  CONFLUENCE VALUES USED FOR INDEFENDENT
TIME OF CONCENTRATION(MIN.) = 8.12
RAINFALL INTENSITY(INCH/HR) = 5.98
512.00 = 2625.00 FEET.
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                     *USER SPECIFIED(SUBAREA):
                                                                                                                    _____
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
                                                                                                                      TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                                       TIME OF CONCENTRATION(MIN.) = 8.90
RAINFALL INTENSITY(INCH/HR) = 5.63
TOTAL STREAM AREA(ACRES) = 15.77
PEAK FLOW RATE(CFS) AT CONFLUENCE =
  UPSTREAM ELEVATION(FEET) = 931.55

DOWNSTREAM ELEVATION(FEET) = 930.85
   ELEVATION DIFFERENCE(FEET) =
                                                       0.70
                                                                                                                                                                                   31.23
  ELEVATION DIFFERENCE(FEET) = 0.70
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
                                                                                                                    .....
  SUBARBA RUNOFF(CFS) = 0.89
TOTAL AREA(ACRES) = 0.30 TOTAL RUNOFF(CFS) = 0.89
                                                                                                                      FLOW PROCESS FROM NODE 510.00 TO NODE 511.00 IS CODE = 21
                                                                                                                       >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
  FLOW PROCESS FROM NODE 508.00 TO NODE 509.00 IS CODE = 61
                                                                                                                      RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
   >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
   >>>>(STANDARD CURB SECTION USED) <<<<
  UPSTREAM ELEVATION(FEET) = 896.65

DOWNSTREAM ELEVATION(FEET) = 895.95

ELEVATION DIFFERENCE(FEET) = 0.70
  UPSTREAM ELEVATION(FEET) = 929.00 DOWNSTREAM ELEVATION(FEET) = 897.00 STREET LENGTH(FEET) = 1010.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                                       SUBAREA OVERLAND TIME OF FLOW(MIN.) = 100 YEAR DATES.
                                                                                                                       100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
SUBAREA RUNOFF(CFS) = 0.74
TOTAL AREA(ACRES) = 0.25 TOTAL RUNOFF(CFS) =
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                                                                                                                              0.74
                                                                                                                    ****************
                                                                                                                      FLOW PROCESS FROM NODE 511.00 TO NODE 512.00 IS CODE = 61
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
  STREET PARKWAY (FORSSFALL(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 >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                       >>>>COMPOIE SIREE FLOW INAVEL LIME INCO
>>>>(STANDARD CURB SECTION USED)<
      **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                       UPSTREAM ELEVATION(FEET) = 895.00 DOWNSTREAM ELEVATION(FEET) = 847.00 STREET LENGTH(FEET) = 829.00 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) = 0.30

HALFSTREET FLOOD WIDTH(FEET) = 8.79

AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.74

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.13

STREET FLOW TRAVEL TIME(MIN.) = 4.50 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.360

**HISER SPECIFIED(SURBAPEA):
                                                                                                                       DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
                                                                                                                       INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  **REAL PROOF COEFFICIENT = 0.520

AREA-AVERGE RESULTION TO THE PROOF COEFFICIENT = 0.520

AREA-AVERGE RESULTION TO THE PROOF COEFFICIENT = 0.520

AREA-AVERGE RESULT = 0.520

AREA-AVERGE RESULT = 0.520

AREA-AVERGE RESULT = 0.520

AREA-AVERGE RESULT = 0.520
                                                                                                                       SPECIFIED NUMBER OF HALFSTREETS 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 = 0.0
  SUBAREA AREA(ACRES) = 5.05
TOTAL AREA(ACRES) = 5.4
                                                   SUBAREA RUNOFF(CFS) = 11.45
PEAK FLOW RATE(CFS) = 12.13
                                                                                                                           **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                      **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.29

HALFSTREET FLOOD WIDTH(FEET) = 8.09

AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.82

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.39

STREET FLOW TRAVEL TIME(MIN.) = 2.87 TC(MIN.) = 11.60

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.746

**HUSPE SPECIFIED(SITRAPEA).**
  ********************
  FLOW PROCESS FROM NODE 509.00 TO NODE 509.00 IS CODE = 1
                                                                                                                       TOU TEAK RAINFALD INIENDITI(INCH, 100K, - .... * * * * USER SPECIFIED(SUBAREA): RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<</p>
S.C.S. CURVE NUMBER (AMC II) = 0
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<</p>
AREA-AVERAGE RUNOFF COEFFICIENT = 0.520
TOTAL NUMBER OF STREAMS = 2
TOTAL NUMBER OF STREAMS = 5.7
TOTAL NUMBER OF STREAMS = 2
TOTAL NUMBER OF STREAMS = 5.7
TOTAL NUMBER OF STREAMS = 2
TOTAL NUMBER OF STREAMS = 2
TOTAL NUMBER OF STREAMS = 5.7
TOTAL NUMBER OF STREAMS = 2
TOTAL NUMBER OF STREAMS = 5.7
TOTAL NUMBER OF STREAMS = 2
TOTAL NUMBER OF STREAMS = 5.7
TOTAL NUMBER OF STREAMS = 2
TOTAL NUMBER OF STREAMS = 5.7
TOTAL NUMBER OF STREAMS = 2
TOTAL NUMBER OF STREAMS = 5.7
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  TIME OF CONCENTRATION(MIN.) = 13.23
RAINFALL INTENSITY(INCH/HR) = 4.36
TOTAL STREAM AREA(ACRES) = 5.35
                                                                                                                       END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                       DEPTH(FEET) = 0.34 HALFSTREET FLOOD WIDTH(FEET) = 10.65
FLOW VELOCITY(FEET/SEC.) = 5.56 DEPTH*VELOCITY(FT*FT/SEC.
LONGEST FLOWPATH FROM NODE 510.00 TO NODE 512.00 =
                                                                                                                                                                             DEPTH*VELOCITY(FT*FT/SEC.)
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                               12.13
                                                                                                                                                                                                                     899.00 FEET.
                                                                                                                    ** CONFLUENCE DATA **
                                                                                                                      FLOW PROCESS FROM NODE 512.00 TO NODE 512.00 IS CODE = 1
                RUNOFF
  STREAM
                                                    INTENSITY
                                                                           AREA
                    (CFS)
23.79
                                  (MIN.)
                                                 (INCH/HOUR)
5.976
   NUMBER
                                                                          (ACRE)
                                                                            10.42
                                                                                                                       >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                     8.12
                    12.13 13.23
                                                       4.360
                                                                              5.35
                                                                                                                       >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES <<->
```

```
.87 SUBAREA RUNOFF(CFS) = 8.1 PFAK PYON -
                            ------ SUBAREA AREA(ACRES) = 7.87
                                                                                                                                              PEAK FLOW RATE(CFS) =
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                                                                                   20 10
                                                                                                TOTAL AREA(ACRES) =
TIME OF CONCENTRATION(MIN.) = 11.60
RAINFALL INTENSITY(INCH/HR) = 4.75
TOTAL STREAM AREA(ACRES) = 5.65
                                                                                                 END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                DEPTH(FEET) = 0.35 HALFSTREET FLOOD WIDTH(FEET) = 11.43
FLOW VELOCITY(FEET/SEC.) = 7.06 DEPTH*VELOCITY(FT*FT/SEC.) = 2.50
LONGEST FLOWPATH FROM NODE 515.00 TO NODE 517.00 = 1100.00 FEET.
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                   13.94
                                                                                              ** CONFLUENCE DATA **
           RUNOFF
                                                                                                FLOW PROCESS FROM NODE 517.00 TO NODE 517.00 IS CODE = 1
STREAM
                               TC
                                          INTENSITY
                                                            AREA
                            (MIN.)
8.90
                (CFS)
                                      (INCH/HOUR)
 NUMBER
                                                           (ACRE)
                                        ..., nour
5.633
4 7
                                                           15.77
                                                                                                 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
               13 94
                          11 60
                                                              5 65
                                                                                                 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES << < <
                                                                                                TOTAL NUMBER OF STREAMS = 2
RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 11.57
RAINFALL INTENSITY(INCH/HR) = 4.76
CONFIJIENCE FORMULA USED FOR 2 STREAMS.
 ** PEAK FLOW RATE TABLE **
                                                                                                 TOTAL STREAM AREA(ACRES) = 8.13
PEAK FLOW RATE(CFS) AT CONFLUENCE =
              RUNOFF
                                        INTENSITY
STREAM
                           (MIN.)
               (CFS)
                                     5.633
4.746
                41.92
                            8.90
                         11.60
     2
                40.25
                                                                                                 ** CONFLUENCE DATA **
                                                                                                 STREAM
                                                                                                           RUNOFF TC INTENSITY (CFS) (MIN.) (INCH/HOUR)
                                                                                                                                                             AREA
COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                NUMBER
                                                                                                                                                           (ACRE)
                                                                                                                                                           21.42
PEAK FLOW RATE(CFS) = 41.92 Tc(MIN.) = TOTAL AREA(ACRES) = 21.4
                                                                                                                         9.69
                                                                                                                                   5.329
4.755
                                                              8.90
LONGEST FLOWPATH FROM NODE 500.00 TO NODE 512.00 = 2625.00 FEET.
RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
FLOW PROCESS FROM NODE 512.00 TO NODE 517.00 IS CODE = 31
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                STREAM RUNOFF TC
NUMBER (CFS) (MIN.)
1 58.76 9.69
                                                                                                                                        INTENSITY
(INCH/HOUR)
                                                                                                              58.76 9.69
57.50 11.57
                                                                                                   1 2
                                                                                                                                           4.755
                                                                                                 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                PEAK FLOW RATE(CFS) = 58.76 Tc(MIN.) = TOTAL AREA(ACRES) = 29.5
                                                                                                                                                              9.69
FLOW PROCESS FROM NODE 517.00 TO NODE 517.00 IS CODE = 1
                                                                                                 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                              == ELEVATION DATA: UPSTREAM(FEET) = 748.00 DOWNSTREAM(FEET) = 695.00 FLOW LENGTH(FEET) = 857.00 MANNING'S N = 0.013
                    -----
                                                                                               ELEVATION DATA: UPSTREAM(FEET) = 748.00 DUWNSIREAR(FEET),
FLOW LENGTH(FEET) = 857.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 18.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 20.89
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 58.76
PIPE TRAVEL TIME(MIN.) = 0.68 Tc(MIN.) = 10.38
LONGEST FLOWPATH FROM NODE 500.00 TO NODE 522.00 = 4512.00 FEET.
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 9.69
RAINFALL INTENSITY(INCH/HR) = 5.33
TOTAL STREAM AREA(ACRES) = 21.42
PEAK FLOW RATE(CFS) AT CONFLUENCE =
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
*HISER SPECIFIED(SHEAREA):
                                                                                              ______
RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
UPSTREAM ELEVATION(FEET) = 843.55
DOWNSTREAM ELEVATION(FEET) = 842.85
ELEVATION DIFFERENCE(FEET) = 0.70
                                                                                                TIME OF CONCENTRATION(MIN.) = 10.38
RAINFALL INTENSITY(INCH/HR) = 5.10
TOTAL STREAM AREA(ACRES) = 29.55
DUNNSIREM BLEVALUA (FBET) - 0.70
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
                                                                                                PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                              *****************
SUBAREA RUNOFF(CFS) = 0.77
TOTAL AREA(ACRES) = 0.26 TOTAL RUNOFF(CFS) =
                                                                                                FLOW PROCESS FROM NODE 520.00 TO NODE 521.00 IS CODE = 21
                                                                                                >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
FLOW PROCESS FROM NODE 516.00 TO NODE 517.00 IS CODE = 61
                                                                                                 *USER SPECIFIED(SUBAREA):
                                                                   LS CODE = 61 *USER SPECIFIEU(SUBARKA).

RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = .70.00
 >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<>>>>>(STANDARD CURB SECTION USED)
UPSTREAM ELEVATION(FEET) = 840.00 DOWNSTREAM ELEVATION(FEET) = 753.00
                                                                                                UPSTREAM ELEVATION(FEET) = 758.83

DOWNSTREAM ELEVATION(FEET) = 758.15
STREET LENGTH(FEET) = 1030.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                 ELEVATION DIFFERENCE(FEET) =
                                                                                                                                           0.68
                                                                                                ELEVATION DIFFERENCE(FEET) = 0.68
SUBARRA OVERLAND TIME OF FLOW(MIN.) = 8.747
WARNING: INITIAL SUBARRA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 68.86
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!
DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.0
                                                                                                100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.694
SUBAREA RUNOFF(CFS) = 0.98
TOTAL AREA(ACRES) = 0.33 TOTAL RUNOFF(CFS) =
SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
SPECIFIED NUMBER OF HALFSIREEIS CARRILING ROWGE - Z
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
                                                                                                FLOW PROCESS FROM NODE 521.00 TO NODE 522.00 IS CODE = 61
   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                         10.56
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW(CF)
STREET FLOW DEPTH(FEET) = 0.30
HALFSTREET FLOOD WIDTH(FEET) = 8.68
AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.06
                                                                                                 >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                              >>>>(STANDARD CURB SECTION USED)<<>>

UPSTREAM ELEVATION(FEET) = 757.00 DOWNSTREAM ELEVATION(FEET) = 700.00

STREET LENGTH(FEET) = 755.00 CURB HEIGHT(INCHES) = 6.0
AVERAGE FLOW VELOCITY(FEET/SEC.) = 0.08

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.82

STREET FLOW TRAVEL TIME(MIN.) = 2.83 TC(MIN.) = 11.57

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.755
**USER SPECIFIED(SURAPFA).**
                                                                                                 STREET HALFWIDTH(FEET) = 18.00
 *USER SPECIFIED(SUBAREA):
                                                                                                DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 9.00
RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.520
                                                                                                INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
```

```
SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                    FLOW PROCESS FROM NODE 498.00 TO NODE
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
     STREET FLOW DEPTH(FEET) = 0.29
HALFSTREET FLOOD WIDTH(FEET) = {
AVERAGE FLOW VELOCITY(FEET/SEC.) =
                                                                                                                    >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                  ELEVATION DATA: UPSTREAM(FEET) = 692.00 DOWNSTREAM(FEET) = 689.50 FLOW LENGTH(FEET) = 407.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 63.0 INCH PIPE IS 50.0 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 11.93 ESTIMATED PIPE DIAMETER(INCH) = 63.00 NUMBER OF PIPES = 1
  AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.50
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.59
STREET FLOW TRAVEL TIME(MIN.) = 2.29
TC(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.902
                                                                                 11.03
  TOO TEAM RAINFABL INTERSTIT (NOT/HOOK) = 4.902
*USER SPECIFIED(SUBAREA):
RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
                                                                                                                    RESIDENTIAL (4.5 DUTAE OR LESS) RONDER CO
S.C.S. CURVE NUMBER (AMC II) = 0
ARRA-AVERAGE RUNOFF COEFFICIENT = 0.520
SUBAREA AREA(ACRES) = 2.56 SUBARE
TOTAL AREA(ACRES) = 2.9 PEA
                                                      SUBAREA RUNOFF(CFS) =
                                                                                            6.53
                                                           PEAK FLOW RATE(CFS) =
                                                                                                      7 37
                                                                                                                  END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                    FLOW PROCESS FROM NODE 527.00 TO NODE 527.00 IS CODE = 1
  TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 ......
  FLOW PROCESS FROM NODE 522.00 TO NODE 522.00 IS CODE = 1
                                                                                                                    TIME OF CONCENTRATION(MIN.) = 13.34
RAINFALL INTENSITY(INCH/HR) = 4.34
TOTAL STREAM AREA(ACRES) = 111.13
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                                                                                                              219.60
                                                                                                                    PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                  =
-----
  TOTAL NUMBER OF STREAMS = 2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 11.03
RAINFALL INTENSITY(INCH/HR) = 4.90
                                                                                                                    FLOW PROCESS FROM NODE 525.00 TO NODE 526.00 IS CODE = 21
                                                                                                                    >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
  TOTAL STREAM AREA(ACRES) = 2.89
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                    *USER SPECIFIED(SUBAREA):
                                                                                                                    .__HOMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
UPSTREAM ELEVATION(FEET) = 754.75
DOWNSTREAM ELEVATION(FEET) = 754.05
ELEVATION DIFFERENCE(FEET) = 0.70
SUBAREA OVERLAND TIME OF PROPERTY OF THE PROPERTY OF 
                                                                                                                    RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
  ** CONFLUENCE DATA **
  STREAM
               RUNOFF
(CFS)
                                                   INTENSITY
                                                                          AREA
                                   (MTN.)
  NUMBER
                                               (TNCH/HOUR)
                                                                       (ACRE)
                                                 5.100
                                 10.38
                                                                        29.55
                                                      4.902
                                                                                                                    SUBARRA OVERLAND TIME OF FLOW(MIN.) = 8.735

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699

SUBARRA RUNOFF(CFS) = 0.74

TOTAL AREA(ACRES) = 0.25 TOTAL RUNOFF(CFS) =
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                                                                                                         0.74
  ** PEAK FLOW RATE TABLE **
  STREAM
                  RUNOFF
                                     Tc
                                                  INTENSITY
                    CUNOFF TC (CFS) (MIN.)
  NUMBER
                                               (INCH/HOUR)
                                                                                                                    FLOW PROCESS FROM NODE 526.00 TO NODE 527.00 IS CODE = 61
                                  10.38
                    63.85 11.03
        2
                                                    4.902
                                                                                                                    >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<>>>>>(STANDARD CURB SECTION USED)
                                                                                                                   UPSTREAM ELEVATION(FEET) = 753.00 DOWNSTREAM ELEVATION(FEET) = 694.00
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) = 65.69 Tc(MIN.) = TOTAL AREA(ACRES) = 32.4 LONGEST FLOWPATH FROM NODE 500.00 TO NODE
                                                                          10.38
                                                                         STREET LENGTH(FEET) = 1294.00
522.00 = 4512.00 FEET. STREET HALFWIDTH(FEET) = 18.00
                                                                                                                                                                   CURB HEIGHT(INCHES) =
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<
                                                                                                                    SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
                                                                                                                    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 = 0.0
  ELEVATION DATA: UPSTREAM(FEET) = 695.00 DOWNSTREAM(FEET) = 693.00 FLOW LENGTH(FEET) = 114.00 MANNING'S N = 0.013
  FLOW LENGTH(FEET) = 114.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 33.0 INCH PIPE IS 26.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 13.09
ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1
                                                                                                                                                                                                              0.0200
                                                                                                                       **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
FLOW PROCESS FROM NODE 498.00 TO NODE 498.00 IS CODE = 11
                                                                                                                    *USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
  >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY
                                                                                                                   S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.418
SUBAREA AREA(ACRES) = 3.35 SUBAREA
                                               ** MAIN STREAM CONFLUENCE DATA **
                                                                                                                                                                       SUBAREA RUNOFF(CFS) =
                                                                                                                                                                                                              5.87
                RUNOFF
(CFS)
                                 Tc (MIN.)
                                                 INTENSITY
                                                                                                                    TOTAL AREA(ACRES) =
                                                                                                                                                            3.6
                                                                                                                                                                            PEAK FLOW RATE(CFS) =
  STREAM
                                                                       APFA
                                               (INCH/HOUR) (ACRE)
  NUMBER
                     65.69
                                  10.52
                                                    5.054
                                                                      32.44
                                                                                                                    END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                           498.00 = 4626.00 FEET.
                                                                                                                   DEPTH (FEET) = 0.34 HALFSTREET FLOOD WIDTH (FEET) = 10.79
FLOW VELOCITY (FEET/SEC.) = 5.01 DEPTH*VELOCITY (FT*FT/SEC.) = 1.71
LONGEST FLOWPATH FROM NODE 525.00 TO NODE 527.00 = 1364.00 FEET.
  LONGEST FLOWPATH FROM NODE
                                               500.00 TO NODE
   ** MEMORY BANK # 1 CONFLUENCE DATA **
                   RUNOFF
                                                  INTENSITY
                                                                       AREA
  STREAM
                                  (MIN.)
                                                                                                                  ......
                    (CFS)
                                               (INCH/HOUR)
                                                                     (ACRE)
  NUMBER
                                                                                                                    FLOW PROCESS FROM NODE 527.00 TO NODE 527.00 IS CODE = 1
                   161 62
                                  12 77
                                                    4 462
                                                                       78.69
  LONGEST FLOWPATH FROM NODE
                                                400.00 TO NODE
                                                                           498.00 =
                                                                                             6748.00 FEET.--
                                                                                                                    >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<-<-
   ** PEAK FLOW RATE TABLE **
  STREAM
               RUNOFF Tc (CFS) (MIN.)
                                                 INTENSITY
                                                                                                                    TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  NUMBER
                                               (INCH/HOUR)
                                                                                                                    TIME OF CONCENTRATION(MIN.) = 13.64
RAINFALL INTENSITY(INCH/HR) = 4.28
                                10.52
                 198.89
                                                       5.054
                 219.60
                                                       4.462
                                                                                                                    TOTAL STREAM AREA(ACRES) =
                                                                                                                                                                    3.60
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                    PEAK FLOW RATE(CFS) AT CONFLUENCE =
  PEAK FLOW RATE(CFS) = 219.6
TOTAL AREA(ACRES) = 111.1
                                          219.60 Tc(MIN.) =
FLOW PROCESS FROM NODE 530.00 TO NODE 531.00 IS CODE = 21
  FLOW PROCESS FROM NODE 498.00 TO NODE 498.00 IS CODE = 12
                                                                                                                   >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
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*USER SPECIFIED(SUBAREA):
                                                                                                                                                        *HISER SPECIFIED(SHBAREA):
   RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100 S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                                                                        RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                                                                        INITIAL SUBARRA FLOW-LENGTH(FEET) =
UPSTREAM ELEVATION(FEET) = 888.85
DOWNSTREAM ELEVATION(FEET) = 888.15
   INITIAL SUBAREA FLOW-LENGTH(FEET) =
  INITIAL SUBAREA FLOW-LENGIH(FEEI) -
UPSTREAM ELEVATION(FEET) = 700.00
DOWNSTREAM ELEVATION(FEET) = 695.00
                                                                                                                                                       DOWNSTREAM ELEVATION(FEET) = 606.15
ELEVATION DIFFERENCE(FEET) = 0.70
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
   ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
     100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.776
   TOTAL AREA(ACRES) = 0.19
TOTAL AREA(ACRES) = 0.06 TOTAL RUNOFF(CFS) =
                                                                                                                                                                         THE MAXIMUM OVERLAND FLOW LENGTH = 70.00 (Reference: Table 3-1B of Hydrology Manual)
                                                                                                                  0.19
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                                                  ******************
   ELEVATION DATA: UPSTREAM(FEET) = 695.00 DOWNSTREAM(FEET) = 695.00 DOWNSTREAM(FEET) = 6100 DOWNSTREAM(F
                                                                                      DOWNSTREAM(FEET) = 690.00 --
                                                                                                                                                       >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                                                    >>>>(STANDARD CURB SECTION USED)
                                                                                                                                                       UPSTREAM ELEVATION(FEET) = 887.00 DOWNSTREAM ELEVATION(FEET) = 869.00 STREET LENGTH(FEET) = 565.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
 FLOW PROCESS FROM NODE 531.00 TO NODE 532.00 IS CODE = 81
                                                                                                                                                   -- SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                  STREET PARKWAY (CROSSFALL(DECIMAL) = 0.020

STREET PARKWAY (CROSSFALL(DECIMAL) = 0.020

Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0200

Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
   >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
  100 YEAR RAINFALL INTENSITY(INCH/HOCK),
*USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4100
SUBAREA AREA(ACRES) = 0.79 SUBAREA RUNOFF(CFS) = 2.27
TOTAL AREA(ACRES) = 0.9 TOTAL RUNOFF(CFS) = 2.4
     100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.015
                                                                                                                                                            **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                                                     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.30
AVERAGE FLOW VELOCITY(FEET) = 8.68
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.74
PRODUCT OF DEPTHEVELOCITY(FT*FT/SEC.) = 1.12
STREET FLOW TRAVEL TIME(MIN.) = 2.52 TC(MIN.) =
100 YEAR RAINFALL INTERNSITY(INCH/HOUR) = 4.841
*USER SPECIFIED(SUBAREA):
- PESIDENTIAL (4.3 NU/AC OR LESS) BUNDER CORFETCIENT =
                                                                                                                        2 44
   TC(MIN.) = 6.33
  FLOW PROCESS FROM NODE 532.00 TO NODE 527.00 IS CODE = 1
                                                                                                                                                 *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
=== SUBAREA AREA(ACRES) = 4.55
SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 4.8 PEAK FLOW RATE(CFS) =
   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE <---
    >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
   -----
  TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
                                                                                                                                                                                                                                  PEAK FLOW RATE(CFS) =
   TIME OF CONCENTRATION(MIN.) = 6.33
RAINFALL INTENSITY(INCH/HR) = 7.01
TOTAL STREAM AREA(ACRES) = 0.85
                                                                                                                                                        END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                                                        DEPTH(FEET) = 0.35 HALFSTREET FLOOD WIDTH(FEET) = 11.36
FLOW VELOCITY(FEET/SEC.) = 4.30 DEPTH*VELOCITY(FT*FT/SEC.) = 1.52
LONGEST FLOWPATH FROM NODE 600.00 TO NODE 602.00 = 635.00 FEET.
   PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                  2.44
                                                                                                                                                    ******************
   ** CONFLUENCE DATA **
                   RUNOFF
(CFS)
   STREAM
                                                                   INTENSITY
                                                                                                AREA
                                                                                                                                                        FLOW PROCESS FROM NODE 602.00 TO NODE 608.00 IS CODE = 31
                                              (MIN.)
   NUMBER
                                                              (INCH/HOUR)
                                                              4.338
4.27
                        219.60
                                            13.34
                                                                                                                                                        >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                111.13
                         6.43
                                                                                                  3 60
                                                                                                                                                         >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) < < < <
                                                                                                                                                        ELEVATION DATA: UPSTREAM(FEET) = 864.00 DOWNSTREAM(FEET) = 863.50
                                                                                                                                                        ELEVATION DATA: UDSTREAM(FEST) = 864.00 DOWNSTREAM(FEST) = FLOW LENGTH(FEST) = 151.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 24.0 INCH PIPE IS 18.8 INCHES

PIPE-FLOW VELOCITY(FEST/SEC.) = 4.60

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

PIPE-FLOW(CFS) = 12.11

PIPE TRAVEL TIME(MIN.) = 0.55 Tc(MIN.) = 11.80

LONGEST FLOWPATH FROM NODE 600.00 TO NODE 608.00 = 786
   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
   CONFLUENCE FORMULA USED FOR 3 STREAMS.
    ** PEAK FLOW RATE TABLE **
                        RUNOFF TC
(CFS) (MIN.)
  NUMBER
                                                              (INCH/HOUR)
                                                               7.015
                        109.67
                                           6.33
                                                                                                                                                                                                                                                                            786.00 FEET.
                                         13..
13.64
          3
                        224.35
                                                                    4.275
                                                                                                                                                        FLOW PROCESS FROM NODE 608.00 TO NODE 608.00 IS CODE = 1
   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
   PEAK FLOW RATE(CFS) = 227.40 Tc(MIN.) = 13.34
TOTAL AREA(ACRES) = 115.6
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 527.00
                                                                                                                                                       >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<-<
                                                            400.00 TO NODE 527.00 = 7155.00 FEET. TOTAL NUMBER OF STREAMS = 2
TOTAL STREAM AREA(ACRES) = 4.81
PEAK FLOW RATE(CFS) AT CONFLUENCE =
    >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
    >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
                                                                                                                    ELEVATION DATA: UPSTREAM(FEET) = 690.00 DOWNSTREAM
                                                                                     DOWNSTREAM(FEET) = 689.00 FLOW PROCESS FROM NODE 605.00 TO NODE 606.00 IS CODE = 21
  ELEVATION DATA: UPSTREAM(FEET) = 690.00 DOWNSTREAM(FEET) = 689.00 FLOW PROCESS FROM NODE 605.00 TO NODE 606.00 IS CODE

FLOW LENGTH(FEET) = 117.00 MANNING'S N = 0.013 

DEPTH OF FLOW IN 60.0 INCH PIPE IS 47.6 INCHES 

PIPE-FLOW VELOCITY(FEET/SEC.) = 13.62 

ESTIMATED PIPE DIAMETER(INCH) = 60.00 NUMBER OF PIPES = 1 
PIPE-FLOW(CFS) = 227.40 

PIPE TRAVEL TIME(MIN.) = 0.14 TC(MIN.) = 13.48 

LONGEST FLOWPATH FROM NODE 400.00 TO NODE 533.00 = 7272.00 FEET. 

INITIAL SUBAREA FLOW-LENGTH(FFET) = 70.00 

UPSTREAM FEED = 889.00 FLOW PROCESS FROM NODE 605.00 TO NODE 606.00 IS CODE 606.00 IS CO
 882.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.412
SUBAREA RUNOFF(CFS) = 0.49
TOTAL AREA(ACRES) = 0.16 TOTAL RUNOFF(CFS) =
   >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
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>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  FLOW PROCESS FROM NODE 611.00 TO NODE 612.00 IS CODE = 21
                                                                                       >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  ESTIMATED PIPE DIAMETER (INCH) INCREASED TO 18.000
                                                                                       *USER SPECIFIED(SUBAREA):
                                                                                       RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.0 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 4.38 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
  PIPE-FLOW(CFS) = 0.49

PIPE TRAVEL TIME(MIN.) = 1.64 Tc(MIN.) = 7.45

LONGEST FLOWPATH FROM NODE 605.00 TO NODE 607.00 = 500.00 FEET. ELEVATION DIFFERENCE(FEET) = 0.70
                                                                                                                             0.70
100 YEAR RAINFALL INTENSITY(INCH/ROCK).
*USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CUSEVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4100
SUBAREA AREA(ACRES) = 2.06 SUBAREA RUNOFF(CFS) = 5
TYYTAI, AREA(ACRES) = 2.2 TOTAL RUNOFF(CFS) =
                                                                                       SUBAREA RUNOFF(CFS) = 0.74
TOTAL AREA(ACRES) = 0.25 TOTAL RUNOFF(CFS) =
                                                                                    FLOW PROCESS FROM NODE 612.00 TO NODE 613.00 IS CODE = 61
                                                                 5.33
                                                                                     >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
                                                                     5.75
                                                                                       >>>>(STANDARD CURB SECTION USED)
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                       DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
                                                                                       INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  ELEVATION DATA: UPSTREAM(FEET) = 865.00 DOWNSTREAM(FEET) = 864.00
 DEDUCATION DATA: UPSIREAM(FEET) = 865.00 DOWNSTREA
FLOW LENGTH(FEET) = 63.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 8.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.09
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF
PIPE-FLOW(CFS) = 5.75
PIPE TRAVEL TIME(MIN ) - 0.15 TOWNS NUMBER OF
                                                                                       SDECTETED MIMBER OF HALESTREETS CAPRVING DINOFF - 2
                                                                                       STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb):
                                                                                                                                                                   0.0150
                                                NUMBER OF PIPES = 1
                                                                                       Manning's FRICTION FACTOR for Back-of-Walk Flow Section =
                                                                                                                                                           0.0200
  PIPE-FLOW(CFS) = 5.75
PIPE TRAVEL TIME(MIN.) = 0.15 Tc(MIN.) = 7.60
                                                                                          **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                                                          2.50
  LONGEST FLOWPATH FROM NODE 605.00 TO NODE 608.00 =
                                                                    563.00 FEET.
                                                                                         STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.23
                                                                                       SIREET FLOW DEPTH(FEET) = 0.23
HALFSTREET FLOOD WIDTH(FEET) = 5.34
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.10
PRODUCT OF DEPTHEVELOCITY(FT*FT/SEC.) = 0.72
STREET FLOW TRAVEL TIME(MIN.) = 3.67 TC(MIN.) = 12.41
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.544
 FLOW PROCESS FROM NODE 608.00 TO NODE 608.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE <---
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
  *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
 TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  TIME OF CONCENTRATION(MIN.) = 7.60
RAINFALL INTENSITY(INCH/HR) = 6.24
TOTAL STREAM AREA(ACRES) = 2.22
                                                                                       SUBAREA AREA(ACRES) = 1.48
TOTAL AREA(ACRES) = 1.7
                                                                                                                              SUBAREA RUNOFF(CFS) =
PEAK FLOW RATE(CFS) =
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                               5.75
                                                                                       ** CONFLUENCE DATA **
          RUNOFF
(CFS)
  STREAM
                                      INTENSITY
                                                       AREA
                           (MIN.) (INCH/HOUR)
                        11.80
               12.11
                                    4.695
6.237
                                                         4.81
                5.75
                          7.60
                                                         2 22
                                                                                       FLOW PROCESS FROM NODE 613.00 TO NODE 613.00 IS CODE = 1
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                       >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE <---
                                                                                       >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
  ** PEAK FLOW RATE TABLE **
                                                                                       -----
            RUNOFF
                                                                                       TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                            тс
                                     INTENSITY
  STREAM
  NUMBER
               (CFS)
                         (MIN.)
                                   (INCH/HOUR)
                                                                                       TIME OF CONCENTRATION(MIN.) = 12.41
RAINFALL INTENSITY(INCH/HR) = 4.54
TOTAL STREAM AREA(ACRES) = 1.73
               13.55
                        7.60
11.80
                                    6.237
4.695
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                       PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                     4.09
  PEAK FLOW RATE (CFS) = 16.44 Tc(MIN.) = 11.80
TOTAL AREA(ACRES) = 7.0
                                                                                       ** CONFLUENCE DATA **
  LONGEST FLOWPATH FROM NODE 600.00 TO NODE 608.00 =
                                                                    786.00 FEET. STREAM RUNOFF NUMBER (CFS)
                                                                                                                  TC
                                                                                                                            INTENSITY
                                                                                                                                             AREA
                                                                                                                                           (ACRE)
7.03
                                                                                                                (MIN.) (INCH/HOUR)
 12.14
                                                                                                                          4.610
4.544
                                                                                                    16.44
                                                                                          2
 FLOW PROCESS FROM NODE 608.00 TO NODE 613.00 IS CODE = 31
                                                                                                     4.09
                                                                                                                                               1.73
  >>>>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.
                                                                                =====
OO ** PEAK FLOW RATE TABLE **
  ._____
 ELEVATION DATA: UPSTREAM(FEET) = 864.00 DOWNSTREAM(FEET) = FLOW LENGTH(FEET) = 284.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 11.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 14.01
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 16.44
                                        864.00 DOWNSTREAM(FEET) = 850.00
                                                                                       STREAM
NUMBER
                                                                                               RUNOFF TC INTENSITY (CFS) (MIN.) (INCH/HOUR)
                                                                                                                         4.610
                                                                                                     20.43
                                                                                                             12.14
12.41
  FLOW PROCESS FROM NODE 613.00 TO NODE 613.00 IS CODE = 1
                                                                                       *****************
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                       FLOW PROCESS FROM NODE 613.00 TO NODE 614.00 IS CODE = 31
------
  TOTAL NUMBER OF STREAMS = 2
                                                                                       >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
 TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 12.14
RAINFALL INTENSITY(INCH/HR) = 4.61
TOTAL STREAM AREA(ACRES) = 7.03
                                                                                       >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                       ELEVATION DATA: UPSTREAM(FEET) = 850.00 DOWNST
FLOW LENGTH(FEET) = 71.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 18.0 INCH PIPE IS 11.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 16.88
                                                                                                                               850.00 DOWNSTREAM(FEET) = 845.00
  TOTAL STREAM AREA(ACRES) = 7.03
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                               16.44
```

```
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1 STREAM NUMBER
                                                                                                               RUNOFF TC INTENSIII
(CFS) (MIN.) (INCH/HOUR)
20.43 12.21 4.593
10.20 9.68 5.334
                                                                                                                                                                 AREA
 PIPE-FLOW(CFS) = 20.43
PIPE TRAVEL TIME(MIN.) = 0
                                                                                                                                (MIN.) (INCH/HOUR)
                                                                                                                                                               (ACRE)
 CONFLUENCE FORMULA USED FOR 2 STREAMS.
 FLOW PROCESS FROM NODE 614.00 TO NODE 614.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                                   ** PEAK FLOW RATE TABLE **
                                                                                                              RUNOFF TC INTENSITY (CFS) (MIN.) (INCH/HOUR) 29.98 9.68 5.334
 -----STREAM
 TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                    NUMBER
                                                                                                                                           5.334
                                                                                                      1 2
                                                                                                                   31.10 12.21
 TIME OF CONCENTRATION(MIN.) = 12.21
RAINFALL INTENSITY(INCH/HR) = 4.59
TOTAL STREAM AREA(ACRES) = 8.76
                                                                                                   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                   TOTAL AREA(ACRES) = 13.10 Tc(MIN.) = 12.21
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                    20.43
FLOW PROCESS FROM NODE 617.00 TO NODE 618.00 IS CODE = 21
                                                                                                   FLOW PROCESS FROM NODE 614.00 TO NODE 620.00 IS CODE = 31
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  *USER SPECIFIED(SUBAREA):
                                                                                                    >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
 RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
                                                                                                    >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) < < < <
                                                                                                    ELEVATION DATA: UPSTREAM(FEET) = 848.00 DOWNSTREAM(FEET) = 833.00
                                                                                                   ELEVATION DATA: UPSTREAM(FEET) = 848.00 DOWNSTREAM(FEET) = 833.00 FLOW LENGTH(FEET) = 321.00 MANNING'S N = 0.013 DEPTH OF FLOW in 21.0 INCH PIPE IS 16.0 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 15.77 ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1 PIPE-FLOW(CFS) = 31.10 PIPE TRAVEL TIME(MIN.) = 0.34 Tc(MIN.) = 12.55 LONGEST FLOWPATH FROM NODE 600.00 TO NODE 620.00 = 1462.00 FEET.
 UPSTREAM ELEVATION(FEET) = 895.00
DOWNSTREAM ELEVATION(FEET) = 893.00
ELEVATION DIFFERENCE(FEET) = 2.00
                                             2.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.156
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.142
 SUBAREA RUNOFF(CFS) = 0.74
TOTAL AREA(ACRES) = 0.20 TOTAL RUNOFF(CFS) = 0.74
 FLOW PROCESS FROM NODE 618.00 TO NODE 619.00 IS CODE = 61
                                                                                                  FLOW PROCESS FROM NODE 620.00 TO NODE 620.00 IS CODE = 1
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                    >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE << < <
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                               === TOTAL NUMBER OF STREAMS = 2
0 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                   TIME OF CONCENTRATION(MIN.) = 12.55
RAINFALL INTENSITY(INCH/HR) = 4.51
                                                                                                                                          13.10
                                                                                                    TOTAL STREAM AREA(ACRES) =
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                    PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                      31.10
                                                                                                 ****************
                                                                                                   FLOW PROCESS FROM NODE 623.00 TO NODE 624.00 IS CODE = 21
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 SPECIFIED NUMBER OF HARFSIREDIS CARRILING ROBOTE - 2
STRRET PARKMAY 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
                                                                                                   >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                        0.0150===
                                                                                                    *USER SPECIFIED(SUBAREA):
                                                                                                    RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
 **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.30

HALFSTREET FLOOD WIDTH(FEET) = 8.50

AVERAGE FLOW VELOCITY(FFET/SEC.) = 3.99

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.18

STREET FLOW TRAVEL TIME(MIN.) = 3.11 Tc(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.487
                                                                                                    UPSTREAM ELEVATION(FEET) = 895.85

DOWNSTREAM ELEVATION(FEET) = 895.15
                                                                                                    ELEVATION DIFFERENCE(FEET) =
                                                                                                                                               0.70
                                                                                                    SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
                                                                                                               THE MAXIMUM OVERLAND FLOW LENGTH = 70.00 (Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION!
  *USER SPECIFIED(SUBAREA):
 RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
 RESIDENTIAL (4.3 DUMBER (AMC LESS) RONOFF CO

AREA-AVERAGE RUNOFF COEFFICIENT = 0.520

SUBAREA AREA(ACRES) = 4.14 SUBAREA

TOTAL AREA(ACRES) = 4.3 PEAL
                                                                                                    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
SUBAREA RUNOFF(CFS) = 0.86
TOTAL AREA(ACRES) = 0.29 TOTAL RUNOFF(CFS) =
                                             SUBAREA RUNOFF(CFS) = 11.81
                                                  PEAK FLOW RATE(CFS) =
DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  FLOW LENGTH(FEET) = 302.00 MANNING'S N = 0.00
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                             0.013
                                                                                                    SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 12.10
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES =
                                                                                                    STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
                                                                                                   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 = 0.02
 PIPE-FLOW(CFS) = 12.38
PIPE TRAVEL TIME(MIN.) = 0.42 TC(MIN.) = 9.68
LONGEST FLOWPATH FROM NODE 617.00 TO NODE 614.00 = 1117.00 FEET.
                                                                                                      **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                      STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                                   STREET FLOW DEPTH(FEET) = 0.26

HALFSTREET FLOW DIDTH(FEET) = 6.86

AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.02

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.32

STREET FLOW TRAVEL TIME(MIN.) = 1.84 Tc(MIN.) = 10.58

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.038
 FLOW PROCESS FROM NODE 614.00 TO NODE 614.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES << < <
 *USER SPECIFIED (SUBAREA):
TOTAL NUMBER OF STREAMS = 2 RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
                                                                                                   S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.520

SUBAREA AREA(ACRES) = 3.85

SUBAREA RUNOFF(CFS) = 10.09

TOTAL AREA(ACRES) = 4.1

PEAK FLOW RATE(CFS) =
 CONFIGURNCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 CONFLUENCE VALUES USED FOR INDEFENDENT TIME OF CONCENTRATION(MIN.) = 9.68 RAINFALL INTENSITY(INCH/HR) = 5.33
 TOTAL STREAM AREA(ACRES) =
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                     12.38
                                                                                                    END OF SUBAREA STREET FLOW HYDRAULICS:
 ** CONFIGUENCE DATA **
                                                                                                    DEPTH(FEET) = 0.31 HALFSTREET FLOOD WIDTH(FEET) = 9.11
```

```
FLOW VELOCITY(FEET/SEC.) = 5.72 DEPTH*VELOCITY(FT*FT/SEC.) = 1.77 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  FLOW PROCESS FROM NODE 625.00 TO NODE 620.00 IS CODE = 31
                                                                                                                          STREET LENGTH(FEET) = 643.00 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                          DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  ELEVATION DATA: UPSTREAM(FEET) = 849.00 DOWNSTI FLOW LENGTH(FEET) = 328.00 MANNING'S N = 0.00 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                           849.00 DOWNSTREAM(FEET) = 833.00
                                                                            0.013
                                                                                                                           SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
  DEPTH OF FLOW IN 18.0 INCH PIPE IS 8.8 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 12.66 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
                                                                                                                           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
                                                                      NUMBER OF PIPES = 1
   PIPE-FLOW(CFS) = 10.85
PIPE TRAVEL TIME(MIN.) = 0
  PIPE-FLOW(CFS) =
                                                       Tc(MIN.) = 11.01
  PIPE TRAVEL TIME(MIN.) = 0.43 Tc(MIN.) = 11.01
LONGEST FLOWPATH FROM NODE 623.00 TO NODE 620.00 =
                                                                                                                               **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                 953.00 FEET.
                                                                                                                              STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                                                           STRESTFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREST FLOW DEPTH(FEET) = 0.29
HALFSTREET FLOOD WIDTH(FEET) = 8.21
AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.05
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.18
STREET FLOW TRAVEL TIME(MIN.) = 2.65 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.805
 -----
  FLOW PROCESS FROM NODE 620.00 TO NODE 620.00 IS CODE = 1
   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
   >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES << < <
                                                                                                                           *USER SPECIFIED(SUBAREA):
RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
   TOTAL NUMBER OF STREAMS = 2
                                                                                                                           S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.520
SUBAREA AREA(ACRES) = 4.40
SUBAREA
TOTAL AREA(ACRES) = 4.7
PEAL
  CONFIGURNCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  TIME OF CONCENTRATION(MIN.) = 11.01
RAINFALL INTENSITY(INCH/HR) = 4.91
                                                                                                                                                                                 SUBAREA RUNOFF(CFS) =
                                                                                                                                                                                      PEAK FLOW RATE(CFS) =
  TOTAL STREAM AREA (ACRES) =
                                                   4 14
   PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                           END OF SUBAREA STREET FLOW HYDRAULICS:
   ** CONFLUENCE DATA **
                                                                                                                           DEPTH(FEET) = 0.34 HALFSTREET FLOOD WIDTH(FEET) = 10.65
FLOW VELOCITY(FEET/SEC.) = 4.69 DEPTH*VELOCITY(FT*FT/SEC.) = 1.59
LONGEST FLOWPATH FROM NODE 628.00 TO NODE 630.00 = 713.00 FEET.
                 RUNOFF
(CFS)
                                                      INTENSITY
                                                                              AREA
  NUMBER
                                      (MIN.)
                                                  (INCH/HOUR)
                                                                            (ACRE)
                                 12.55
                      31.10
                                                        4 513
                                                                                13 10
                     10.85
                                                         4.909
                                                                                                                        .....
                                                                                                                           FLOW PROCESS FROM NODE 630.00 TO NODE 630.00 IS CODE = 1
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                            >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <--
                                                                                                                           >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES <<< <
   ** PEAK FLOW RATE TARLE **
                                                                                                                           TOTAL NUMBER OF STREAMS = 2
  STREAM
                                                    INTENSITY
                                       Tc
                   RUNOFF
                                   (MIN.)
  NUMBER
                     (CFS)
                                                  (INCH/HOUR)
                                                                                                                           CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                           CONFLUENCE VALUES USED FOR INDEFENDANTIME OF CONCENTRATION(MIN.) = 11.38
RAINFALL INTENSITY(INCH/HR) = 4.81
TOTAL STREAM AREA(ACRES) = 4.70
                                 11.01
                                                  4.513
                     41.07
   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                            PEAK FLOW RATE(CFS) AT CONFLUENCE =
  PEAK FLOW RATE(CFS) = 41.07 Tc(MIN.) = 12.55
TOTAL AREA(ACRES) = 17.2
LONGEST FLOWPATH FROM NODE 600.00 TO NODE 620.00 = 1462.00 FEET.
                                                                                                                           ** CONFLUENCE DATA **
                                                                                                                           STREAM RUNOFF
NUMBER (CFS)
                                                                                                                                                              (MIN.) (INCH/HOUR)
                                                                                                                           NUMBER
                                                                                                                                                                                                     (ACRE)
 .....
                                                                                                                                                          12.66
                                                                                                                                                                                 4.486
                                                                                                                                                                                                       17.24
                                                                                                                                             11.74
  FLOW PROCESS FROM NODE 620.00 TO NODE 630.00 IS CODE = 31
   >>>>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) = 833.00 DOWNSTREAM(FEET) = 831.00 FLOW LENGTH(FEET) = 89.00 MANNING'S N = 0.013
                                                                                                                           ** PEAK FLOW RATE TABLE **
  FLOW LENGTH(FEET) = 89.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 27.0 INCH PIPE IS 20.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 12.89
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER
                                                                                                                                       RUNOFF
                                                                                                                                                                             INTENSITY
                                                                                                                           STREAM
                                                                                                                                                                Tc
                                                                                                                                                            (MIN.) (INCH/HOUR)
                                                                                                                                             (CFS)
50.08
                                                                                                                           NUMBER
                                                                                                                                                         11.38
                                                                                                                                                                                4.805
                                                                   NUMBER OF PIPES =
                                                                                                                                              52.03
   PIPE-FLOW(CFS) =
                                     41.07
  PIPE-FLOW(CFS) = 41.07

PIPE TRAVEL TIME(MIN.) = 0.12  Tc(MIN.) = 12.66

LONGEST FLOWPATH FROM NODE 600.00 TO NODE 630.00 = 1551.00 FEET.
                                                                                                                          COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 52.03 Tc(MIN.) = 12.66

TOTAL AREA(ACRES) = 21.9

LONGEST FLOWPATH FROM NODE 600.00 TO NODE 630.00 = 1551.00 FEET.
...............
  FLOW PROCESS FROM NODE 630.00 TO NODE 630.00 IS CODE = 1
                                                                                                                          *******************
   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                                                           FLOW PROCESS FROM NODE 630.00 TO NODE 631.00 IS CODE = 31
 ______
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                                           >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                           >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<-
  CONFIDENCE VALUES USED FOR INSTANCE.

TIME OF CONCENTRATION(MIN.) = 12.66
RAINFALL INTENSITY(INCH/HR) = 4.49
TOTAL STREAM AREA(ACRES) = 17.24
                                                                                                                        _____
                                                                                                                ELEVATION DATA: UPSTREAM(FEET) = 831.00 DOWNSTREAM(FEET) = 830.00 FLOW LENGTH(FEET) = 88.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 33.0 INCH PIPE IS 25.6 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 10.52

******* ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                 41.07
 *********************
                                                                                                                          ESTIMATED FIFE DIRECTION CASCAL STATE OF THE PER PLANE CONTROL OF THE PROPERTY OF THE PROPERTY
  FLOW PROCESS FROM NODE 628.00 TO NODE 629.00 IS CODE = 21
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                                                                                                                        631.00 = 1639.00 FEET.
                                                                                                                        _
   *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
                                                                                                                          FLOW PROCESS FROM NODE 631.00 TO NODE 631.00 IS CODE = 10
                                                                                                                           >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<
  UPSTREAM ELEVATION(FEET) = 866.85
DOWNSTREAM ELEVATION(FEET) = 866.15
   ELEVATION DIFFERENCE(FEET)
                                                         0.70
  ELEVATION DIFFERENCE (FEET) = 0.70
SUBAREA OVERLAND TIME OF FLOW (MIN.) = 8.735
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 70.00
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TC CALCULATION!
                                                                                                                           FLOW PROCESS FROM NODE 634.00 TO NODE 635.00 IS CODE = 21
                                                                                                                           >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                                           *USER SPECIFIED(SUBAREA):
                                                                                                                          RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100 S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBARRA FLOW-LENGTH(FEET) = 85.00
UPSTREAM ELEVATION(FEET) = 897.00
DOWNSTREAM ELEVATION(FEET) = 896.00
ELEVATION DIFFERENCE(FEET) = 1.00
    100 YEAR RAINFALL INTENSITY (INCH/HOUR) = 5.699
  SUBAREA RUNOFF(CFS) = 0.89

TOTAL AREA(ACRES) = 0.30 TOTAL RUNOFF(CFS) =
  FLOW PROCESS FROM NODE 629.00 TO NODE 630.00 IS CODE = 61
                                                                                            10.028
```

```
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
                 THE MAXIMUM OVERLAND FLOW LENGTH = 72.65
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!
                                                                                                                                          FLOW PROCESS FROM NODE 641.00 TO NODE 642.00 IS CODE = 61
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.214
                                                                                                                                           >>>>COMDITE STREET FLOW TRAVEL TIME THREE SHRAPFA
 100 YEAR RAINFALL INTENSITY(INCH/HOOK) - J.L.
SUBARBA RUNOFF(CFS) = 0.24
TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF(CFS) =
                                                                                                                                           >>>>(STANDARD CURB SECTION USED) << < <
                                                                                                                                       0.24
                                                                                                                                          UPSTREAM ELEVATION(FEET) = 911.00 DOWNSTREAM ELEVATION(FEET) = 840.00 STREET LENGTH(FEET) = 2.13 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
......
 FLOW PROCESS FROM NODE 635.00 TO NODE 636.00 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                                          DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
                                                                                                                                          INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.0
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) < < < <
                   DATA: UPSTREAM(FEET) = 894.00 DOWNSTREAM(FEET) = 860.00
 ELEVATION DATA: UPSTREAM(FEET) = 894.00 DOWNSTREAFLOW LENGTH(FEET) = 907.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                                                           SPECIFIED NUMBER OF HALFSTREETS 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 = 0.02
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 1.4 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 3.77 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
                                                                                                                                                                                                                                                                    0.0150
                                                                                                                                                                                                                                                        0 0200
 ESTIMATED FIFE DIAGRAMMAN, PIPE-FIDW(CFS) = 0.24
PIPE TRAVEL TIME(MIN.) = 4.01 Tc(MIN.) = LONGEST FLOWPATH FROM NODE 634.00 TO NODE
                                                                                                                                              **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                                              STREET FLOW DEPTH(FEET) = 0.16
HALFSTREET FLOOD WIDTH(FEET) = 1.50
                                                                Tc(MIN.) = 14.04
                                                                                      636.00 =
                                                                                                              992.00 FEET.
                                                                     HALFSTREET FLOOD WIDTH(FEET) = 1.50

AVERAGE FLOW VELOCITY(FEET/SEC.) = 108.89

PRODUCT OF DEPTHSVELOCITY(FT*FT/SEC.) = 17.01

STREET FLOW TRAVEL TIME(MIN.) = 0.00 TC(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168

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

*USER SPECIFIED (SUBARRA):

LIMITED INDIVIDUAL PROPAGE CORPORATION OF THE PROPAGE CONTROL O
.....
 FLOW PROCESS FROM NODE 635.00 TO NODE 636.00 IS CODE = 81
     >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.197
                                                                                                                                          *USER SPECIFIED(SUBAREA):
LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.850
SUBAREA AREA (ACRES) = 2.13
SUBAREA RUNOFF (CFS) =
TOTAL AREA (ACRES) = 2.3
PEAK FLOW RATE (CFS)
 TOO TEAM RAINFARD INTERSTITEMENT/HOOK) = 4.17/
*USER SPECIFIED(SUBAREA):
RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
 S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.4100

SUBAREA AREA(ACRES) = 1.33

SUBAREA RUNOFF(CFS) = 2.29

TOTAL AREA(ACRES) = 1.4

TOTAL RUNOFF(CFS) = 2.4
                                                                                                                                                                                         2.3
                                                                                                                                                                                                            PEAK FLOW RATE(CFS) =
                                                                                                                                          TOTAL AREA(ACRES) =
FLOW PROCESS FROM NODE 636.00 TO NODE 637.00 IS CODE = 31
                                                                                                                                                                                                                                                            72.13 FEET.
                                                                                                                                       _
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                                          FLOW PROCESS FROM NODE 642.00 TO NODE 642.00 IS CODE = 1
ELEVATION DATA: UPSTREAM(FEET) = 855.00 DOWNSTREAM(FEET) = 853.00 FLOW LENGTH(FEET) = 43.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCRESED TO 18.000 DEPTH OF FLOW IN 18.0 INCH PIPE IS 4.1 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 8.25 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1 PIPE-FLOW(CFS) = 2.48 PIPE TRAVEL TIME(MIN.) = 0.09 TC(MIN.) = 14.12 LONCEST FLOWPATH FROM NOONE (2.4)
                                                                                                                                          >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
                                                                                                                                          TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                                           TIME OF CONCENTRATION(MIN.) = 3.20
RAINFALL INTENSITY(INCH/HR) = 8.17

      PIPE-FLOW(CFS) =
      2.48
      RAINFALL INTENSITY(INCH/HR) =
      8.1

      PIPE TRAVEL TIME(MIN.) =
      0.09
      Tc(MIN.) =
      14.12
      TOTAL STREAM AREA (ACRES) =
      2.32

      LONGEST FLOWPATH FROM NODE
      634.00 TO NODE
      637.00 =
      1035.00 FEET.
      PEAK FLOW RATE(CFS) AT CONFLUENCE =

                                                                                                                                                                                                                   16.11
                                                                                                                                      ** ** CONFLUENCE DATA **
 FLOW PROCESS FROM NODE 637.00 TO NODE 642.00 IS CODE = 31
                                                                                                                                           STREAM
                                                                                                                                                              RUNOFF
(CFS)
                                                                                                                                                                                                     INTENSITY
                                                                                                                                                                                                                                 AREA
                                                                                                                                                                                  (MIN.) (INCH/HOUR)
                                                                                                                                          NUMBER
                                                                                                                                                                                                                               (ACRE)
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<>>>>
                                                                                                                                                                                                    4.059
                                                                                                                                                                                14.78
                                                                                                                                                                  2.48
                                                                                                                                                                                                                                    1.44
 ELEVATION DATA: UPSTREAM(FEET) = 855.00 DOWNSTF FLOW LENGTH(FEET) = 350.00 MANNING'S N = 0.01 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                                                          RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR \ 2\ \text{STREAMS.}
                                                               855.00 DOWNSTREAM(FEET) = 835.00
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 3.9
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.89
ESTIMATED PIPE DIAMETER(INCH) = 18.00
                                                                                                                                           ** PEAK FLOW RATE TABLE **
                                                                     3.9 INCHES
                                                                                                                                           STREAM
                                                                                                                                                              RUNOFF
(CFS)
                                                                                                                                                                                Tc (MIN.)
                                                                            NUMBER OF PIPES = 1
                                                                                                                                          NUMBER
                                                                                                                                                                                                (INCH/HOUR)
 ESTIMATED PIPE DIAMETER (INC.) - 10.00 ...
PIPE-FIDW(CFS) = 2.48
PIPE TRAVEL TIME(MIN.) = 0.66  Tc(MIN.) = 14.78
LONGEST FLOWPATH FROM NODE 634.00 TO NODE 642.00 = 1385.00 FEET.
                                                                                                                                                               16.64
                                                                                                                                                                             3.20
14.78
                                                                                                                                                                                                       8.168
4.059
                                                                                                                                          COMPUTED CONFIJIENCE ESTIMATES ARE AS FOLLOWS:
TOTAL AREA(ACRES) = 16.64 Tc(MIN.) = 3.8
 FLOW PROCESS FROM NODE 642.00 TO NODE 642.00 IS CODE = 1
                                                                                                                                          LONGEST FLOWPATH FROM NODE 634.00 TO NODE
                                                                                                                                                                                                                               642.00 =
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
TOTAL NUMBER OF STREAMS = 2 FLOW PROCESS FROM NODE 642.00 TO NODE 631.00 IS CODE = 31 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 CONFLUENCE VALUES GER FOR THE TIME OF CONCENTRATION(MIN.) = 14.78
RAINFALL INTENSITY(INCH/HR) = 4.06
TOTAL STREAM AREA(ACRES) = 1.44
                                                                                                                                           >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                                           >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
                                                                                                                                       ______
                                                                                                                                          ELEVATION DATA: UPSTREAM(FEET) = 835.00 DOWNSTREAM(FEET) = 833.00 FLOW LENGTH(FEET) = 89.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 21.0 INCH PIPE IS 13.2 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 10.47 ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
 FLOW PROCESS FROM NODE 640.00 TO NODE 641.00 IS CODE = 21
                                                                                                                                         PIPE-FLOW(CFS) = 16.64
PIPE TRAVEL TIME(MIN.) = 0.14 Tc(MIN.) =
LONGEST FLOWPATH FROM NODE 634.00 TO NODE
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                                                                                                                       Tc (MIN ) = 3 35
 *USER SPECIFIED(SUBAREA):
                                                                                                                                                                                                                                  631.00 = 1474.00 FEET.
 LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
                                                                                                                                          FLOW PROCESS FROM NODE 631.00 TO NODE 631.00 IS CODE = 11
 UPSTREAM ELEVATION(FEET) = 912.00
DOWNSTREAM ELEVATION(FEET) = 911.00
ELEVATION DIFFERENCE(FEET) = 1.00
                                                                                                                                           >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<
 ELEVATION DIFFERENCE (FEET) = 1.00
SUBAREA OVERLAND TIME OF FLOW (MIN.) = 3.204
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 64.29
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TC CALCULATION!
                                                                                                                                           ** MAIN STREAM CONFLUENCE DATA **
                                                                                                                                                                                                   INTENSITY
                                                                                                                                           STREAM
                                                                                                                                                              RUNOFF
                                                                                                                                                                                                                             AREA
                                                                                                                                                                                    TC
                                                                                                                                                                                (MIN.) (INCH/HOUR)
                                                                                                                                                               (CFS)
16.64
                                                                                                                                           NUMBER
                                                                                                                                                                                                                          (ACRE)
                                                                                                                                                                                                       8.168
                                                                                                                                                                                   3.35
                                                                                                                                                                                                                             3.76
                                                                                                                                          LONGEST FLOWPATH FROM NODE
                                                                                                                                                                                                634.00 TO NODE
                                                                                                                                                                                                                                631.00 = 1474.00 FEET.
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
 NOTE: RAINFALL INTENSITY IS BASED ON To = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 1.32
TOTAL AREA(ACRES) = 0.19 TOTAL RUNOFF(CFS) =
                                                                                                                                           ** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM RUNOFF TC INTENSIT
                                                                                                        1.32
                                                                                                                                          STREAM
                                                                                                                                                                                                  INTENSITY
                                                                                                                                                                                                                             AREA
```

```
(CFS) (MIN.) (INCH/HOUR) (ACRE)
52.03 12.80 4.454 21 94
  NUMBER
                                                   LONGEST FLOWPATH FROM NODE
    ** PEAK FLOW RATE TABLE **
                                                                                                                             >>>>COMDITTE DIDE-FLOW TRAVEL TIME THREE SHRAPEACCCC
                 RUNOFF
(CFS)
                                                                                                                             >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                    (MIN.)
  NUMBER
                                                   (TNCH/HOUR)
                                                                                                                          ______
                                                                                                                            FLEVATION DATA: UPSTREAM(FEET) = 781.00 DOWNSTREAM(FEET) = 770.00 FLOW LENGTH(FEET) = 184.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 18.0 INCH PIPE IS 13.9 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 16.11 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                    3.35
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) = 61.1
TOTAL AREA(ACRES) = 25.7
                                              61.11 Tc(MIN.) = 12.80
                                                                                                                            ESTIMALED FIFE DIRECTION, PURPLE DIRECTION, PURPLE DIVIDED FILE BOOK (FS) = 23.63

PIPE TRAVEL TIME(MIN.) = 0.19 Tc(MIN.) = 8.02

LONGEST FLOWPATH FROM NODE 645.00 TO NODE 648.00 = 1259.00 FEET.
  FLOW PROCESS FROM NODE 631.00 TO NODE 631.00 IS CODE = 12
   >>>>CLEAR MEMORY BANK # 1 <<<<<
                                                                                                                            FLOW PROCESS FROM NODE 648.00 TO NODE 648.00 IS CODE = 1
______
                                                                                                                             >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                                                         ** >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                                                         -- TOTAL NUMBER OF STREAMS = 2
   FLOW PROCESS FROM NODE 631.00 TO NODE 648.00 IS CODE = 31
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                             CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                            CONFLUENCE VALUES USED FOR INDUITION TIME OF CONCENTRATION(MIN.) = 8.02
RAINFALL INTENSITY(INCH/HR) = 6.02
TOTAL STREAM AREA(ACRES) = 7.43
   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
  ELEVATION DATA: UPSTREAM(FEET) = 832.00 DOWNSTREAM(FEET) = 7
FLOW LENGTH(FEET) = 963.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 18.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 20.81
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
                                                           832.00 DOWNSTREAM(FEET) = 774.00
                                                                                                                             PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                             ** CONFLUENCE DATA **
                                                                                                                            STREAM RUNOFF TC INTENSITY
NUMBER (CFS) (MIN.) (INCH/HOUR)
  PIPE-FLOW(CFS) = 61.11
PIPE TRAVEL TIME(MIN.) = 0.77  Tc(MIN.) = 13.57
LONGEST FLOWPATH FROM NODE 600.00 TO NODE 648.00 = 2602.00 FEET.
                                                                                                                                                                                                        (ACRE)
                                                                                                                                               61.11
                                                                                                                                                           13.57 4.289
8.02 6.022
                                                                                                                                                                                                           25.70
 FLOW PROCESS FROM NODE 648.00 TO NODE 648.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                                                             ** PEAK FLOW RATE TABLE **
  TOTAL NUMBER OF STREAMS = 2 NUMBER
                                                                                                                                          RUNOFF TC INTENSITY (CFS) (MIN.) (INCH/HOUR)
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 13.57
RAINFALL INTENSITY(INCH/HR) = 4.29
TOTAL STREAM AREA(ACRES) = 25.70
PEAK FLOW RATE(CFS) AT CONFLUENCE = 61.11
                                                                                                                                                            8.02
13.57
                                                                                                                                                                                   6.022
                                                                                                                             COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                            PEAK FLOW RATE(CFS) = 77.94 Tc(MIN.) = 13.57
TOTAL AREA(ACRES) = 33.1
FLOW PROCESS FROM NODE 645.00 TO NODE 646.00 IS CODE = 21
   >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                                             FLOW PROCESS FROM NODE 648.00 TO NODE
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
   *USER SPECIFIED(SUBAREA):
   RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
UPSTREAM ELEVATION(FEET) = 854.00
DOWNSTREAM ELEVATION(FEET) = 850.00
ELEVATION DIFFERENCE(FEET) = 4.00
                                                                                                                          ______
                                                                                                                             ELEVATION DATA: UPSTREAM(FEET) = 770.00 DOWNSTREAM(FEET) = FLOW LENGTH(FEET) = 131.00 MANNING'S N = 0.013
                                                                                                                            ELEVATION DAIA. OFSIREAM(FEEI) = 7/0.00 DUMNSIREAM(FEEI) = FLOW LENGTH(FEET) = 131.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 30.0 INCH PIPE IS 24.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 18.14
ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
  ELEVATION DIFFERENCE(FEET) = 4.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                    4.886
  SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.886

100 YEAR RAINFALL INTENSITY INTENSITY INTENSITY INTENSITY IS BASED ON TO = 5-MINUTE.

SUBAREA RUNOFF(CFS) = 0.51

TOTAL AREA(ACRES) = 0.12 TOTAL RUNOFF(CFS) =
                                                                                                                            ESTIMALED FIFE DIRECTION OF THE PROPERTY OF TH
                                                                                                                                                                                                          653.00 = 2733.00 FEET.
                                                                                         0.51
                                                                                                                          ............
   FLOW PROCESS FROM NODE 646.00 TO NODE 647.00 IS CODE = 61
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                             >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<-
                                                                                                                         ______
                                                                                                                            TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                                            TIME OF CONCENTRATION(MIN.) = 13.69
RAINFALL INTENSITY(INCH/HR) = 4.27
TOTAL STREAM AREA(ACRES) = 33.13
  STREET LENGTH(FEET) = 1005.00
STREET HALFWIDTH(FEET) = 18.00
                                                     CURB HEIGHT(INCHES) = 6.0
                                                                                                                             PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                                          77.94
  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 651.00 TO NODE 652.00 IS CODE = 21
                                                                                                                             >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  SPECIFIED NUMBER OF HALFSTREETS 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
                                                                                                                             *USER SPECIFIED(SUBAREA):
                                                                                                                             LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
                                                                                                                             S.C.S. CURVE NUMBER (AMC II) =
INITIAL SUBAREA FLOW-LENGTH(FEET)
      **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = STREETFLOW MODEL RESULTS USING ESTIMATED FLOW: STREET FLOW DEPTH(FEET) = 0.32

HALFSTREET FLOOD WIDTH(FEET) = 9.81

AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.69

PRODUCT OF DEPTHAVELOCITY(FT*FT/SEC.) = 1.84

STREET FLOW TRAVEL TIME(MIN.) = 2.94 TC(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.116
                                                                                                                             UPSTREAM ELEVATION(FEET) = 839.00

DOWNSTREAM ELEVATION(FEET) = 837.00

ELEVATION DIFFERENCE(FEET) = 2.00
                                                                                                                                                                                   2.00
                                                                                                                             SUBARRA OVERLAND TIME OF FLOW(MIN.) = 2.653
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
NOTE: RAINFALL INTENSITY IS BASED ON TC = 5-MINUTE.
                                                                                                                             *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

SUBAREA AREA(ACRES) = 7.31

SUBAREA

TOTAL AREA(ACRES) = 7.4
                                                                                                                             FLOW PROCESS FROM NODE 652.00 TO NODE 653.00 IS CODE = 61
                                                          SUBAREA RUNOFF(CFS) =
                                                                                                 23.25
                                              7.4
                                                              PEAK FLOW RATE(CFS) =
  TOTAL AREA(ACRES) =
                                                                                                                             >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                         >>>> (STANDARD CURB SECTION USED) <<<<
   END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38 HALFSTREET FLOOD WIDTH(FEET) = 12.90
FLOW VELOCITY(FEET/SEC.) = 6.63 DEPTH*VELOCITY(FT*FT/SEC.) = 2.55
LONGEST FLOWPATH FROM NODE 645.00 TO NODE 647.00 = 1075.00 FE
                                                                                                  UPSTREAM ELEVATION(FEET) = 837.00 DOWNSTREAM ELEVATION(FEET) = 768.50 C.) = 2.55 STREET LENGTH(FEET) = 1029.00 CURB HEIGHT(INCHES) = 6.0 1075.00 FEET. STREET HALFWIDTH(FEET) = 18.00
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TOTAL AREA(ACRES) =
                                                                                                                              0.22 TOTAL RUNOFF(CFS) =
                                                                                                                                                                        0.65
  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 658.00 TO NODE 659.00 IS CODE = 61
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  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
                                                                                                  >>>>(STANDARD CURB SECTION USED) < < < <
                                                                                                  UPSTREAM ELEVATION(FEET) = 852.00 DOWNSTREAM ELEVATION(FEET) = 812.00 STREET LENGTH(FEET) = 650.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                       0.0150===
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) = 0.30
HALFSTREET FLOOD WIDTH(FEET) = 8.85
AVERAGE FLOW VELOCITY(FEET/SEC.) = !
                                                                                                  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 9 00
                                                                                                  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  HALFSIREET FLOOD WIDTH(FEEL) = 6.05
AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.40
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.64
STREET FLOW TRAVEL TIME(MIN.) = 3.18 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.399
                                                                                                  SPECIFIED NUMBER OF HALFSTREETS 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 = 0.02
  100 YEAR RAINFALL INTERNSITY(INCH/HOUR) = 7.399
**USER SPECIFIED(SUBAREA):
LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.850
SUBAREA AREA(ACRES) = 2.61 SUBAREA RUNOFF(CFS) = 16.41
TOTAL AREA(ACRES) = 2.8 PEAK FLOW RATE(CFS) =
                                                                                                                                                                                       0.0150
                                                                                                     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                                  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.27
HALFSTREET FLOOD WIDTH(FEET) = 7.33
AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.81
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.31
STREET FLOW TRAVEL TIME(MIN.) = 2.25 Tc(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.916
  END OF SUBAREA STREET FLOW HYDRAULICS:
  END OF SUBAREA STREET FLOW HIDRADILGS.

DEPTH(FEET) = 0.35 HALFSTREET FLOOD WIDTH(FEET) = 11.43

FLOW VELOCITY(FEET/SEC.) = 6.23 DEPTH*VELOCITY(FT*FT/SEC.) = 2.21

LONGEST FLOWPATH FROM NODE 651.00 TO NODE 653.00 = 1099.00 FEET.
                                                                                                  100 YEAR RAINFALL INTENSITY(INCH, HOCH,
*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
SUBAREA AREA(ACRES) = 4.41 SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 4.6 PEAK FLOW RATE(CFS):
 *************************
  FLOW PROCESS FROM NODE 653.00 TO NODE 653.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                                                                                SUBAREA RUNOFF(CFS) = 11.27
PEAK FLOW RATE(CFS) =
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES << < <
                                                                                                  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  CONFLUENCE VALUES USED FOR INDICATION TIME OF CONCENTRATION(MIN.) = 5.83 RAINFALL INTENSITY(INCH/HR) = 7.40 TOTAL STREAM AREA(ACRES) = 2.82
                                                                                                .....
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                     17.73
                                                                                                  FLOW PROCESS FROM NODE 659.00 TO NODE 659.00 IS CODE = 1
   ** CONFIGUENCE DATA **
              RUNOFF
(CFS)
77.94
                                           INTENSITY
                                                              AREA
                                                                                                  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                              (MIN.) (INCH/HOUR)
                                                                                                NUMBER
                                                             (ACRE)
                            13.69
                                          4.265
7.399
                                                                33.13
                                                                                                  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                  TIME OF CONCENTRATION(MIN.) = 10.99
RAINFALL INTENSITY(INCH/HR) = 4.92
TOTAL STREAM AREA(ACRES) = 4.63
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                  TOTAL STREAM AREA(ACRES) = 4.63
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                    11.84
  ** PEAK FLOW RATE TABLE **
               RUNOFF
(CFS)
                                                                                                STREAM
                            (MIN.)
                                                                                                  FLOW PROCESS FROM NODE 662.00 TO NODE 663.00 IS CODE = 21
  NUMBER
                                        (INCH/HOUR)
                          5.83
                  62 66
       2
                                                                                                  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                 88.16
                                            4.265
                                                                                                ______
0.48
  ELEVATION DATA: UPSTREAM(FEET) = 763.50 DOWNSTREAM(FEET) = 760.50

FLOW LENGTH(FEET) = 132.00 MANNING'S N = 0.013
  ELEVATION DATA: UPSTREAM (FEET) = 763.50 DOWNSTREAM (FEET) = FLOW LENGTH(FEET) = 132.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 36.0 INCH PIPE IS 26.7 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 15.69

ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
                                                                                                  FLOW PROCESS FROM NODE 663.00 TO NODE 664.00 IS CODE = 31
                                                                                                  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
FLOW PROCESS FROM NODE 657.00 TO NODE 658.00 IS CODE = 21
                                                                                            >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                 FLOW PROCESS FROM NODE 663.00 TO NODE 664.00 IS CODE = 81
                              >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                -----
                                                                                                                                                              -----
                                                                                                   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.713
  S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
UPSTREAM ELEVATION(FEET) = 854.85
DOWNSTREAM ELEVATION(FEET) = 854.15
ELEVATION DIFFERENCE(FEET) = 0.70
SUBADEA OURDIAND TAME OF PROCESSION
                                                                                                  TOU TEAR RAINFALD INTERNSTIT(INCH/HOUR) = 7.713
*USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4100
  ELEVATION DIFFERENCE(FEET) = 0.70
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 70.00
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TC CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
                                                                                                  SUBAREA AREA(ACRES) = 0.29 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 0.4 TOTAL RUNOFF(CFS) =
                                                                                                                                                                           0.92
                                                                                                  TOTAL AREA(ACRES) = TC(MIN.) = 5.46
                                                                                                  FLOW PROCESS FROM NODE 664.00 TO NODE 659.00 IS CODE = 31
  SUBAREA RUNOFF(CFS) =
                                   0.65
```

```
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                          ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                                          PIPE-FLOW(CFS) = 0.52

PIPE TRAVEL TIME(MIN.) = 1.98 Tc(MIN.) = 7.74

LONGEST FLOWPATH FROM NODE 666.00 TO NODE 668.00 =
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<
 FLOW LENGTH(FEET) =
                      45.00 MANNING'S N = 0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.6 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 8.75
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
                                                                          FLOW PROCESS FROM NODE 667.00 TO NODE 668.00 IS CODE = 81
                                                                          >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
 ______
                                                                           100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.159
                                                          145.00 FEET.
                                                                          *USER SPECIFIED(SUBAREA):
                                                                          RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4100
*************
 FLOW PROCESS FROM NODE 659.00 TO NODE 659.00 IS CODE = 1
                                                                          SUBAREA AREA(ACRES) = 0.90 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 1.1 TOTAL RUNOFF(CFS) =
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES << < <
                                                                          TC(MIN.) = 7.74
 TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                          FLOW PROCESS FROM NODE 668.00 TO NODE 665.00 IS CODE = 31
 TIME OF CONCENTRATION(MIN.) = 5.55
RAINFALL INTENSITY(INCH/HR) = 7.64
                                                                          >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                               0.44
 TOTAL STREAM AREA(ACRES) =
                                                                          >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) < < < <
 PEAK FLOW RATE(CFS) AT CONFLUENCE
                                                                          ELEVATION DATA: UPSTREAM(FEET) = 800.00 DOWNSTREAM(FEET) = 790.00
                                        1.39
  ** CONFLUENCE DATA **
                                                                          FLOW LENGTH(FEET) = 260.00 MANNING'S N = 0.013
                                                                          FLOW LENGTH(FEET) = 260.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 4.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.93
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
          RUNOFF
(CFS)
                      Tc INTENSITY (MIN.) (INCH/HOUR)
                                               AREA
 NUMBER
                                             (ACRE)
                            4.916
7.636
            11 84
                     10.99
                                                 4 63
                                                                          PIPE TRAVEL TIME(MIN.) = 0
                                                                          PIPE TRAVEL TIME(MIN.) = 0.55 Tc(MIN.) = 8.29
LONGEST FLOWPATH FROM NODE 666.00 TO NODE 665.00 =
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                         *******************
  ** PEAK FLOW RATE TABLE **
          RUNOFF
(CFS)
                   Tc (MIN.)
                                                                          FLOW PROCESS FROM NODE 665.00 TO NODE 665.00 IS CODE = 1
 NUMBER
                              (INCH/HOUR)
                              7.636
              7 37
                       5 55
                                                                          >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
            12.73
                    10.99
                                 4.916
                                                                          >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES <<->
                                                                         ______
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 12.73 Tc(MIN.) = 10.99
TOTAL AREA(ACRES) = 5.1
                                                                          TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TOTAL AREA (ACRES) = 5.1 TIME OF CONCENTRATION (MIN.) = 8.29 LONGEST FLOWPATH FROM NODE 657.00 TO NODE 659.00 = 720.00 FEET. RAINFALL INTENSITY(INCH/HR) = 5.89
                                                                          TOTAL STREAM AREA(ACRES) =
 UIAL DIREMT ARCHIMACES - 1.07
                                                                                                                 2.70
                                                                          ** CONFLUENCE DATA *
                                                                                   RUNOFF
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                          STREAM
                                                                                                         INTENSITY
                                                                                                                        AREA
                                                                                     (CFS)
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
                                                                          NUMBER
                                                                                               (MIN.)
                                                                                                       (INCH/HOUR)
                                                                                                                       (ACRE)
 12.73
                                                                                              11.39
                                                                                                        4.802
5.894
                                                                                                                         5.07
 ELEVATION DATA: UPSTREAM(FEET) = 807.00 DOWNSTREAM(FEET) = 784.00 FLOW LENGTH(FEET) = 356.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                       2.70
                                                                          RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 8.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 14.64
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                                          CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                          ** PEAK FLOW RATE TABLE **
 STREAM RUNOFF
NUMBER (CFS)
                                                                                           Tc (MIN.)
                                                                                                        INTENSITY
                                                                          NUMBER
                                                                                                       (INCH/HOUR)
                                                                            1 2
                                                                                      13 07
                                                                                               8 29
                                                                                                          5 894
                                                                                            11.39
 FLOW PROCESS FROM NODE 665.00 TO NODE 665.00 IS CODE = 1
                                                                          COMPUTED CONFIJIENCE ESTIMATES ARE AS FOLLOWS:
                                                                          PEAK FLOW RATE(CFS) = 14.93 Tc(MIN.) = TOTAL AREA(ACRES) = 6.1
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
 TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                       657.00 TO NODE
                                                                                                                        665.00 = 1076.00 FEET.
                                                                        *******************
 CONFLUENCE VALUES USED FOR INDEFENDENT
TIME OF CONCENTRATION(MIN.) = 11.39
RAINFALL INTENSITY(INCH/HR) = 4.80
                                                                         FLOW PROCESS FROM NODE 665.00 TO NODE 671.00 IS CODE = 31
 TOTAL STREAM AREA(ACRES) =
                               5.07
                                                                          >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                          >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                         ______
   ELEVATION DATA: OPSTREAM(FEET) = 784.50 DOWNS:
FLOW LENGTH(FEET) = 464.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 14.10
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
 FLOW PROCESS FROM NODE 666.00 TO NODE 667.00 IS CODE = 21
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                                 NUMBER OF PIPES = 1
                                                                          PIPE-FLOW(CFS) = 14.93

PIPE TRAVEL TIME(MIN.) = 0.55 TC(MIN.) = 11.94

LONGEST FLOWPATH FROM NODE 657.00 TO NODE 671.00 = 1540.00 FEET.
 *USER SPECIFIED(SUBAREA):
 RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100 S.C.S. CURVE NUMBER (AMC II) = 0
 S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
 UPSTREAM ELEVATION(FEET) = 820.00
DOWNSTREAM ELEVATION(FEET) = 810.00
                                                                          FLOW PROCESS FROM NODE 671.00 TO NODE 671.00 IS CODE = 1
 ELEVATION DIFFERENCE(FEET)
                                 10.00
 TIME OF CONCENTRATION(MIN.) = 11.94
RAINFALL INTENSITY(INCH/HR) = 4.66
                                                       0.52
 PEAK FLOW RATE(CFS) AT CONFLUENCE =
 FLOW PROCESS FROM NODE 667.00 TO NODE 668.00 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << < <
                                                                          FLOW PROCESS FROM NODE 669.00 TO NODE 670.00 IS CODE = 21
 ELEVATION DATA: UPSTREAM(FEET) = 810.00 DOWNSTREAM(FEET) = 800.00
                                                                          >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
 FLOW LENGTH(FEET) = 471.00 MANNING'S N = 0.013
                                                                        DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.97
                                                                          *USER SPECIFIED(SUBAREA):
                                                                          NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
                                                                          S.C.S. CURVE NUMBER (AMC II) =
                                                                                                          0
```

```
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4100
SUBAREA AREA(ACRES) = 1.40 SUBAREA RUNOFF(CFS) = 4.13
TOTAL AREA(ACRES) = 1.5 TOTAL RUNOFF(CFS) = 4.
  INITIAL SUBAREA FLOW-LENGTH(FEET) :
                                            85.00
 UPSTREAM ELEVATION(FEET) = 812.00
DOWNSTREAM ELEVATION(FEET) = 807.00
ELEVATION DIFFERENCE(FEET) = 5.00
 ELEVATION DIFFERENCE (FEET) = 5.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 2.850

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168

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

SUBAREA RUNOFF (CFS) = 0.77

TOTAL AREA(ACRES) = 0.12 TOTAL RUNOFF (CFS) = 0.77
                                                                                      TC(MIN.) =
                                                                                                     6.08
                                                                                      FLOW PROCESS FROM NODE 675.00 TO NODE 671.00 IS CODE = 31
                                                                                      >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
FLOW PROCESS FROM NODE 670.00 TO NODE 671.00 IS CODE = 61
                                                            ----- ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                                              760.00 DOWNSTREAM(FEET) = 759.00
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                       ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                      DEPTH OF FLOW IN 18.0 INCH PIPE IS 7.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.78
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
   UPSTREAM ELEVATION(FEET) = 806.00 DOWNSTREAM ELEVATION(FEET) = 765.00 STREET LENGTH(FEET) = 685.00 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 671.00 TO NODE 671.00 IS CODE = 1
  SDECTETED MIMBED OF HALESTDEETS CAPPVING DINOFF - 1
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb):
                                                                                       >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <--
                                                                             0.0150 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                                                      TOTAL NUMBER OF STREAMS = 3
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
                                                                                       CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
TIME OF CONCENTRATION(MIN.) = 6.23
RAINFALL INTENSITY(INCH/HR) = 7.09
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                    4 35
    **TRAVEL TIME COMPULED USING ESTIMATED FLOW:
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.30
HALFSTREET FLOOD WIDTH(FEET) = 8.56
    HALFSTREET FLOOD WIDTH(FEET) = AVERAGE FLOW VELOCITY(FEET/SEC.) =
                                                                                                                         1.54
                                                                                       TOTAL STREAM AREA(ACRES) =
                                                                                       PEAK FLOW RATE(CFS) AT CONFLUENCE =
  AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.11
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.52
STREET FLOW TRAVEL TIME(MIN.) = 2.24 Tc(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.079
                                                                                       ** CONFILIENCE DATA **
                                                               5 09
                                                                                               RUNOFF
(CFS)
  *USER SPECIFIED(SUBAREA):
                                                                                                               (MIN.)
                                                                                       NUMBER
                                                                                                                         (INCH/HOUR)
                                                                                                                                           (ACRE)
 *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) = 1.12

SUBAREA RUNOFF(COEFFICIENT = 0.790

TOTAL AREA (ACRES) = 1.2

PEAK FLOW RAT
                                                                                                                          4.659
                                                                                                    14.93
                                                                                                              11.94
                                                                                                                                              6.14
                                                                                                             6.23
                                                                                                     4.54
                                                                                                                             7.088
                                                                                                                                              1.54
                                     SUBAREA RUNOFF(CFS) = 7.15
PEAK FLOW RATE(CFS) = 7.91
                                                                                       RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 3 STREAMS.
                                                                                       ** PEAK FLOW RATE TABLE **
                                                                                       STREAM
                                                                                                   RUNOFF
                                                                                                                 Tc
                                                                                                                          INTENSITY
                                                                                                           (MIN.)
                                                                                                    (CFS)
                                                                                                                         (INCH/HOUR)
                                                                                                                        8.079
                                                                                         1 2
                                                                                                    20.24
                                                                                                               5.09
6.23
  ****************
                                                                                                    21.30
                                                                                                                            7 088
                                                                                                    22.48 11.94
  FLOW PROCESS FROM NODE 271.00 TO NODE 271.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                      TOTAL AREA(ACRES) = 8.9

LONGEST FLOWPATH FROM NODE 657.00 TO NODE 671.00 = 1540.00 FEET.
  TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.09
RAINFALL INTENSITY(INCH/HR) = 8.08
  TOTAL STREAM AREA(ACRES) = 1.24
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                    FLOW PROCESS FROM NODE 671.00 TO NODE 654.00 IS CODE = 31
                                                                                      >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
_____
                                                                                      ELEVATION DATA: UPSTREAM(FEET) = 765.00 DOWNSTREAM(FEET) = 764.00 FLOW LENGTH(FEET) = 66.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 24.0 INCH PIPE IS 16.7 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 9.66
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  *USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                       PIPE-FLOW VELOCITY(FEET/SEC.) = 9.66
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES =
 S.C.S. CURVE NUMBER (AMC II) = 0 O
INITIAL SUBAREA FLOW-LENGTH(FEET) = 85.00
UPSTREAM ELEVATION(FEET) = 790.00
DOWNSTREAM ELEVATION(FEET) = 780.00
ELEVATION DIFFERENCE(FEET) = 10.00
                                                                                       PIPE TRAVEL TIME(MIN.) = 0
                                                                                       780.00
10.00
10.00
5.315
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                      FLOW PROCESS FROM NODE 654.00 TO NODE 654.00 IS CODE = 11
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.315 FI
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION+---
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.852 >>
SUBAREA RUNOFF(CFS) = 0.45 ====
TOTAL AREA(ACRES) = 0.14 TOTAL RUNOFF(CFS) = 0.45
                                                                                       >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY << < <
 LONGEST FLOWPATH FROM NODE
                                                                                                                                            654.00 =
                                                                                                                                                          1606.00 FEET.
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                 ==== ** MEMORY BANK # 1 CONFLUENCE DATA **
                                                                                      ** MEMOKY BANG T --
STREAM RUNOFF TC INTENSITY AREA
NUMBER (CFS) (MIN.) (INCH/HOUR) (ACRE)
2 98 16 13.83 4.237 35.95
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 1.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.20
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                                                                                                           654.00 = 2865.00 FEET.
                                                                                       LONGEST FLOWPATH FROM NODE
                                                                                                                        600.00 TO NODE
                                                                                       ** PEAK FLOW RATE TABLE **
  PIPE TRAVEL TIME (MIN.) = (LONGEST FLOWDARD -
                                                                                                  RUNOFF Tc (CFS) (MIN.)
                                                                                       STREAM
                                                                                                                          INTENSITY
 PIPE-FLOW(CFS) = 0.45

PIPE TRAVEL TIME(MIN.) = 0.77  Tc(MIN.) = 6.08

LONGEST FLOWPATH FROM NODE 673.00 TO NODE 675.00 = 370.00 FEET.
                                                                                                                        (INCH/HOUR)
                                                                                                           12.05
13.83
                                                                                                   99.31
                                                                                                                              4.630
                                                                                         1
2
                                                                                                  108.74
                                                                                                                              4.237
                                                                                      COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  FLOW PROCESS FROM NODE 674.00 TO NODE 675.00 IS CODE = 81
                                                                          >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
______
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.198
                                                                                    FLOW PROCESS FROM NODE 654.00 TO NODE 654.00 IS CODE = 12
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
```

>>>>CLEAR MEMORY BANK # 1 <<<< LONGEST FLOWPATH FROM NODE 678.00 TO NODE 681.00 = 1630.00 FEET. FLOW PROCESS FROM NODE 654.00 TO NODE 681.00 IS CODE = 31 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIDENCE< >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA< >>>>AND COMPUTE VARIOUS CONFIDENCED STREAM VALUES <<< < >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) == TOTAL NUMBER OF STREAMS = 2 ELEVATION DATA: UPSTREAM(FEET) = 765.00 D 765.00 DOWNSTREAM(FEET) = 742.00 CONFIJIENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE: ELEVATION DATA: UBSTREAM(FEET) = 765.00 DOWNSTREAM(FEET) = 7 FLOW LENGTH(FEET) = 578.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 36.0 INCH PIPE IS 25.2 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 20.55

ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 108.74

PIPE TRAVEL TIME(MIN.) = 0.47 TC(MIN.) = 14.30 TIME OF CONCENTRATION(MIN.) = 14.19
RAINFALL INTENSITY(INCH/HR) = 4.17 TOTAL STREAM AREA(ACRES) = 10 48 PEAK FLOW RATE(CFS) AT CONFLUENCE = ** CONFLUENCE DATA ** INTENSITY (MIN.) (INCH/HOUR) (ACRE) 14.30 FLOW PROCESS FROM NODE 681.00 TO NODE 681.00 IS CODE = 1 23.09 DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE CONFLUENCE CONFLUENCE FORMULA USED FOR 2 STREAMS. >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE< TOTAL NUMBER OF STREAMS = 2 TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 14.30
RAINFALL INTENSITY(INCH/HR) = 4.15
TOTAL STREAM AREA(ACRES) = 44.87 ** DEAK ELOW DATE TABLE ** STREAM RUNOFF (MIN.) (INCH/HOUR) NUMBER (CFS) TOTAL STREAM AREA(ACRES) = 44.87
PEAK FLOW RATE(CFS) AT CONFLUENCE = 130.96 14.19 131.71 14.30 4.169 4.147 -----*HIGER SDECTETED (SHRAPEA): RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 FLOW PROCESS FROM NODE 681.00 TO NODE 686.00 IS CODE = 31 S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
UPSTREAM ELEVATION(FEET) = 795.35
DOWNSTREAM ELEVATION(FEET) = 794.65
ELEVATION DIFFERENCE(FEET) = 0.70 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA< >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<< ______ DOWNSTREAM ELEVATION (FEET) = 794.65

ELEVATION DIFFERENCE(FEET) = 0.70

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735

WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

THE MAXIMUM OVERLAND FLOW LENGTH = 70.00

(Reference: Table 3-1B of Hydrology Manual)

THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!

100 YEAR RAINFALL INTENSITY (INCH/HOUR) = 5.699

SUBARPEA DINOREF (CS) - 0.50 FLEVATION DATA: UPSTREAM(FEET) = 742.00 DOWNSTREAM(FEET) = 727.00

FLOW LENGTH(FEET) = 500.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 39.0 INCH PIPE IS 30.2 INCHES

PIPEP-FLOW VELOCITY(FEET/SEC.) = 19.11

ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER OF PIPES = 1 SUBAREA RUNOFF(CFS) = 0.59
TOTAL AREA(ACRES) = 0.20 TOTAL RUNOFF(CFS) = >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA< >>>>(STANDARD CURB SECTION USED) TOTAL NUMBER OF STREAMS = 2 === CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE: UPSTREAM ELEVATION(FEET) = 794.00 DOWNSTREAM ELEVATION(FEET) = 744.00 STREET LENGTH(FEET) = 1376.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00 TIME OF CONCENTRATION(MIN.) = 14.74
RAINFALL INTENSITY(INCH/HR) = 4.07
TOTAL STREAM AREA(ACRES) = 55.35 131.71 PEAK FLOW RATE(CFS) AT CONFLUENCE = 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 684.00 TO NODE 685.00 IS CODE = 21 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS SPECIFIED NUMBER OF HALFSTREETS 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 0.0150 *USER SPECIFIED(SUBAREA): LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00 **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = **TRAVEL TIME COMPILED USING ESTIMATED FLOW(CFS) STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.35

HALFSTREET FLOOD WIDDTH(FEET) = 11.07

AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.50

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.56

STREET FLOW TRAVEL TIME(MIN.) = 5.10 TC(MIN.) = UPSTREAM ELEVATION(FEET) = 765.00

DOWNSTREAM ELEVATION(FEET) = 763.00

ELEVATION DIFFERENCE(FEET) = 2.00 2.00 ELEVATION DIFFERENCE(FEET) = 2.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 2.653
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
NOTE: RAINFALL INTENSITY IS BASED ON TC = 5-MINUTE. 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.237 SUBAREA RUNOFF(CFS) = 1.67 TOTAL AREA(ACRES) = 0.24 TOTAL RUNOFF(CFS) = SPECIFIED(SUBAREA): RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 ************************************** REGIDENTIAL (4.3 DU/AC OR LESS) ROUTE CONS.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.520

SUBAREA AREA(ACRES) = 10.28 SUBAREA

TOTAL AREA(ACRES) = 10.5 PEAF FLOW PROCESS FROM NODE 685.00 TO NODE 686.00 IS CODE = 61 SUBAREA RUNOFF(CFS) = 22.65 >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA< PEAK FLOW RATE(CFS) = UPSTREAM ELEVATION(FEET) = 763.00 DOWNSTREAM ELEVATION(FEET) = 727.00 STREET LENGTH(FEET) = 648.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00 END OF SUBAREA STREET FLOW HYDRAULICS: DEPTH(FET) = 0.41 HALFSTRET FLOOD WIDTH(FEET) = 14.38

FLOW VELOCITY(FEET/SEC.) = 5.28 DEPTH*VELOCITY(FT*FT/SEC.) = 2.19

LONGEST FLOWPATH FROM NODE 678.00 TO NODE 680.00 = 1446.00 FEET. FLOW PROCESS FROM NODE 680.00 TO NODE 681.00 IS CODE = 31 INSIDE STREET CROSSFALL(DECIMAL) = OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA 0.0150 0 0200

```
AVERAGE FLOW VELOCITY(FEET/SEC.) =
                                                                                                                STREET HALFWIDTH(FEET) = 18.00
                                                           5.08
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.08
PRODUCT OF DEPTHEVELOCITY(FT*FT/SEC.) = 1.57
STREET FLOW TRAVEL TIME(MIN.) = 2.13
TC(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
NOTE: RAINFALL INTENSITY IS BASED ON TC = 5-MINUTE.
*USER SPECIFIED(SUBAREA):
                                                                                                               DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
                                                                                                                SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.850

SUBAREA AREA(ACRES) = 2.33

SUBAREA RUNOFF(CFS) = 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7.000 | 7
                                                                                                                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
                                                                                       16.18
= 17.84
                                                       PEAK FLOW RATE(CFS) =
  TOTAL AREA(ACRES) =
                                                                                                                    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
  END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.32
HALFSTREET FLOOD WIDTH(FEET) = 9.46
 END OF SUBARBA STREET FLOW HYDRAGULICS.

DEPTH(FEET) = 0.36 HALFSTREET FLOOD WIDTH(FEET) = 11.92

FLOW VELOCITY(FEET/SEC.) = 5.80 DEPTH*VELOCITY(FT*FT/SEC.) = 2.11

LONGEST FLOWPATH FROM NODE 684.00 TO NODE 686.00 = 718.00 FE
8.60
                                                                                             >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
        TOTAL NUMBER OF STREAMS = 2
                                                                                                                                                                                                       8.71
 TOTAL NOMBER OF SIREMANS - 2 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 4.78
RAINFALL INTENSITY(INCH/HR) = 8.17
                                                                                                                                                                      PEAK FLOW RATE(CFS) =
                                                                                                                END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                DEPTH(FEET) = 0.36 HALFSTREET FLOOD WIDTH(FEET) = 11.92 FLOW VELOCITY(FEET/SEC.) = 3.07 DEPTH*VELOCITY(FT*FT/SEC.) = 1.12 LONGEST FLOWPATH FROM NODE 689.00 TO NODE 691.00 = 1040.00 FEET.
 TOTAL STREAM AREA(ACRES) = 2.57
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                            17.84
  ** CONFLUENCE DATA **
                                                                                                              ......
                RUNOFF
                                    Tc
                                                 INTENSITY
  STREAM
                                                                       AREA
                                 (MIN.) (INCH/HOUR)
14.74 4.067
4.78 8.168
                 (CFS)
131.71
                                                                     (ACRE)
                                                                                                                FLOW PROCESS FROM NODE 691.00 TO NODE 691.00 IS CODE = 1
  NUMBER
                               4.78
       2
                  17.84
                                                                         2.57
                                                                                                                >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                                                >>>>AND COMPUTE VARIOUS CONFIDENCED STREAM VALUES <<< <
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                                              -----
 CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                TOTAL NUMBER OF STREAMS = 2
                                                                                                                CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                CONFLUENCE VALUES USED FOR INDEPENDENT
TIME OF CONCENTRATION(MIN.) = 8.60
RAINFALL INTENSITY(INCH/HR) = 5.76
  ** PEAK FLOW RATE TABLE **
  STREAM
                 RUNOFF
                                   Tc
                                               INTENSITY
                   (CFS) (MIN.)
  NUMBER
                                                                                                                TOTAL STREAM AREA(ACRES) =
                                             (INCH/HOUR)
                 83.43 4.78 8.168
140.59 14.74 4.067
                                                                                                                PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                ** CONFLUENCE DATA **
                                                                                                                             RUNOFF
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                                                               INTENSITY
                                                                                                                STREAM
                                                                                                                                                                                     AREA
                                                                                                                                 (CES)
  PEAK FLOW RATE(CFS) = 140.59 Tc(MIN.) = 14.74
TOTAL AREA(ACRES) = 57.9
                                                                                                                NUMBER
                                                                                                                                                (MIN.) (INCH/HOUR)
                                                                                                                                                                                   (ACRE)
                                                                                                                                            15.72
8.60
  LONGEST FLOWPATH FROM NODE 600.00 TO NODE 686.00 = 3943.00 FEET.
                                                                                                                     2
                                                                                                                                 9.45
                                                                                                                                                                 5.759
FLOW PROCESS FROM NODE 686.00 TO NODE 691.00 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
                                                                                                                                 (CFS)
 ELEVATION DATA: UPSTREAM(FEET) = 727.00 DOWNSTREAM(FEET) =
                                                                                                                                             (MIN.) (INCH/HOUR)
                                                                                                                NUMBER
                                                                                                                                104.68
                                                                                               709.00
                                                                                                                 1 2
                                                                                                                                                8.60
                                                                                                                                                                5.759
 ELEVATION DATA. OFSIRAM(FEET) = 727.00 DONNSTREAM(FEET) = FLOW LENGTH(FEET) = 970.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 45.0 INCH PIPE IS 32.6 INCHES

PIPE-FLOW VEBLOCITY(FEET/SEC.) = 16.39

ESTIMATED PIPE DIAMETER(INCH) = 45.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 140.59
                                                                                                                               146.99 15.72
                                                                                                                                                                3.901
                                                                                                                COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                               PEAK FLOW RATE(CFS) = 146.99 Tc(MIN.) = 15.72

TOTAL AREA(ACRES) = 59.8

LONGEST FLOWPATH FROM NODE 600.00 TO NODE 691.00 = 4913.00 FEET.
 FLOW PROCESS FROM NODE 691.00 TO NODE 691.00 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 = 2
  709.00 DOWNSTREAM(FEET) = 699.00
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 15.72
RAINFALL INTENSITY(INCH/HR) = 3.90
  TOTAL STREAM AREA(ACRES) =
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                                      697.00 = 5838.00 FEET.
  FLOW PROCESS FROM NODE 689.00 TO NODE 690.00 IS CODE = 21
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                                FLOW PROCESS FROM NODE 697.00 TO NODE 697.00 IS CODE = 1
                                 -----
                                                                                                                >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
  *USER SPECIFIED(SUBAREA):
  LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500 S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                                TOTAL NUMBER OF STREAMS = 2
  INITIAL SUBAREA FLOW-LENGTH(FEET) = UPSTREAM ELEVATION(FEET)
                                                         70.00
                                                                                                                CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00

UPSTREAM ELEVATION(FEET) = 726.00

DOWNSTREAM ELEVATION(FEET) = 724.00

ELEVATION DIFFERENCE(FEET) = 2.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 2.653

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168

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

SUBAREA RUNOFF(CFS) = 1.04

TOTAL AREA(ACRES) = 0.15 TOTAL RUNOFF(CFS) =
                                                                                                                CONFLUENCE VALUES USED FOR INDEPENDENT
TIME OF CONCENTRATION(MIN.) = 16.86
RAINFALL INTENSITY(INCH/HR) = 3.73
TOTAL STREAM AREA(ACRES) = 59.85
                                                                                                                PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                             ******************
                                                                                                               FLOW PROCESS FROM NODE 694.00 TO NODE 695.00 IS CODE = 21
                                                                                                                >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
FLOW PROCESS FROM NODE 690.00 TO NODE 691.00 IS CODE = 61
                                                                                                                *USER SPECIFIED (SUBAREA):
                                                                                               TOUSE SPECIFIED (SUBARRAY).

RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
   >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
  >>>>(STANDARD CURB SECTION USED) << <<
 UPSTREAM ELEVATION(FEET) = 724.00 DOWNSTREAM ELEVATION(FEET) = 709.00 DOWNSTREAM ELEVATION(FEET) = 710.00 STREET LENGTH(FEET) = 970.00 CURB HEIGHT(INCHES) = 6.0 ELEVATION DIFFERENCE(FEET) = 11.00
  STREET LENGTH(FEET) = 970.00 CURB HEIGHT(INCHES) = 6.0
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SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.765
                                                                                         >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
 SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) =
                                                                                        TIME OF CONCENTRATION(MIN.) = 17.04
RAINFALL INTENSITY(INCH/HR) = 3.70
TOTAL STREAM AREA(ACRES) = 62.41
                              0.28 TOTAL RUNOFF(CFS) =
        PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                     150.95
 FLOW PROCESS FROM NODE 695.00 TO NODE 696.00 IS CODE = 31
                                                                                      --
********************************
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                       FLOW PROCESS FROM NODE 700.00 TO NODE 701.00 IS CODE = 21
  ELEVATION DATA: UPSTREAM(FEET) =
                                                                                        >>>>RATIONAL METHOD INITIAL SUBARRA ANALYSIS
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 3.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.40
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                                                        LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
 ESTIMATED PIPE DIAMETEK(INCH) = 10.00 ROSSIN C = 1

PIPE-FLOW(CFS) = 0.86 UPSTREAM ELEVATION(FEET) = 1

PIPE TRAVEL TIME(MIN.) = 1.01 TC(MIN.) = 6.77 DOWNSTREAM ELEVATION(FEET) = 1

LONGEST FLOWPATH FROM NODE 694.00 TO NODE 696.00 = 366.00 FEET. ELEVATION DIFFERENCE(FEET) = 1

SUBAREA OVERLAND TIME OF FLOW
                                                                                        UPSTREAM ELEVATION(FEET) = 709.00
DOWNSTREAM ELEVATION(FEET) = 709.00
1.00
 NOTE: RAINFALL INIENSIII (INCH/HOUR) = 8.108
NOTE: RAINFALL INIENSIIY IS BASED ON TC = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 1.04
TOTAL AREA(ACRES) = 0.15 TOTAL RUNOFF(CFS) =
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.715
*USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4100
                                                                                     **************
 SUBAREA AREA(ACRES) = 2.28 SUBAREA RUNOFF(CFS) = 6.28
TOTAL AREA(ACRES) = 2.6 TOTAL RUNOFF(CFS) = 7.0
                                                                                       FLOW PROCESS FROM NODE 701.00 TO NODE 702.00 IS CODE = 61
  TOTAL AREA(ACRES)
                                                                      7.05
                                                                                        >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  TC(MIN.) = 6.77
                                                                                      >>>>(STANDARD CURB SECTION USED)<<<<>
LIPSTREAM ELEVATION(FEET) = 708.00 DOWNSTREAM ELEVATION(FEET) = 698.00
- STREET LENGTH(FEET) = 965.00 CURB HEIGHT(INCHES) = 6.0
 *****************************
 FLOW PROCESS FROM NODE 696.00 TO NODE 697.00 IS CODE = 31
                                                                                                                             CURB HEIGHT(INCHES) = 6.0
                                                                                        STREET HALFWIDTH(FEET) = 18.00
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
  >>>>ISING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) < < < <
                                                                                        DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  ELEVATION DATA: UPSTREAM(FEET) = 703.00 DOWNSTREAM(FEET) = 699.00
 ELBUATION DAIA. UPSIREAM(FEET) = 7.03.00 DOWNSTREAM(FEET) = FLOW LENGTH(FEET) = 74.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 6.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 11.73
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                                                         SPECIFIED NUMBER OF HALFSTREETS 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
  PIPE TRAVEL TIME(MIN.) = 0
  PIPE-FLOW(CFS) = 7.05

PIPE TRAVEL TIME(MIN.) = 0.11 Tc(MIN.) = 6.88

LONGEST FLOWPATH FROM NODE 694.00 TO NODE 697.00 = 440.00 FEET.
                                                                                           **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                        **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.32

HALFSTREET FLOW DEPTH(FEET) = 9.88

AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.29

PRODUCT OF DEPTHAVELOCITY(FT*FT/SEC.) = 0.74

STREET FLOW TRAVEL TIME(MIN.) = 7.04 Tc(MIN.) = 10.24

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.143
************************
 FLOW PROCESS FROM NODE 697.00 TO NODE 697.00 IS CODE = 1
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
 -----
                                                                                        *USER SPECIFIED(SUBAREA):
LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
 TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  TIME OF CONCENTRATION(MIN.) = 6.88
RAINFALL INTENSITY(INCH/HR) = 6.65
TOTAL STREAM AREA(ACRES) = 2.56
                                                                                        S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.850
SUBAREA AREA(ACRES) = 1.75 SUBAREA
TOTAL AREA(ACRES) = 1.9 PEAI
                                                                                                                              SUBAREA RUNOFF(CFS) =
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                7.05
                                                                                                                                   PEAK FLOW RATE(CFS) =
  ** CONFLUENCE DATA **
                                                                                         END OF SUBAREA STREET FLOW HYDRAULICS:
            RUNOFF
                                                                                        DEPTH(FET) = 0.37 HALFSTREET FLOOD WIDTH(FEET) = 12.27 FLOW VELOCITY(FEET/SEC.) = 2.56 DEPTH*VELOCITY(FT*FT/SEC.) = 0.95 LONGEST FLOWPATH FROM NODE 700.00 TO NODE 702.00 = 1035.00 FEET.
                             ТС
                                       INTENSITY
                                                        AREA
  STREAM
  NUMBER
                (CFS)
                           (MIN.)
                                    (INCH/HOUR)
                                                       (ACRE)
              146.99
                         16.86
                                    3.729
6.649
                                                         59.85
                           6.88
                                                                                      RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                        FLOW PROCESS FROM NODE 702.00 TO NODE 702.00 IS CODE = 1
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                         >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <--
  ** PEAK FLOW RATE TABLE **
                                                                                        TOTAL NUMBER OF STREAMS = 2
                                                                                         >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES <<< <
            RUNOFF
(CFS)
                       Tc (MIN.)
                                    (INCH/HOUR)
 NUMBER
                                     6.649
                89 50
                           6.88
                                                                                         CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                        CONFLUENCE VALUES USED FOR INDEPENDENT TIME OF CONCENTRATION(MIN.) = 10.24 RAINFALL INTENSITY(INCH/HR) = 5.14 TOTAL STREAM AREA(ACRES) = 1.90
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 150.95 Tc(MIN.) = 16.86
TOTAL AREA(ACRES) = 62.4
                                                                                        TOTAL STREAM AREA(ACRES) = 1.90
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                        8.31
  LONGEST FLOWPATH FROM NODE 600.00 TO NODE 697.00 = 5838.00 FEET. ** CONFLUENCE DATA **
                                                                                        STREAM RUNOFF
NUMBER (CFS)
                                                                                                                              INTENSITY
    (MIN.) (INCH/HOUR)
                                                                                                                                             (ACRE)
 FLOW PROCESS FROM NODE 697.00 TO NODE 702.00 IS CODE = 31
                                                                                                                                3.703
                                                                                                     150.95
                                                                                                                17.04
                                                                                                                                                62.41
                                                                                                               10.24
                                                                                                                               5.143
                                                                                                      8.31
                                                                                                                                                1.90
  >>>>COMPILE PIPE-FLOW TRAVEL TIME THRU SUBAREA
    >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                         RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
699.00 DOWNSTREAM(FEET) =
  ELEVATION DATA: UPSTREAM(FEET) =
                                                                           698.00
 ELEVATION DATA: UPSIREAM(FEET) = 699.00 DOWNSIREAM(FEET) = FLOW LENGTH(FEET) = 131.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 54.0 INCH PIPE IS 40.1 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 11.92

ESTIMATED PIPE DIAMETER(INCH) = 54.00 NUMBER OF PIPES = 1
                                                                                         ** PEAK FLOW RATE TABLE **
                                                                                                   RUNOFF
                                                                                        STREAM
                                                                                                                   Tc
                                                                                                                            INTENSITY
                                                                                                                TC (MIN.)
10.24
                                                                                                     (CFS)
117.00
                                                                                                                          (INCH/HOUR)
                                                                                         NUMBER
                                                                                          1
2
17.04
```

```
PIPE-FLOW(CFS) = 0.52

PIPE TRAVEL TIME(MIN.) = 2.84 Tc(MIN.) = 10.16
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
                                                                                                             LONGEST FLOWPATH FROM NODE 705.00 TO NODE
                                                                                                                                                                                 707 00 -
                                                                                                                                                                                                630 00 EFFT
 ELEVATION DATA: UPSTREAM(FEET) = 698.00 DOWNSTREAM(FEET) = 696.00

DEPTH OF FLOW IN 42.0 INCH PIPE IS 29.0 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 22.11

ESTIMATED PIPE DIAMETER(INCH) = 42.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 156.93

PIPE TRAVEL TIME(MIN.) = 0.04 Tc(MIN.) = 17.08

LONGEST FLOWARTH FROM NODE 600.00 TO NODE 533.00 = 6022.00 FEET.

FILOW PROCESS FROM NODE 533.00 TO NODE 533.00 IS CODE = 11

SUBARBA AREA-AVERAGE RUNOFF COEFFICIENT = 0.4100

SUBARBA AREA(ACRES) = 7.0 TOTAL RUNOFF(CFS) = 14.41

TOTAL AREA(ACRES) = 7.0 TOTAL RUNOFF(CFS) = 14.85
                                                   FLOW PROCESS FROM NODE 706.00 TO NODE 707.00 IS CODE = 81
                                                                                                                                                                                               14.84
                                                                                                           ** MAIN STREAM CONFLUENCE DATA **
                                                                                                            FLOW PROCESS FROM NODE 707.00 TO NODE 708.00 IS CODE = 31
               RUNOFF TC
(CFS) (MIN.)
                                              INTENSITY
                                            (INCH/HOUR) (ACRE)
                                                                                                             >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  NUMBER
                                             3.698 64.31
600.00 TO NODE 53
                                                                     ..31 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<
                 156 93
                                17 08
   LONGEST FLOWPATH FROM NODE
  ** MEMORY BANK # 2 CONFLUENCE DATA **
STREAM RUNOFF TC INTENSIT
                                                                                                             ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                                                                              695.00 DOWNSTREAM(FEET) = 686.00
                                                                                                             FLOW LENGTH(FEET) = 132.00 MANNING'S N = 0.01
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                              INTENSITY
                                                                  AREA
                   (CFS) (MIN.) (INCH/HOUR)
                                                                                                             DEPTH OF FLOW IN 18.0 INCH PIPE IS 9.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 15.52
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
  NUMBER
                                                               (ACRE)
                                             4.308 11
400.00 TO NODE
                                                                 115.58
                                                                      533.00 = 7272.00 FEET.
  LONGEST FLOWPATH FROM NODE
                                                                                                             PIPE-FLOW(CFS) = 14.84
PIPE TRAVEL TIME(MIN.) = 0.14 Tc(MIN.) =
   ** PEAK FLOW RATE TABLE **
                                                                                                             STREAM RUNOFF TC INTENSITY NUMBER (CFS) (MIN.) (INCH/HOUR)
                                                                                                                                                                                                 762.00 FEET.
                             13.48
                                                                                                           .....
                                                                                                             FLOW PROCESS FROM NODE 708.00 TO NODE 708.00 IS CODE = 1
                352.11
                                                    3.698
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                             >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <--
                                       352.11
   PEAK FLOW RATE(CFS) = 352.
TOTAL AREA(ACRES) = 179.9
                                                   Tc(MTN.) = 17.08
                                                                                                             >>>>AND COMPUTE VARIOUS CONFIJIENCED STREAM VALUES<
                                                                                                             TOTAL NUMBER OF STREAMS = 2
                                                                                                            CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                       *** CONFLUENCE VALUES USED FOR INDEFERDED.
TIME OF CONCENTRATION(MIN.) = 10.30
--- RAINFALL INTENSITY(INCH/HR) = 5.12
TOTAL STREAM AREA(ACRES) = 7.00
  FLOW PROCESS FROM NODE 533.00 TO NODE 533.00 IS CODE = 12
  >>>>CLEAR MEMORY BANK # 2 <<<<
                                                                                                             PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                             ** CONFLUENCE DATA **
                                                                                                                          RUNOFF
(CFS)
                                                                                                             NUMBER
                                                                                                                                            (MIN.) (INCH/HOUR)
                                                                                                                                                                               (ACRE)
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                             352.11
                                                                                                                                          17.26
                                                                                                                                                                                179.89
                                                                                                                                        10.30
                                                                                                                             14.84
                                                                                                                                                             5.124
  ELEVATION DATA: UPSTREAM(FEET) = 697.00 DOWNSTREAM(FEET) = 686.50 FLOW LENGTH(FEET) = 278.00 MANNING'S N = 0.013
                                                                                                             RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  FLOW LENGTH(FEET) = 278.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 54.0 INCH PIPE IS 41.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 26.64
ESTIMATED PIPE DIAMETER(INCH) = 54.00 NUMBER OF PIPES = 1
                                                                                                             CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                             ** PEAK FLOW RATE TABLE **
                                                                                                                                                         INTENSITY
                                                                                                             STREAM
                                                                                                                          RUNOFF
                                                                                                                                              Tc
  (MIN.)
                                                                                                             NUMBER
                                                                                                                             (CES)
                                                                                                                                                      (INCH/HOUR)
                                                                                                                            225.02
362.75
                                                                                                                                        10.30
17.26
                                                                                                                                                           5.124
                                                                                                               1
2
______
                                                                                                          --
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                            FLOW PROCESS FROM NODE 708.00 TO NODE 709.00 IS CODE = 31
  TIME OF CONCENTRATION(MIN.) = 17.26
RAINFALL INTENSITY(INCH/HR) = 3.67
TOTAL STREAM AREA(ACRES) = 179.89
                                                                                                             >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                             >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<-
   PEAK FLOW RATE(CFS) AT CONFLUENCE = 352.11
                                                                                                          ELEVATION DATA: UPSTREAM(FEET) = 686.00 DOWNSTREAM(FEET) = 650.00 FLOW LENGTH(FEET) = 218.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 42.0 INCH PIPE IS 31.5 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 46.94 ESTIMATED PIPE DIAMETER(INCH) = 42.00 NUMBER OF PIPES = 1
 **********************
  FLOW PROCESS FROM NODE 705.00 TO NODE 706.00 IS CODE = 21
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                 | ESTIMATED FIRE DIAPREDENTINGER | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | - 12.00 | -
   *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
                                                                                                                                                                                 709.00 = 7768.00 FEET.
                                                                                                           UPSTREAM ELEVATION(FEET) = 704.00

DOWNSTREAM ELEVATION(FEET) = 702.0

ELEVATION DIFFERENCE(FEET) = 2.0
                                                                                                             FLOW PROCESS FROM NODE 709.00 TO NODE 709.00 IS CODE = 1
                                             702.00
                                                                                                             >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <--
                                                 2.00
                                                                                                          TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                            7 323
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.386
  SUBAREA RUNOFF(CFS) = 0.52
TOTAL AREA(ACRES) = 0.20 TOTAL RUNOFF(CFS) =
                                                                                                             CONFLUENCE VALUES USED FOR TAXABLE STATES TIME OF CONCENTRATION(MIN.) = 17.33
RAINFALL INTENSITY(INCH/HR) = 3.66
TOTAL STREAM AREA(ACRES) = 186.89
                                                                               0.52
  *************
                                                                                                                                                                   362.75
  FLOW PROCESS FROM NODE 706.00 TO NODE 707.00 IS CODE = 31
                                                                                                             PEAK FLOW RATE(CFS) AT CONFLUENCE =
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<
                                                                                                            FLOW PROCESS FROM NODE 711.00 TO NODE 712.00 IS CODE = 21
  ELEVATION DATA: UPSTREAM(FEET) = 702.00 D
FILOW LENGTH(FEET) = 560.00 MANNING'S N =
                                                                                                             >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                    702.00 DOWNSTREAM(FEET) = 695.00
  FLOW LENGTH(FEET) = 560.00 MANNING'S N = 0.01
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                              *USER SPECIFIED(SUBAREA):
  DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.6 INCHES
                                                                                                             URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
```

```
S.C.S. CURVE NUMBER (AMC II) =
  INITIAL SUBARRA FLOW-LENGTH(FEET) = :
UPSTREAM ELEVATION(FEET) = 665.00
DOWNSTREAM ELEVATION(FEET) = 660.00
                                                    100.00
 DOWNSTREAM ELEVATION(FEET) = 660.00
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
SUBAREA RUNOFF(CFS) = 0.32
TOTAL AREA(ACRES) = 0.15 TOTAL RUNOFF(CFS) = 0.32
   ******************
  FLOW PROCESS FROM NODE 712.00 TO NODE 709.00 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  DEPTH OF FLOW IN 18.0 INCH PIPE IS 1.3 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 5.84 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
                                                            NUMBER OF PIPES = 1
  PIPE-FLOW(CFS) = 0.32
PIPE TRAVEL TIME(MIN.) = 0.29 Tc(MIN.) =
LONGEST FLOWPATH FROM NODE 711.00 TO NODE
                                                                   709.00 =
                                                                                    200.00 FEET.
*******************************
  FLOW PROCESS FROM NODE 712.00 TO NODE 709.00 IS CODE = 81
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
 **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) = 5.79 SUBAREA RUNOFF(CFS) = 12.24

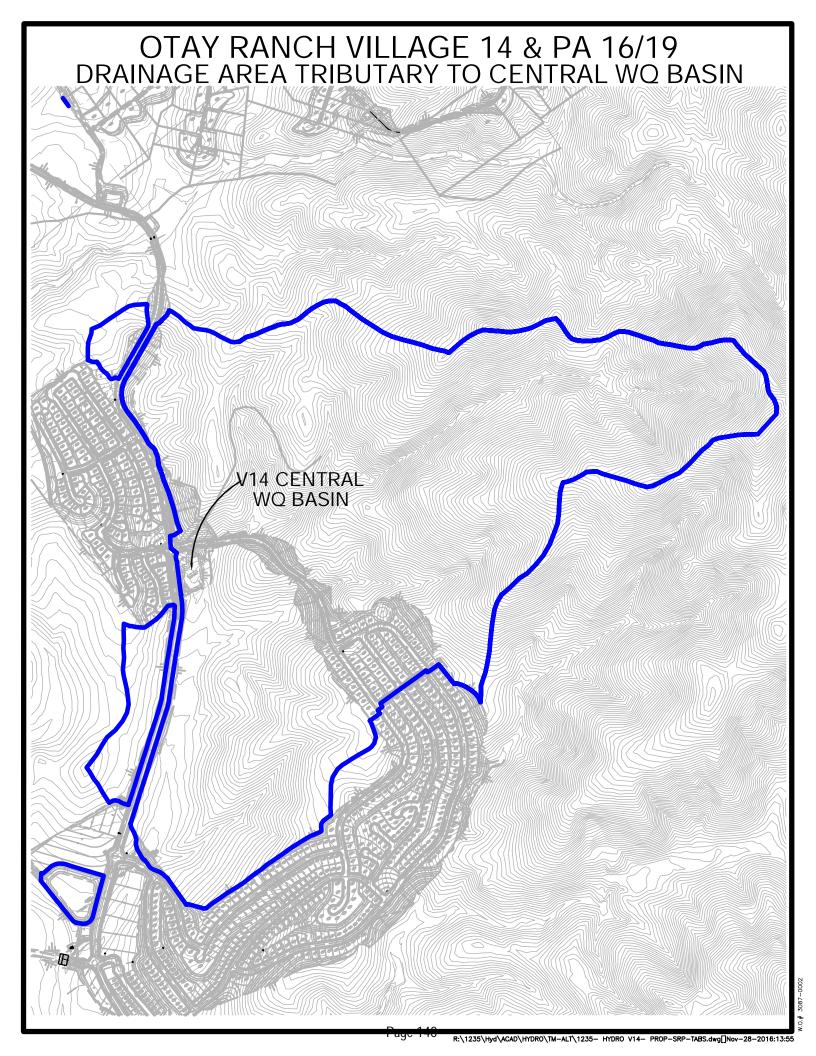
TOTAL AREA(ACRES) = 5.9 TOTAL RUNOFF(CFS) = 12.5
  TOTAL AREA(ACRES) = TC(MIN.) = 7.98
*****************
  FLOW PROCESS FROM NODE 709.00 TO NODE 709.00 IS CODE = 1
   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES << < <
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  TIME OF CONCENTRATION(MIN.) = 7.98
RAINFALL INTENSITY(INCH/HR) = 6.04
  TOTAL STREAM AREA(ACRES) =
                                             5.94
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
  ** CONFIGUENCE DATA **
  STREAM
NUMBER
               RUNOFF
(CFS)
                                TC INTENSITY (MIN.) (INCH/HOUR)
                                                                  (ACRE)
                               17.33
7.98
                                             3.663
6.041
                 362 75
                                                                  186.89
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR \ \ 2 STREAMS.
  ** PEAK FLOW RATE TABLE **
STREAM RUNOFF TC
NUMBER (CFS) (MIN.)
  NUMBER
                                           (INCH/HOUR)
                232.52
                             7.98
17.33
                                            6.041
3.663
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 370.37 Tc(MIN.) = 17.33
TOTAL AREA(ACRES) = 192.8
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 709.00 = 7768.00 FEET.
  END OF STUDY SUMMARY:
TOTAL AREA(ACRES) =
PEAK FLOW RATE(CFS) =
                                    192.8 TC(MIN.) =
                                         370.37
 _____
_____
```

END OF RATIONAL METHOD ANALYSIS

CHAPTER 5

5.1.2 – Rational Method Hydrologic Analysis (AES 2015)

Drainage Area Tributary to V14 Central WQ Basin



```
FLOW PROCESS FROM NODE 752.00 TO NODE 763.00 IS CODE = 31
               RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
               Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT 2003,1985,1981 HYDROLOGY MANUAL
                                                                                                       >>>>COMDITTE DIDE-FLOW TRAVEL TIME THREE SHEAPEACCOCC
                                                                                                       >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
            (c) Copyright 1982-2015 Advanced Engineering Software (aes)
                                                                                                    ELEVATION DATA: UPSTREAM(FEET) = 937.50 DOWNSTREAM(FEET) = 932.50 FLOW LENGTH(FEET) = 264.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                 Ver. 22.0 Release Date: 07/01/2015 License ID 1239
                                   Analysis prepared by:
                                                                                                       DEPTH OF FLOW IN 18.0 INCH PIPE IS 'PIPE-FLOW VELOCITY(FEET/SEC.) = 7.24
                                                                                                                                                         7.3 INCHES
                                                                                                      PIPE-FLOW VELOCITY(FEET/SEC.) = 7.24

ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 4.88

PIPE TRAVEL TIME(MIN.) = 0.61 Tc(MIN.) = 11.78

LONGEST FLOWPATH FROM NODE 750.00 TO NODE 763.00 = 1109.00 FEET.
  ********************** DESCRIPTION OF STUDY *****************
  V14 Drainage Area tributary to V14 Central Basin and East Offsite
                                                                                                    * FLOW PROCESS FROM NODE 763.00 TO NODE 763.00 IS CODE = 1
                                                                                                       >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIDENCE<
                                                                                                       TOTAL NUMBER OF STREAMS =
  FILE NAME: R:\1235\HYD\CALCS\AES\SRP\V14E.DAT
                                                                                                       CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
  TIME/DATE OF STUDY: 13:51 11/03/2016
                                                                                                      TIME OF CONCENTRATION(MIN.) = 11.78
RAINFALL INTENSITY(INCH/HR) = 4.70
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
                                                                                                       TOTAL STREAM AREA(ACRES) =
                                                                                                       PEAK FLOW RATE(CFS) AT CONFLUENCE =
  2003 SAN DIEGO MANUAL CRITERIA
                                                                                                    HISER SPECIFIED STORM EVENT(YEAR) = 100 00
  SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00
                                                                                                       FLOW PROCESS FROM NODE 760.00 TO NODE 761.00 IS CODE = 21
  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
                                                                                                       >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                       *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
                                                                                                      UPSTREAM ELEVATION(FEET) = 998.00

DOWNSTREAM ELEVATION(FEET) = 992.00
                           0.020/0.020/0.020 0.50
0.020/0.020/0.020 0.50
                                                                                                       ELEVATION DIFFERENCE (FEET) =
                                                                                                                                                    6.00
                                                                                                      SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.746
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.467
       12.0
                                                                  1.50 0.0313 0.125 0.0130
                                                                                                      SUBAREA RUNOFF(CFS) = 0.47
TOTAL AREA(ACRES) = 0.12 TOTAL RUNOFF(CFS) =
  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
     1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) -
                                                                 (Top-of-Curb)
  as (maximum Allowable Street Flow Depth) - (10
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
                                                                                                      FLOW PROCESS FROM NODE 761.00 TO NODE 762.00 IS CODE = 61
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
                                                                                                      >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
                                                                                                       >>>>(STANDARD CURB SECTION USED) <---
............
                                                                                                    FLOW PROCESS FROM NODE 750.00 TO NODE 751.00 IS CODE = 21
                                                                                                      UPSTREAM ELEVATION(FEET) = 992.00 DOWNSTREAM ELEVATION(FEET) = 937.00 STREET LENGTH(FEET) = 1024.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  *USER SPECIFIED(SUBAREA):
  *USER SPECIFIED(SUBAREA):
RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
UPSTREAM ELEVATION(FEET) = 999.05
DOWNSTREAM ELEVATION(FEET) = 998.35
ELEVATION DIFFERENCE(FEET) = 0.70
                                                                                                       DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
                                                                                                      INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                       SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                      STREET PARKWAY (FORSSFALL(DECIMAL) = 0.020

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

Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                                                                                                0.0150
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
SUBAREA RUNOFF(CFS) = 0.53
TOTAL AREA(ACRES) = 0.18 TOTAL RUNOFF(CFS) =
                                                                                                                                                                                       0.0200
                                                                                                          **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                                                                                      7 68
                                                                                                         STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.29
HALFSTREET FLOOD WIDTH(FEET) = 8.33
  FLOW PROCESS FROM NODE 751.00 TO NODE 752.00 IS CODE = 61
                                                                                                      HALFSTREET FLOOD WIDTH(FEET) = 8.33

AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.73

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.39

STREET FLOW TRAVEL TIME(MIN.) = 3.61 Tc(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.453
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
  >>>>(STANDARD CURB SECTION USED)<**

UPSTREAM ELEVATION(FEET) = 998.00 DOWNSTREAM ELEVATION(FEET) = 932.50

STREET LENGTH(FEET) = 775.00 CURB HEIGHT(INCHES) = 6.0
                                                                                                      STREET LENGTH(FEET) = 775.00
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
                                                                                                      END OF SUBAREA STREET FLOW HYDRAULICS: DEPTH(FEET) = 0.35 HALFSTREET FLOOD WIDTH(FEET) = 11.00 FLOW VELOCITY(FEET/SEC.) = 5.47 DEPTH*VELOCITY(FT*FT/SEC.) = 1.90 LONGEST FLOWPATH FROM NODE 760.00 TO NODE 762.00 = 1124.00 FEET.
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
  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 = 0.02
                                                                                  0.0200
                                                                                                    ************************
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                       FLOW PROCESS FROM NODE 762.00 TO NODE 763.00 IS CODE = 31
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW MODEL RESULTS USING ESTIMATED FLOW.

STREET FLOW DEPTH(FEET) = 0.25

HALFSTREET FLOOD WIDTH(FEET) = 6.33

AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.30

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.34

STREET FLOW TRAVEL TIME(MIN.) = 2.44 Tc(MIN.) = 11.17

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.863
                                                                                                       >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                        >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
                                                                                                    ______
                                                                                                                                               = 937.50 DOWNSTREAM(FEET) = MANNING'S N = 0.013
                                                                                                       ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                      ELEVATION DATA: OPSIREAM(FEET) = 937.50 DOWNS:
FLOW LENGTH(FEET) = 30.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 21.0 INCH PIPE IS 13.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 9.05
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER
  *USER SPECIFIED(SUBAREA):
RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
                                                                                                                                                             NUMBER OF PIPES =
  RESIDENTIAL (4.5 DU/AC OR LESS, KONOF: CO
S.C.S. CURVE NUMBER (AMC II) = 0
ARRA-AVERAGE RUNOFF COEFFICIENT = 0.520
SUBAREA AREA(ACRES) = 1.75 SUBARE
TOTAL AREA(ACRES) = 1.9 PEA
                                                                                                       PIPE-FLOW(CFS) = 14.55
PIPE TRAVEL TIME(MIN.) = 0
                                                SUBAREA RUNOFF(CFS) =
                                                   PEAK FLOW RATE(CFS) =
                                                                                                    END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                      FLOW PROCESS FROM NODE 763.00 TO NODE 763.00 IS CODE =
  DEPTH(FEET) = 0.29 HALFSTREET FLOOD WIDTH(FEET) = 8.38 FLOW VELOCITY(FEET/SEC.) = 5.94 DEPTH*VELOCITY(FT*FT/SEC.) = 1.75 LONGEST FLOWPATH FROM NODE 750.00 TO NODE 752.00 = 845.00 FEE
                                                                                                      >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
                                                                                   845.00 FEET.==============
```

```
    24.27
    9.41
    5.433

    24.76
    11.78
    4.699

    24.52
    12.64
    4.491

  TOTAL NUMBER OF STREAMS = 3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  CONFLUENCE VALUES USED FOR INDEFENDENT
TIME OF CONCENTRATION(MIN.) = 9.41
RAINFALL INTENSITY(INCH/HR) = 5.43
                                                                                             COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 24.76 Tc(MIN.) = TOTAL AREA(ACRES) = 10.4
  TOTAL STREAM AREA(ACRES) =
                                       5 13
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                              24.76 Tc(MIN.) =
FLOW PROCESS FROM NODE 755.00 TO NODE 756.00 IS CODE = 21
  >>>>RATIONAL METHOD INITIAL SUBARRA ANALYSIS
                                                                                             FLOW PROCESS FROM NODE 763.00 TO NODE 764.00 IS CODE = 31
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
  *HISER SPECIFIED (SHEAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0
  S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
                                                                                             ELEVATION DATA: UPSTREAM(FEET) = 932.00 DOWNSTREAM(FEET) = 931.00 FLOW LENGTH(FEET) = 99.00 MANNING'S N = 0.013
                                                                                             ELEVATION DATA: UPSTREAM(FEb., -
FLOW LENGTH(FEET) = 99.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 27.0 INCH PIPE IS 18.5 INCHES

**COUNTY FEET/SEC.) = 8.51
  UPSTREAM ELEVATION(FEET) = 999.75
DOWNSTREAM ELEVATION(FEET) = 999.05
  SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
                                                                                             PIPE-FLOW VELOCITY(FEET/SEC.) = 8.51
ESTIMATED PIPE DIAMETER(INCH) = 27.00
PIPE-FLOW(CFS) = 24.76
PIPE TRAVEL TIME(MIN.) = 0.19
Tc(M
                                                                                                                                                NUMBER OF PIPES = 1
                                                                                                                                     Tc(MIN.) =
                                                                                             PIPE TRAVEL TIME(MIN.) = 0.19 Tc(MIN.) = 11.97

LONGEST FLOWPATH FROM NODE 755.00 TO NODE 764.00 = 1324.00 FEET.
  SUBAREA RUNOFF(CFS) = 0.59
TOTAL AREA(ACRES) = 0.20 TOTAL RUNOFF(CFS) =
.....
  FLOW PROCESS FROM NODE 756.00 TO NODE 757.00 IS CODE = 61
                                                                                           FLOW PROCESS FROM NODE 764.00 TO NODE 764.00 IS CODE = 10
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<>>>>>(STANDARD CURB SECTION USED)<
                                                                                              >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
UPSTREAM ELEVATION(FEET) = 999.00 DOWNSTREAM ELEVATION(FEET) STREET LENGTH(FEET) = 1125.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                             FLOW PROCESS FROM NODE 767.00 TO NODE 768.00 IS CODE = 21
                                                                                              >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                              *HIGER SDECTETED (SHEAREA):
                                                                                             RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                             S.C.S. CURVE NUMBER (AMC II) = U
INITIAL SUBAREA FLOW-LENGTH(FEET) =
UPSTREAM ELEVATION(FEET) = 992.65
DOWNSTREAM ELEVATION(FEET) = 991.95
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
  STREET PARKMAY 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) = 0.7
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                             100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
SUBAREA RUNOFF(CFS) = 0.65
TOTAL AREA(ACRES) = 0.22 TOTAL RUNOFF(CFS) =
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                         4.30
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.30

HALFSTREET FLOW VELOCITY(FEET/SEC.) = 4.88
PRODUCT OF DEPTHEVELOCITY(FT*FT/SEC.) = 1.47

STREET FLOW TRAVEL TIME(MIN.) = 3.84 Tc(MIN.) = 12.57
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.506
**USED SUPPLIFIE(SIRADEA).**
                                                                                           FLOW PROCESS FROM NODE 768.00 TO NODE 769.00 IS CODE = 61
                                                                                              >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
  *USER SPECIFIED(SUBAREA):
                                                                                              >>>>(STANDARD CURB SECTION USED) << < <
  *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
SUBAREA AREA(ACRES) = 3.14
SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 3.3 PEAK FLOW RATE(CFS) =
                                                                                             UPSTREAM ELEVATION(FEET) = 991.00
STREET LENGTH(FEET) = 679.00 CU
STREET HALFWIDTH(FEET) = 18.00
                                                                                                                                        DOWNSTREAM ELEVATION(FEET) = 943.00
                                                                                                                                   CURB HEIGHT (INCHES) = 6.0
                                                                                             DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 9.00
  UNSIDE 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) = Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
*******************
  FLOW PROCESS FROM NODE 757.00 TO NODE 763.00 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                                                               USING _
0.28
- 7.45
STREET FLOW DEPTH(FEET) =
                                                                                             STREET FLOW DEPTH(FEET) = 0.28
HALFSTREET FLOOD WIDTH(FEET) = 7.45
AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.18
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.43
STREET FLOW TRAVEL TIME(MIN.) = 2.18 TG(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.936
  ELEVATION DATA: UPSTREAM(FEET) = 937.50 DOWNSTREAM(FEET) = 937.00 FLOW LENGTH(FEET) = 30.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.79
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
  PIPE TESTIMATED PIPE DIAMETER(INcn) - --
PIPE-FLOW(CFS) = 7.83
PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 12.64

COMPACT FLOWPATH FROM NODE 755.00 TO NODE 763.00 = 1225.00 FEET.
                                                                                              *USER SPECIFIED(SUBAREA):
FLOW PROCESS FROM NODE 763.00 TO NODE 763.00 IS CODE = 1
TOTAL NUMBER OF STREAMS =
  TOTAL NUMBER OF SIKEAMS = 5
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
TIME OF CONCENTRATION(MIN.) = 12.64
RAINFALL INTENSITY(INCH/HR) = 4.49
TOTAL STREAM AREA(ACRES) = 3.34
                                                                                           **********************
                                                                                             FLOW PROCESS FROM NODE 769.00 TO NODE 769.00 IS CODE = 1
  TOTAL STREAM AREA(ACRES)
                                                                                             >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                           -----
                                                  7.83
                                                                                             TOTAL NUMBER OF STREAMS = 2
  ** CONFLUENCE DATA **
                                                                                              CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                             TIME OF CONCENTRATION(MIN.) = 10.92
RAINFALL INTENSITY(INCH/HR) = 4.94
TOTAL STREAM AREA(ACRES) = 5.13
                               Tc
                                         INTENSITY
  STREAM
              RUNOFF
                                                           AREA
                (CFS)
4.88
  NUMBER
                            (MIN.)
                                       (INCH/HOUR)
                                                          (ACRE)
                          11.78
                                           4.699
                                                             1.93
                                                                                             PEAK FLOW RATE(CFS) AT CONFIDENCE =
                14.55
                            9.41
                                           5.433
                                                                                                                                             13.17
                  7.83
                          12.64
                                           4.491
                                                                                           ......
                                                                                             FLOW PROCESS FROM NODE 772.00 TO NODE 773.00 IS CODE = 21
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR 3 STREAMS.
                                                                                              >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  ** PEAK FLOW RATE TABLE **
                                                                                           -----
                                                                                              *USER SPECIFIED(SUBAREA):
  STREAM
                                       TMTTMCTTV
               (CFS) (MIN.) (INCH/HOUR)
                                                                                             RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
  NUMBER
```

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S.C.S. CURVE NUMBER (AMC II)
  INITIAL SUBAREA FLOW-LENGTH(FEET) =
UPSTREAM ELEVATION(FEET) = 955.00
DOWNSTREAM ELEVATION(FEET) = 949.00
                                                100.00
                                                                                               FLOW PROCESS FROM NODE 764.00 TO NODE 764.00 IS CODE = 11
                                                                                                >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<
  ELEVATION DIFFERENCE(FEET) = 6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.676
                                                                                                 ** MAIN STREAM CONFLUENCE DATA **
  SUBAREA RUNOFF(CFS) = 0.49
TOTAL AREA(ACRES) = 0.18 TOTAL RUNOFF(CFS) =
                                                                                                             RUNOFF
(CFS)
                                                                                                                       TC INTENSITY (MIN.) (INCH/HOUR)
                                                                                                STREAM
NUMBER
                                                                                                                                                      (ACRE)
                                                                                                               14.43
                                                                                                                           11.01
                                                                                                                                         4.909
                                                                                                                                                         5.75
767.00 TO NODE
                                                                                                                                                             764.00 =
                                                                                                                                                                             825.00 FEET.
  FLOW PROCESS FROM NODE 773.00 TO NODE 774.00 IS CODE = 31
                                                                                                ** MEMORY BANK # 1 CONFLUENCE DATA **
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                              RUNOFF
                                                                                                                          Tc (MIN.)
                                                                                                                                        INTENSITY
                                                                                                                                                         AREA
                                                                                                              (CFS)
                                                                                                                                      (INCH/HOUR)
                                                                                                NUMBER
                                                                                                                                                       (ACRE)
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<>>>>
ELEVATION DATA: UPSTREAM(FEET) = 449.00 DOWNSTREAM(FEET) = 448.00
FLOW LENGTH(FEET) = 165.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 3.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 2.52
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.49
PIPE TRAVEL TIME(MIN.) = 1.09 TC(MIN.) = 7.93
LOWLEGE REOMBATH EROM NODE 772.00 TO NODE 774.00 - 265.00 FEE
                                                                                                               24.76
                                                                                                                          11.97
                                                                                                                                         4.650
                                                                                                                                                         10.40
                                                                                                LONGEST FLOWPATH FROM NODE
                                                                                                                                      755.00 TO NODE
                                                                                                                                                             764.00 =
                                                                                                                                                                            1324.00 FEET.
                                                                                                ** PEAK FLOW RATE TABLE **
                                                                                                          RUNOFF
(CFS)
                                                                                                                                       INTENSITY
                                                                                                                          (MTN.)
                                                                                                NUMBER
                                                                                                                                      (TNCH/HOUR)
                                                                                                              37 19
                                                                                                                            11.01
                                                                                                                                            4 9 9
                                                                                                                          11.97
                                                                                                              38.43
                                                                                                                                            4.650
  PIPE-FLOW(CFS) = 0.49

PIPE TRAVEL TIME(MIN.) = 1.09 Tc(MIN.) = 7.93

LONGEST FLOWPATH FROM NODE 772.00 TO NODE 774.00 =
                                                                           265.00 FEET.
                                                                                                COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
       38.43 Tc(MIN.) = 11.97
                                                                                                                                16.1
 FLOW PROCESS FROM NODE 773.00 TO NODE 774.00 IS CODE = 81
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                FLOW PROCESS FROM NODE 764.00 TO NODE 764.00 IS CODE = 12
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.067
                                                                                                >>>>CLEAR MEMORY BANK # 1 <<<<
 TOU TEAR RAINFALL INLENSIT(INCH/HOUR) = 0.007
*USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4100
                                                                                                FLOW PROCESS FROM NODE 764.00 TO NODE 775.00 IS CODE = 31
  REAL-AVERAGE RUNOFF COEFFICIENT - 0.4100
SUBAREA AREA(ACRES) = 0.44 SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 0.6 TOTAL RUNOFF(CFS) =
                                                                                                >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                        1.54
  TC(MIN.) =
                  7.93
                                                                                                >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                                     ·
                                                                                                ELEVATION DATA: UPSTREAM(FEET) = 934.00 DOWNSTREAM(FEET) = 918.00 FLOW LENGTH(FEET) = 199.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 21.0 INCH PIPE IS 15.3 INCHES
FLOW PROCESS FROM NODE 774.00 TO NODE 769.00 IS CODE = 31
                                                                                                PIPE-FLOW VELOCITY(FEET/SEC.) = 20.54
ESTIMATED PIPE DIAMETER(INCH) = 21.00
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                                                   NUMBER OF PIPES =
                                                                                         ===== PIPE-FLOW(CFS) = 38.43
D PIPE TRAVEL TIME(MIN.) = (
______
                                                                                                PIPE-FLOW(CFS) = 38.43
PIPE TRAVEL TIME(MIN.) = 0.16 Tc(MIN.) = 12.14
LONGEST FLOWPATH FROM NODE 755.00 TO NODE 775.00 = 1523.00 FEET.
  ELEVATION DATA: UPSTREAM(FEET) =
                                             948.00 DOWNSTREAM(FEET) = 943.00
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 9.12
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                                                                FLOW PROCESS FROM NODE 775.00 TO NODE 775.00 IS CODE =
  PIPE-FLOW(CFS) = 1.54
PIPE TRAVEL TIME(MIN.) =
                                                                                                >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<-
  PIPE-FLOW(CFS) = 1.54

PIPE TRAVEL TIME(MIN.) = 0.10 Tc(MIN.) = 8.03 =:

LONGEST FLOWPATH FROM NODE 772.00 TO NODE 769.00 = 320.00 FEET.
                                                                                                 -----
                                                                                                TOTAL NUMBER OF STREAMS = 2
                                                                                                CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 12.14
RAINFALL INTENSITY(INCH/HR) = 4.61
  FLOW PROCESS FROM NODE 769.00 TO NODE 769.00 IS CODE = 1
                                                                                                TOTAL STREAM AREA(ACRES)
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                                PEAK FLOW RATE(CFS) AT CONFLUENCE =
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                            FLOW PROCESS FROM NODE 778.00 TO NODE 779.00 IS CODE = 21
  TOTAL NUMBER OF STREAMS =
  CONFIJIENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  TIME OF CONCENTRATION(MIN.) = 8.03
RAINFALL INTENSITY(INCH/HR) = 6.02
                                                                                                >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  TOTAL STREAM AREA(ACRES) = 0.62
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                *USER SPECIFIED(SUBAREA):
                                                                                                *USER SPECIFIED(SUBAREA):

RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00

UPSTREAM ELEVATION(FEET) = 970.00

DOWNSTREAM ELEVATION(FEET) = 960.00

PLEVATION DIFFERENCE (FEET) = 10.00
  ** CONFLUENCE DATA **
  STREAM
               RUNOFF
                             (MIN.)
  NUMBER
                (CFS)
                                        (INCH/HOUR)
                                                           (ACRE)
                            10.92
                                                                                                ELEVATION DIFFERENCE(FEET)
                                                                                                                                         10.00
                                                                                                                                                  5.765
                                                                                                SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                  1.54
                             8.03
                                            6.018
                                                               0.62
                                                                                                SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.765
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.451
SUBAREA RUNOFF(CFS) = 0.37
TOTAL AREA(ACRES) = 0.12 TOTAL RUNOFF(CFS) = 0.37
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR 2 STREAMS.
  ** PEAK FLOW RATE TABLE **
  STREAM
               RUNOFF
                              Tc
                                         INTENSITY
                            (MIN.)
                 (CFS)
                                                                                                FLOW PROCESS FROM NODE 779.00 TO NODE 780.00 IS CODE = 31
  NUMBER
                                      (INCH/HOUR)
                             8.03
                                           6.018
                                                                                                >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                          10.92
      2
                 14.43
                                           4.936
                                                                                              >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) = 14.43 Tc(MIN.) = 10.92
TOTAL AREA(ACRES) = 5.7
LONGEST FLOWPATH FROM NODE 767.00 TO NODE 769.00 =
                                                                                                ELEVATION DATA: UPSTREAM(FEET) = 960.00 DOWNSTREAM(FEET) = 930.00 FLOW LENGTH(FEET) = 639.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                              749.00 FEET.
                                                                                                DEPTH OF FLOW IN 18.0 INCH PIPE IS 1.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.73
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.37
 FLOW PROCESS FROM NODE 769.00 TO NODE 764.00 IS CODE = 31
                                                                                                PIPE TRAVEL TIME(MIN.) = 2
                                                                                                FIFE-FLOW(CFS) = 0.37

PIPE TRAVEL TIME(MIN.) = 2.25 Tc(MIN.) = 8.02

LONGEST FLOWPATH FROM NODE 778.00 TO NODE 780.00 =
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                                                                                                             739.00 FEET.
ELEVATION DATA: UPSTREAM(FEET) = 937.00 DOWNSTREAM(FEET) = 933.00 *
                                                                                              = 937.00 DOWNSTREAM(FEET) = 933.00 MANNING'S N = 0.013
  ELEVATION DATA: UPSTREAM(FEET) =
  FLOW LENGTH(FEET) = 76.00 MANNING'S N = 0.0 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000 DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.2 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 13.97
                                                                                                FLOW PROCESS FROM NODE 779.00 TO NODE 780.00 IS CODE = 81
                                                                                                >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                              ______
  PIPE-FLOW(CFS) = 14.43
PIPE TRAVEL TIME(MIN.) = 0.09 Tc(MI
                                                                                                  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.024
                                                     NUMBER OF PIPES = 1
                                                                                                 *USER SPECIFIED(SUBAREA):
                                          Tc(MIN.) =
  LONGEST FLOWPATH FROM NODE 76
                                                                                                RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4100
                                                              11.01
                                      767.00 TO NODE
                                                              764.00 =
                                                                              825.00 FEET.
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SUBAREA AREA(ACRES) = 1.55 SUBAREA RUNOFF(CFS) = 3.83
TOTAL AREA(ACRES) = 1.7 TOTAL RUNOFF(CFS) = 4.3
                                                                                                          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
  TC(MIN.) =
                                   780.00 TO NODE
  FLOW PROCESS FROM NODE
                                                                                                          SPECIFIED NUMBER OF HALFSTREETS 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
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
ELEVATION DATA: UPSTREAM(FEET) = 925.00 DOWNSTREAM(FEET) = 920.00 FLOW LENGTH(FEET) = 40.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                             **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                             STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.19
HALFSTREET FLOOD WIDTH(FEET) = 3.40
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 4.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 13.60
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES
PIPE-FLOW(CFS) = 4.12
PIPE TRAVEL TIME(MIN.) = 0.05 Tc(MIN.) = 8.07
LONGEST FLOWPATH FROM NODE 778.00 TO NODE 775.00 =
                                                                                                          HALFSTREET FLOOD WIDTH(FEET) = 3.40
AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.71
PRODUCT OF DEPTHAVELOCITY(FT*FT/SEC.) = 0.92
STREET FLOW TRAVEL TIME(MIN.) = 3.11 TC(MIN.) = 12.75
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.466
**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) = 1.55 SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 1.8 PEAK FLOW RATE(CFS) =
                                                           NUMBER OF PIPES = 1
                                                                                   779.00 FEET.
********************
  FLOW PROCESS FROM NODE 775.00 TO NODE 775.00 IS CODE = 1
                                                                                                                                                            PEAK FLOW RATE(CFS) = 3.18
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
  TOTAL NUMBER OF STREAMS = 2
                                                                                                          END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                          END OF SUBARRA STREET FLOW HIDRAULICS.

DEPTH(FEET) = 0.23 HALFSTREET FLOOD WIDTH(FEET) = 5.04

FLOW VELOCITY(FEET/SEC.) = 4.96 DEPTH*VELOCITY(FT*FT/SEC.) = LONGEST FLOWPATH FROM NODE 783.00 TO NODE 785.00 = 95
  TOTAL NUMBER OF STREAMS - 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 8.07
RAINFALL INTENSITY(INCH/HR) = 6.00
                                                                                                                                                                                               950 00 FEET
  TOTAL STREAM AREA(ACRES) = 1.67
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                           4.12
                                                                                                          FLOW PROCESS FROM NODE 785.00 TO NODE 785.00 IS CODE = 1
  ** CONFLUENCE DATA **
                RUNOFF
(CFS)
38.43
  STREAM
                                              INTENSITY
                                                                   AREA
                                                                                                          >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE < < <
                                (MIN.) (INCH/HOUR)
12.14 4.610
                                                                                                          >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
  MIIMBED
                                                                  (ACRE)
                              12.14
                    4.12
                               8.07
                                                 6.000
                                                                                                          TOTAL NUMBER OF STREAMS = 2
                                                                                                          CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                          TIME OF CONCENTRATION(MIN.) = 12.75
RAINFALL INTENSITY(INCH/HR) = 4.47
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFIJIENCE FORMULA USED FOR 2 STREAMS.
                                                                                                          TOTAL STREAM AREA(ACRES) =
  ** PEAK FLOW RATE TABLE **
                                                                                                          PEAK FLOW RATE(CFS) AT CONFLUENCE =
  STREAM
                 RUNOFF
                                 Tc
                                             INTENSITY
                                                                                                          ** CONFLUENCE DATA **
                   (CFS)
                              (MIN.)
                                            6.000
                                                                                                                                                       INTENSITY
                                                                                                                                                                            AREA
                  29.66
41.60
                                8.07
                                                                                                          STREAM
                                                                                                                         RUNOFF
(CFS)
                            12.14
       2
                                               4.610
                                                                                                          NUMBER
                                                                                                                                        (MIN.) (INCH/HOUR)
                                                                                                                                                                         (ACRE)
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 41.60 Tc(MIN.) = 12.14

TOTAL AREA(ACRES) = 17.8

LONGEST FLOWFATH FROM NODE 755.00 TO NODE 775.00 = 1523.00 FEET. CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                                     12.75
                                                                                                                                                                              1.80
                                                                                                          RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
FLOW PROCESS FROM NODE 775.00 TO NODE 785.00 IS CODE = 31
                                                                                                                         RUNOFF
(CFS)
45.26
                                                                                                          STREAM
                                                                                                                                         Tc
                                                                                                                                                     INTENSITY
                                                                                                                                       (MIN.)
                                                                                                          NUMBER
                                                                                                                                                   (INCH/HOUR)
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                                       12.63
                                                                                                                                                       4.494
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                                                           45.03
                                                                                                                                     12.75
  ELEVATION DATA: UPSTREAM(FEET) = 918.00 DOWNSTREAM(FEET) = 858.00
                                                                                                          COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  ELEVATION DAIA. UPSIREAM(FEEI) = 918.00 DOWNSTREAM(FEEI) = FLOW LENGTH(FEET) = 648.00 MANING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 15.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 22.06
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 41.60
PIPE TRAVEL TIME(MIN.) = 0.49 Tc(MIN.) = 12.63
                                                                                                          PEAK FLOW RATE(CFS) = 45.26 Tc(MIN.) = 12.63
TOTAL AREA(ACRES) = 19.6
LONGEST FLOWPATH FROM NODE 755.00 TO NODE 785.00 = 2171.00 FEET.
                                                                                                       ...........
                                                                                                         FLOW PROCESS FROM NODE 785.00 TO NODE 786.00 IS CODE = 31
                                                                    785.00 = 2171.00 FEET.--
  LONGEST FLOWPATH FROM NODE 755.00 TO NODE
                                                                                                          >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                          >>>>IISING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
  FLOW PROCESS FROM NODE 785.00 TO NODE 785.00 IS CODE = 1
                                                                                                          ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                                                                           858.00 DOWNSTREAM(FEET) = 767.00
                                                                                                         ELEVATION DATA: UPSTREAM(FEET) = 858.00 DOWNSTREAM(FEET) = 767.00 FLOW LENGTH(FEET) = 1269.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 24.0 INCH PIPE IS 15.7 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 20.71 ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1 PIPE-FLOW(CFS) = 45.26 PIPE TRAVEL TIME(MIN.) = 1.02 Tc(MIN.) = 13.65 LONGEST FLOWPATH FROM NODE 755.00 TO NODE 786.00 = 3440.00 FEET.
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
  TOTAL NUMBER OF STREAMS = 2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
  TIME OF CONCENTRATION(MIN.) = 12.63
RAINFALL INTENSITY(INCH/HR) = 4.49
  TOTAL STREAM AREA(ACRES) =
                                           17.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                        41.60
FLOW PROCESS FROM NODE 783.00 TO NODE 784.00 IS CODE = 21
                                                                                                   ---- >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
  *USER SPECIFIED(SUBAREA):
                                                                                                          CONFIDENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
  RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600 S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                          TIME OF CONCENTRATION(MIN.) = 13.65
RAINFALL INTENSITY(INCH/HR) = 4.27
TOTAL STREAM AREA(ACRES) = 19.62
  INITIAL SUBAREA FLOW-LENGTH (FEET) =
                                                     70.00
  INITIAL SUBAREA FLOW-LENGIH(FEET) = UPSTREAM ELEVATION(FEET) = 941.55

DOWNSTREAM ELEVATION(FEET) = 940.85

ELEVATION DIFFERENCE(FEET) = 0.70
                                                                                                          PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                 0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.)
   SUBAREA OVERLAND TIME OF FLOW(MIN.) = 9.638
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.349
                                                                                                          FLOW PROCESS FROM NODE 789.00 TO NODE 790.00 IS CODE = 21
  SUBAREA RUNOFF(CFS) = 0.62
TOTAL AREA(ACRES) = 0.25 TOTAL RUNOFF(CFS) =
                                                                                                          >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                              0.62
                                                                                                       -----
                                                                                                          *USER SPECIFIED(SUBAREA):
>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<>>>>>(STANDARD CURB SECTION USED)<
                                                                                                          UPSTREAM ELEVATION(FEET) = 863.50
DOWNSTREAM ELEVATION(FEET) = 861.00
UPSTREAM ELEVATION(FEET) = 940.00 DOWNSTREAM ELEVATION(FEET) = 863.00 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 3.054

STREET LENGTH(FEET) = 880.00 CURB HEIGHT(INCHES) = 6.0 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
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NOTE: RAINFALL INTENSITY IS BASED ON To = 5-MINUTE.
  NOTE: RAINFAID INITIAL INITIAL INITIAL RUNOFF (CFS) = 0.71

TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF (CFS) = 0.71
                                                                                                                             FLOW PROCESS FROM NODE 795.00 TO NODE 795.00 IS CODE = 1
                                                                                 FLOW PROCESS FROM NODE 790.00 TO NODE 791.00 IS CODE = 61
                                                                                   ----- TOTAL NUMBER OF STREAMS = 2
>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<>>>>>(STANDARD CURB SECTION USED)<>>><

UPSTREAM ELEVATION(FEET) = 861.00 DOWNSTREAM ELEVATION(FEET) = 765.50
STREET LENGTH(FEET) = 1296.00 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00
                                                                                                                              TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 13.71
RAINFALL INTENSITY(INCH/HR) = 4.26
TOTAL STREAM AREA(ACRES) = 22.29
PEAK FLOW RATE(CFS) AT CONFLUENCE = 54.53
                                                                                                                            *******************
   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
                                                                                                                               FLOW PROCESS FROM NODE 793.00 TO NODE 794.00 IS CODE = 21
  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                                               >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                                                                                   -----
   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                                               *HISER SPECIFIED(SHBAREA):
                                                                                                                               *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) = 740.00
DONNSTREAM ELEVATION(FEET) = 730.00
ELEVATION DIERPEDENCE(FEET) = 10.00
  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) =
                                                                                                   7.38
      STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.28
HALFSTREET FLOOD WIDTH(FEET) = 7.56
                                                                                                                               ELEVATION DIFFERENCE(FEET) = 10.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                               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
SUBARBA RUNOFF(CFS) = 0.35
TOTAL AREA(ACRES) = 0.14 TOTAL RUNOFF(CFS) = 0.35
      AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.35
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.48
  STREET FLOW TRAVEL TIME (MIN.) = 4.04 Tc(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.517
                                                                                                                                                                       0.14 TOTAL RUNOFF(CFS) =
                                                                                             7 10
                                                                                                                            *************
   *USER SPECIFIED(SUBAREA):
  *USER SPECIFIED(SUBARKA):
NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.790
SUBAREA AREA(ACRES) = 2.56
SUBAREA AREA(ACRES) = 2.56
TOTAL AREA(ACRES) = 2.7
PEAK FLOW RATE(CFS) = 13.18
                                                                                                                               FLOW PROCESS FROM NODE 794.00 TO NODE 795.00 IS CODE = 31
                                                                                                                               ELEVATION DATA: UPSTREAM(FEET) = 730.00 DOWNSTREAM FLOW LENGTH(FEET) = 284.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
   END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FERT) = 0.33 HALFSTREET FLOW HIDRAULICS.

FLOW VELOCITY(FEET/SEC.) = 6.13 DEPTH*VELOCITY(FT*FT/SEC.) = 2.00

LONGEST FLOWPATH FROM NODE 789.00 TO NODE 791.00 = 1366.00 FEET.
                                                                                                                               DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.9
PIPE-FLOW VELOCITY(FEET/SEC.) = 1.84
ESTIMATED PIPE DIAMETER(INCH) = 18.00
                                                                                                                                                                                                    NUMBER OF PIPES = 1
                                                                                                                               ESTIMATED FIFE DIAMETERS 3.35
PIPE-FLOW(CFS) = 0.35
PIPE TRAVEL TIME(MIN.) = 2.57 Tc(MIN.) = 8.83
LONGEST FLOWPATH FROM NODE 793.00 TO NODE 795.00 =
  FLOW PROCESS FROM NODE 791.00 TO NODE 786.00 IS CODE = 31
                                                                                                                                                                                                                                   384.00 FEET.
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                            .....
  ELEVATION DATA: OFSIREAM(FEET) = 701.00 DWNNT
FLOW LENGTH(FEET) = 125.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 21.0 INCH PIPE IS 17.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.55
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER
                                                                                                                            ______
                                                                                                                                100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.658
*USER SPECIFIED(SUBAREA):
                                                                       NUMBER OF PIPES = 1
                                                                                                                              URBAN NEWLY GRADED AREAS RUNOFF COLLISION
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) = 2.51 SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 2.7 TOTAL RUNOFF(CFS) =
                                                                                                                               URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
   PIPE-FLOW(CFS) =
                                     13.75
                                                                                7.41
                                                         Tc(MIN.) =
  PIPE TRAVEL TIME(MIN.) = 0.32 Tc(MIN.) = 7.41

LONGEST FLOWPATH FROM NODE 789.00 TO NODE 786.00 = 1491.00 FEET.
TOTAL AREA(ACRES) = TC(MIN.) = 8.83
  FLOW PROCESS FROM NODE 786.00 TO NODE 786.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
                                                                                                                            FLOW PROCESS FROM NODE 795.00 TO NODE 795.00 IS CODE = 1
   ______
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                               >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
                                                                                                                               >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
  CONFIGURACE VALUES USED FOR INSTITUTE OF CONCENTRATION(MIN.) = 7.41 RAINFALL INTENSITY(INCH/HR) = 6.34 TOTAL STREAM AREA(ACRES) = 2.67
                                                                                                                               TOTAL NUMBER OF STREAMS =
                                                                                                                               CONFIDENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                               CONFLUENCE VALUES USED FOR INDEFENDENT TIME OF CONCENTRATION(MIN.) = 8.83
RAINFALL INTENSITY (INCH/HR) = 5.66
   PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                  13.75
                                                                                                                                                                                      8.83
   ** CONFLUENCE DATA **
                                                                                                                               TOTAL STREAM AREA(ACRES) =
                                                                                                                                                                                  2.65
   STREAM
                    RUNOFF
                                                        INTENSITY
                                                                                 AREA
                                                                                                                               PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                      (MIN.) (INCH/HOUR)
  NUMBER
                      (CFS)
                                                                              (ACRE)
                                                      4.274
                                                                               19.62
                                                                                                                               ** CONFLUENCE DATA **
                                   13.65
                      45.26
                      13.75
                                                                                                                               STREAM RUNOFF TC INTENSITY
NUMBER (CFS) (MIN.) (INCH/HOUR)
                                                                                                                               NUMBER
                                                                                                                                                                                                           (ACRE)
                                                                                                                                                                                 4.262
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR \ 2\ {\rm STREAMS.}
                                                                                                                                                   54 53
                                                                                                                                                                 13 71
                                                                                                                                                                                                             22.29
                                                                                                                                                                  8.83
                                                                                                                                                    5.25
   ** PEAK FLOW RATE TABLE **
                                                                                                                               RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR \  \  \, 2 STREAMS.
                                                      INTENSITY
   STREAM
                    RUNOFF
                                        Tc
                                    (MIN.)
   NUMBER
                      (CFS)
                                                  (INCH/HOUR)
                     44.28
54.53
                                                                                                                               ** PEAK FLOW RATE TABLE **
                                  7.41
13.65
                                                                                                                                                 RUNOFF TC (CFS) (MIN.) 46.32 8.83
                                                                                                                               STREAM
                                                                                                                                                                                   INTENSITY
                                                                                                                               NUMBER
                                                                                                                                                                                ( TNCH / HOUR )
                                                                                                                                                             8.83
13.71
                                                                                                                                                                                     5.658
   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) = 54.53 Tc(MIN.) = TOTAL AREA(ACRES) = 22.3
                                                                                 13.65
                                                                                                                                                  58.48
   LONGEST FLOWPATH FROM NODE 755.00 TO NODE
                                                                                                                               COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                               786.00 = 3440.00 FEET.
                                                                                                                                                                                                             13.71
                                                                                                                               PEAK FLOW RATE(CFS) = 58.48 Tc(MIN.) = TOTAL AREA(ACRES) = 24.9
  FLOW PROCESS FROM NODE 786.00 TO NODE 795.00 IS CODE = 31
                                                                                                                               LONGEST FLOWPATH FROM NODE 755.00 TO NODE 795.00 = 3566.00 FEET.
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                                                               FLOW PROCESS FROM NODE 795.00 TO NODE 795.50 IS CODE = 31
  ELEVATION DATA: UPSTREAM(FEET) = 760.00 DOWNAMING'S N = 126.00 MANNING'S N = 2.2 INCL
760.00 DOWNSTREAM(FEET) = 730.00
                                                                                                                               >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  ELEVATION DATA: UPSIRKAM(FBEI) = 700.00 DOWNSTREAM(FBEI) = FLOW LENGTH(FEET) = 126.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 13.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 34.13
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
                                                                                                                               >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                            ELEVATION DATA: UPSTREAM(FEET) = 730.00 DOWNSTREAM(FEET) = 728.00 FLOW LENGTH(FEET) = 120.00 MANNING'S N = 0.013
  | ELEVATION DATA: DESTREAM(FRET) = 730.00 | DOWNSTREAM(FRET) = = 730.00 |
```

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S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) = 31.63 SUBAREA RUNOFF(CFS) = 48.18

TOTAL RUNOFF(CFS) = 133.
  PIPE-FLOW(CFS) =
                               58.48
  133.81
                                                                                                  *** TC(MIN.) =
                                   795.50 TO NODE 795.50 IS CODE =
  >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
                                                                                                       FLOW PROCESS FROM NODE 854.00 TO NODE 855.00 IS CODE = 52
                                                                                                       >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
                                                                                                     * >>>>TRAVELITME THRU SUBAREA<<<<
  FLOW PROCESS FROM NODE 850.00 TO NODE 851.00 IS CODE = 21
                                                                                                       ELEVATION DATA: UPSTREAM(FEET) = 1150.00 DOWNSTREAM(FEET) = CHANNEL LENGTH THRU SUBAREA(FEET) = 987.00 CHANNEL SLOPE = NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
                                                                                                                                                                                               1040 00
                                                                                                                                                                       CHANNEL SLOPE = 0.1114
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                       CHANNEL FLOW THEM SUBAREA(CFS) = 133.81

FLOW VELOCITY(FEET/SEC) = 16.39 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)

TRAVEL TIME(MIN.) = 1.00

TC(MIN.) = 14.27

LONGEST FLOWPATH FROM NODE 850.00 TO NODE 855.00 = 4212.00 FEET.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0
  S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
UPSTREAM ELEVATION(FEET) = 1880.00
DOWNSTREAM ELEVATION(FEET) = 1870.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                               = 100.00
                                                                                                     ****************
                                              10.00
                                                                                                       FLOW PROCESS FROM NODE 854.00 TO NODE 855.00 IS CODE = 81
                                                        6.267
  SUBARBA OVERLAND TIME OF FLOW(MIN.) = 6.267

WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION! >>>>ADDITION OF SUBARBA TO MAINLINE PEAK FLOW<<<<<
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061

SUBARBA RUNOFF(CFS) = 1.61

TOTAL AREA(ACRES) = 0.65 TOTAL RUNOFF(CFS) = 1.61 *USER SPECIFIED(SUBARBA):
                                                                                                       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 851.00 TO NODE 852.00 IS CODE = 52
                                                                                                       AKEA-AVERAGE RUNOFF COEFFICIENT - 0.3300
SUBARRA AREA(ACRES) = 32.36 SUBARRA RUNOFF(CFS) = 47.03
TOTAL AREA(ACRES) = 120.2 TOTAL RUNOFF(CFS) = 174.
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
                                                                                                                                                                                    174.69
  >>>>TRAVELTIME THRU SUBAREA<
                                                                                                       TC(MIN.) = 14.27
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1870.00 DOWNSTREAM(FEET) = 1430.00 **

CHANNEL LENGTH THRU SUBAREA(FEET) = 1062.00 CHANNEL SLOPE = 0.4143

NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION --
CHANNEL FLOW THRU SUBAREA(CFS) = 1.61

FLOW VELOCITY(FEET/SEC) = 5.20 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)

TRAVEL TIME(MIN.) = 3.40 TC(MIN.) = 9.67 ==

LONGEST FLOWPATH FROM NODE 850.00 TO NODE 852.00 = 1162.00 FEET.
                                                                                         FLOW PROCESS FROM NODE 855.00 TO NODE 856.00 IS CODE = 52
                                                                                                        >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
                                                                                                        >>>>TRAVELTIME THRU SUBAREA<
                                                                                                                              -----
                                                                                                       ELEVATION DATA: UPSTREAM(FEET) = 1040.00 DOWNSTREAM(FEET) = CHANNEL LENGTH THRU SUBAREA(FEET) = 1055.00 CHANNEL SLOPE = NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
                                                                                                                                                                                                 890 00
                                                                                                                                                                      CHANNEL SLOPE = 0.1422
FLOW PROCESS FROM NODE 851.00 TO NODE 852.00 IS CODE = 81
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.338
   *USER SPECIFIED(SUBAREA):
  "USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) = 18.66 SUBAREA RUNOFF(CFS) = 34.86
TOTAL AREA(ACRES) = 19.3 TOTAL RUNOFF(CFS) = 36.0
                                                                                                       FLOW PROCESS FROM NODE 855.00 TO NODE 856.00 IS CODE = 81
                                                                                                       >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                               36.08
                                                                                                         100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.977
  TC(MIN.) =
                    9.67
                                                                                                        *USER SPECIFIED(SUBAREA):
                                                                                                       *USER SPECIFIED(SUBARRA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500

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

AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500

SUBAREA AREA(ACRES) = 37.32 SUBAREA RUNOFF(CFS) = 51.94

TOTAL AREA(ACRES) = 157.5 TOTAL RUNOFF(CFS) = 219.33
  FLOW PROCESS FROM NODE 852.00 TO NODE 853.00 IS CODE = 52
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
                                                                                                                                                                                    219.25
  >>>>TRAVELTIME THRU SUBAREAcccc
                                                                                                       TC(MIN.) =
                                                                                                                       15.26
 ELEVATION DATA: UPSTREAM(FEET) = 1420.00 DOWNSTREAM(FEET)
CHANNEL LENGTH THRU SUBAREA(FEET) = 1033.00 CHANNEL SLOPE
NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
CHANNEL FLOW THRU SUBAREA(CFS) = 36.08
                                                                                         DOWNSTREAM(FEET) = 1260.0
0 CHANNEL SLOPE = 0.1549
                                                                                                      FLOW PROCESS FROM NODE 856.00 TO NODE 857.00 IS CODE = 52
  NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITI ESTIMATION CHANNEL FLOW THRU SUBAREA(CFS) = 36.08

FLOW VELOCITY(FEET/SEC) = 11.15 (PER LACFED/RCFC&WCD HYDROLOGY MANUAL)

TRAVEL TIME(MIN.) = 1.54 TC(MIN.) = 11.21 =:

LONGEST FLOWPATH FROM NODE 850.00 TO NODE 853.00 = 2195.00 FEET.
                                                                                                       >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
                                                                                                       >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>TRAVELITIME THRU SUBAREA<>>>> ELEVATION DATA: UPSTREAM(FEET) = 890.00 DOWNSTREAM(FEET) = 780.0 CHANNEL LENGTH THRU SUBAREA(FEET) = 858.00 CHANNEL SLOPE = 0.1282 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
                                                                                                                                                                                                 780.00
......
  FLOW PROCESS FROM NODE 852.00 TO NODE 853.00 IS CODE = 81
                                                                                                       CHANNEL FLOW THRU SUBAREA(CFS) = 219.25
                                                                                                       CHANNEL FLOW THRU SUBAREA(CFS) = 219.25
FLOW VELOCITY(FEET/SEC) = 19.08 (FER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 0.75 TC(MIN.) = 16.01
LONGEST FLOWPATH FROM NODE 850.00 TO NODE 857.00 = 6125.00 FEET.
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.851
                                                                                                     *******************
   *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                                       FLOW PROCESS FROM NODE 856.00 TO NODE 857.00 IS CODE = 81
                                                                                                       >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>
  SUBAREA AREA(ACRES) = 36.90 SUBAREA RUNOFF(CFS) = 62.66
TOTAL AREA(ACRES) = 56.2 TOTAL RUNOFF(CFS) = 95.4
                                                                               95.45
                                                                                                         100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.856
  TC(MIN.) =
                  11.21
                                                                                                        *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 853.00 TO NODE 854.00 IS CODE = 53
                                                                                                       SUBAREA AREA(ACRES) = 10.49
TOTAL AREA(ACRES) = 168.
                                                                                                                                        10.49 SUBAREA RUNOFF(CFS) = 14.16
168.0 TOTAL RUNOFF(CFS) = 226.
  >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<
  >>>>TRAVELTIME THRU SUBAREA<
                                                                                                       TC(MIN.) =
                                                                                                                        16.01
  ELEVATION DATA: UPSTREAM(FEET) = 1260.00 DOWNSTREAM(FEET) = 1150.0

CHANNEL LENGTH THRU SUBAREA(FEET) = 1030.00 CHANNEL SLOPE = 0.1068

CHANNEL FLOW TUDIL SUBAREA(FEET)
                                                                                          FLOW PROCESS FROM NODE 857.00 TO NODE 857.00 IS CODE =
  CHANNEL ELOGH THRU SUBAREA(FEET) = 1030.00 CHANNEL SLOPE = 0.1008 CHANNEL FLOW THRU SUBAREA(CFS) = 95.45 FLOW VELOCITY(FEET/SEC) = 8.35 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME(MIN.) = 2.06 Tc(MIN.) = 13.27 LONGEST FLOWPATH FROM NODE 850.00 TO NODE 854.00 = 3225.00 FEET
                                                                                                       >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE < < <
                                         850.00 TO NODE 854.00 = 3225.00 FEET.
                                                                                                       TOTAL NUMBER OF STREAMS =
                                                                                                       CONFIGURNCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
168.01
                                                                                                       TOTAL STREAM AREA(ACRES) =
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                       PEAK FLOW RATE(CFS) AT CONFLUENCE =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.352
  **USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
                                                                                                    FLOW PROCESS FROM NODE 860.00 TO NODE 861.00 IS CODE = 21
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>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                                 TOTAL NUMBER OF STREAMS =
              *USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                                                 TIME OF CONCENTRATION(MIN.) = 9.01
RAINFALL INTENSITY(INCH/HR) = 5.59
TOTAL STREAM AREA(ACRES) = 55.69
                                                 0 100.00
  S.C.S. CURVE NUMBER (AMC II) =
INITIAL SUBAREA FLOW-LENGTH(FEET)
                                                                                                                 PEAK FLOW RATE(CFS) AT CONFLUENCE =
  UPSTREAM ELEVATION(FEET) = 1310.00

DOWNSTREAM ELEVATION(FEET) = 1300.00

ELEVATION DIFFERENCE(FEET) = 10.00
                                                                                                                 ** CONFIJIENCE DATA **
                                                                                                                                                                INTENSITY
                                                                                                                                                 (MTN.) (TNCH/HOUR)
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                              6.267
                                                                                                                 NUMBER
                                                                                                                                  (CFS)
                                                                                                                                                                                     (ACRE)
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION: 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
                                                                                                                                 226.73
108.91
                                                                                                                                               16.01
                                                                                                                                                             3.856
5.587
                                                                                                                                                                                       168.01
  SUBAREA RUNOFF(CFS) = 1.26
TOTAL AREA(ACRES) = 0.51 TOTAL RUNOFF(CFS) =
                                                                                                                 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR \ 2\ STREAMS .
 FLOW PROCESS FROM NODE 861.00 TO NODE 862.00 IS CODE = 53
                                                                                                                                 RUNOFF
                                                                                                                 STREAM
                                                                                                                                                   Tc
                                                                                                                                                               INTENSITY
                                                                                                                                                (MIN.)
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<
                                                                                                                                  (CFS)
236.47
                                                                                                                 NIIMBER
                                                                                                                                                             (INCH/HOUR)
                                                                                                                                 301.88
                                                                                                                                                16.01
                                                                                                                                                                  3.856
 ELEVATION DATA: UPSTREAM(FEET) = 1300.00 DOWNSTREAM(FEET) = 990.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 14.80 CHANNEL SLOPE = 20.9459 NOTE: CHANNEL SLOPE OF .5 WAS ASSUMED IN VELOCITY ESTIMATION
                                                                                                                 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                 PEAK FLOW RATE(CFS) = 301.88 Tc(MIN.) = TOTAL AREA(ACRES) = 223.7 LONGEST FLOWPATH FROM NODE 850.00 TO NODE
                                                                                                                                                                                       16.01
 NOTE: CHANNEL SLOPE OF .5 WAS ASSUMED IN VELOCITY ESTIMATION CHANNEL FLOW THRU SUBAREA(CFS) = 1.26

FLOW VELOCITY(FEET/SEC) = 4.28 (PER LACFED/RCFC&WCD HYDROLOGY MANUAL)

TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 6.32

LONGEST FLOWPATH FROM NODE 860.00 TO NODE 862.00 = 114.80 FEET
  FLOW PROCESS FROM NODE 861.00 TO NODE 862.00 IS CODE = 81
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
 FLOW PROCESS FROM NODE $867.00\ \text{TO}\ \text{NODE}$ 868.00\ \text{IS}\ \text{CODE} = 21
                                                                                                                 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                                 *USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                       37.61
                                                                                                                 S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
UPSTREAM ELEVATION(FEET) = 910.00
DOWNSTREAM ELEVATION(FEET) = 900.00
ELEVATION DIFFERENCE(FEET) = 10.00
  FLOW PROCESS FROM NODE 862.00 TO NODE 863.00 IS CODE = 52
                                                                                                                 SUBARRA OVERLAND TIME OF FLOW(MIN.) = 0.326
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 TO = 5-MINUTE.
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
  >>>>TRAVELTIME THRU SUBAREA
_____
                                                                                                                 SUBAREA RUNOFF(CFS) = 0.77
TOTAL AREA(ACRES) = 0.27 TOTAL RUNOFF(CFS) =
 ELEVATION DATA: UPSTREAM(FEET) = 980.00 DOWNSTREAM(FEET) = 870.0 CHANNEL LENGTH THRU SUBAREA(FEET) = 1000.00 CHANNEL SLOPE = 0.1100
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1000.00 CHANNEL SLOPE = 0.1100 NOTE: CHANNEL SLOPE of .1 WAS ASSUMED IN VELOCITY ESTIMATION CHANNEL FLOW THRU SUBAREA(CFS) = 37.61 *
FLOW VELOCITY(FEET/SEC) = 11.28 (PER LACFED/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.48 Tc(MIN.) = 7.80 -
LONGEST FLOWPATH FROM NODE 860.00 TO NODE 863.00 = 1114.80 FEET.
                                                                                                              ***********
                                                                                                                 FLOW PROCESS FROM NODE 868.00 TO NODE 869.00 IS CODE = 53
                                                                                                                 >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<>>>
>TRAVELTIME THRU SUBAREA<>>>>
                                                                                                                 ELEVATION DATA: UPSTREAM(FEET) = 900.00 DOWNSTREAM(FEET) = 860.
CHANNEL LENGTH THRU SUBAREA(FEET) = 243.00 CHANNEL SLOPE = 0.1646
  FLOW PROCESS FROM NODE 862.00 TO NODE 863.00 IS CODE = 81
                                                                                                                 CHANNEL LENGH THRO SUBAREA(FEET) = 243.00 CHANNEL SLOPE = 0.1648
NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
CHANNEL FLOW THRU SUBAREA(CFS) = 0.77
FLOW VELOCITY(FEET/SEC) = 2.27 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME (MIN.) = 1.78 TC (MIN.) = 2.11
LONGEST FLOWPATH FROM NODE 867.00 TO NODE 869.00 = 243.27 FEET.
  >>>>ADDITION OF SUBARRA TO MAINLINE PEAK FLOW<
 *USER SPECIFIED(SUBAREA):

*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) = 18.00 SUBAREA RUNOFF(CFS) = 38.62

**TOTAL AREA(ACRES) = 33.3 TOTAL RUNOFF(CFS) = 71.4
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.130
                                                                                                              ***********************
                                                                                                                 FLOW PROCESS FROM NODE 868.00 TO NODE 869.00 IS CODE = 81
                                                                                       71.47
                                                                                                                 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                                      _____
                                                                                                                  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
  FLOW PROCESS FROM NODE 863.00 TO NODE 857.00 IS CODE = 52
                                                                                                                         RAINFALL INTENSITY IS BASED ON To = 5-MINUTE.
                                                                                                                  *USER SPECIFIED(SUBAREA):
                                                                                                                 VISEA SPECIFIED(SUBAREA).
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
>>>>COMPUIE NAIGRAL VALLEI CHENNEL FLORINGE
>>>>>TRAVELTIME THRU SUBAREA<<<<
 ELEVATION DATA: UPSTREAM(FEET) = 880.00 DOWNSTREAM(FEET) = 780.0 CHANNEL LENGTH THRU SUBAREA(FEET) = 983.00 CHANNEL SLOPE = 0.1017 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
                                                                                                                 SUBAREA AREA(ACRES) = 6.64 SUBAREA RUNOFF(CFS) = 18.98
TOTAL AREA(ACRES) = 6.9 TOTAL RUNOFF(CFS) = 19.
                                                                                                                                     2.11
                                                                                                                 TC(MIN.) =
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION

CHANNEL FLOW THRU SUBAREA(CFS) = 71.47

FLOW VELOCITY(FEET/SEC) = 13.58 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)

TRAVEL TIME(MIN.) = 1.21 TC(MIN.) = 9.01

LONGEST FLOWPATH FROM NODE 860.00 TO NODE 857.00 = 2097.80 FEET.

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
  FLOW PROCESS FROM NODE 863.00 TO NODE 857.00 IS CODE = 81
                                                                                                                 ELEVATION DATA: UPSTREAM(FEET) = 860.00 DOWNSTREAM(FEET) = FLOW LENGTH(FEET) = 329.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.5 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 18.56 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES =
                                                                                                                                                                     860.00 DOWNSTREAM(FEET) = 830.00
  >>>>ADDITION OF SUBARRA TO MAINLINE PEAK FLOW<
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.587
  *USER SPECIFIED(SUBAREA):
 *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) = 22.38 SUBAREA RUNOFF(CFS) = 43.77

TOTAL AREA(ACRES) = 55.7 TOTAL RUNOFF(CFS) = 108.5
                                                                                                                 PIPE-FLOW(CFS) = 19.75
PIPE TRAVEL TIME(MIN.) =
                                                                                                                                                                 Tc(MIN.) =
                                                                                                                                                       0.30
                                                                                                                 LONGEST FLOWPATH FROM NODE
                                                                                                                                                            867.00 TO NODE 870.00 =
                                                                                      108.91
  TC(MIN.) =
                     9.01
                                                                                                                 FLOW PROCESS FROM NODE 870.00 TO NODE 870.00 IS CODE = 1
                                                                                                                 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<-
                                                                                                             FLOW PROCESS FROM NODE 857.00 TO NODE 857.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                                                 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
```

```
STREAM
              RUNOFF
                                      INTENSITY
                                                       AREA
                                                                                       FLOW PROCESS FROM NODE
                                                                                                                    857.00 TO NODE
                                                                                                                                         864.00 IS CODE = 31
               (CFS)
  NIIMBER
                          (MIN.) (INCH/HOUR)
                                                      (ACRE)
                                                                                        >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                           2.93
               12.64
                         11.58
                                         4.753
                                                          6.59
                                                                                        ELEVATION DATA: UPSTREAM(FEET) = 780.00 DOWNSTREA
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                                                       DOWNSTREAM (FEET) =
                                                                                        FLOW LENGTH(FEET) = 469.00 MANNING'S N = 0.0 DEPTH OF FLOW IN 51.0 INCH PIPE IS 37.4 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 27.06 ESTIMATED PIPE DIAMETER(INCH) = 51.00 NUMBER
  CONFIJIENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                                            0.013
  ** PEAK FLOW RATE TABLE **
  STREAM
              RUNOFF
                           TC
                                     INTENSITY
                                                                                                                                      NUMBER OF PIPES = 1
                                                                                       ESTIMATED FIFE DIAMETER LINEAR, STORY PIEP-FLOW (CFS) = 301.88
PIPE TRAVEL TIME(MIN.) = 0.29 Tc(MIN.) = LONGEST FLOWPATH FROM NODE 755.00 TO NODE
               (CFS)
                         (MIN.)
  NUMBER
                                   (INCH/HOUR)
                                                                                                                              Tc(MIN.) =
                          11.58
               60.95
                                       4.753
      2
               63 65
                        12 93
                                       4 426
                                                                                                                                             864.00 = 6657.00 FEET.
 COMPUTED CONFLUENCE ESTA

PEAK FLOW RATE(CFS) = 63.6

17.00ES) = 38.1
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                63.65 Tc(MIN.) =
                                                        12.93
                                                                                       FLOW PROCESS FROM NODE 864.00 TO NODE 865.00 IS CODE = 52
  LONGEST FLOWPATH FROM NODE
                                   871.00 TO NODE
                                                       874.00 = 2173.00 FEET.
                                                                                       >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
                                                                                        >>>>TRAVELTIME THRU SUBAREA<
......
                                                                                       ELEVATION DATA: UPSTREAM(FEET) = 750.00 DOWNSTREAM(FEET) = 725.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 480.00 CHANNEL SLOPE = 0.0521 CHANNEL FLOW THRU SUBAREA(CFS) = 301.88 FLOW VELOCITY(FEET/SEC) = 15.22 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME (MIN.) = 0.53 TC(MIN.) = 16.82 LONGEST FLOWPATH FROM NODE 755.00 TO NODE 865.00 = 7137.00 FEET.
 FLOW PROCESS FROM NODE 874.00 TO NODE 795.50 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
 ELEVATION DATA: UPSTREAM(FEET) = 805.00 DOWNSTREAM(FEET) = 743.00
 FLOW LENGTH(FEET) = 1145.00 MANNING'S
DEPTH OF FLOW IN 27.0 INCH PIPE IS 20.
PIPE-FLOW VELOCITY(FEET/SEC.) = 20.01
ESTIMATED PIPE DIAMETER(INCH) = 27.00
                                    MANNING'S N = 0.013
                                            20.1 INCHES
                                                                                       FLOW PROCESS FROM NODE 864.00 TO NODE 865.00 IS CODE = 81
                                                 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 63.65
PIPE TRAVEL TIME(MIN.) = 0.95
                                                                                        >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                       Tc(MIN.) =
                                                        13.88
                                                        795.50 = 3318.00 FEET.
  LONGEST FLOWPATH FROM NODE 871.00 TO NODE
                                                                                        100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.734
                                                                                        *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 795.50 TO NODE 795.50 IS CODE = 11
                                                                                                                    6.63 SUBAREA RUNOFF(CFS) = 230.3 TOTAL RUNOFF(CFS) =
                                                                                       SUBAREA AREA(ACRES) =
TOTAL AREA(ACRES) =
  >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<
                                                                                                                                                         8 67
                                                                                                                                                         301.88
                                                                                                      16.82
                                                                                       TC(MIN.) = 16.82
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  ** MAIN STREAM CONFLUENCE DATA **
              RUNOFF
                                     TNTENSITY
  STREAM
                           Тс
                                                     APFA
                       (MIN.)
                                                                                      .....
 NUMBER
               (CFS)
                                   (INCH/HOUR) (ACRE)
               63.65
                          13.88
                                       4.227
                                                     38.11
                                                                                       FLOW PROCESS FROM NODE 865.00 TO NODE 880.00 IS CODE = 52
  LONGEST FLOWPATH FROM NODE
                                   871.00 TO NODE
                                                         795.50 =
                                                                      3318.00 FEET.-
                                                                                        >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA
  ** MEMORY BANK # 1 CONFLUENCE DATA **
              RUNOFF
                                     INTENSITY
                                                                                       ELEVATION DATA: UPSTREAM(FEET) = 725.00 DOWNSTREAM(FEET) = 700.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 666.00 CHANNEL SLOPE = 0.0375 CHANNEL FLOW THRU SUBAREA(CFS) = 301.88 FLOW VELOCITY(FEET/SEC) = 12.92 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME (MIN.) = 0.86 TC(MIN.) = 17.68 LONGEST FLOWPATH FROM NODE 755.00 TO NODE 880.00 = 7803.00 FEET.
                         (MIN.)
 NUMBER
               (CFS)
                                   (INCH/HOUR)
                                                   (ACRE)
               58 48
                         13 87
                                       4 230
                                                     24.94
  LONGEST FLOWPATH FROM NODE
                                   755.00 TO NODE
                                                        795.50 =
                                                                      3686.00 FEET.
  ** PEAK FLOW RATE TABLE **
  STREAM
            RUNOFF
(CFS)
                         (MIN.)
  NUMBER
                                    (INCH/HOUR)
      2
                         13.88
                                                                                       FLOW PROCESS FROM NODE 865.00 TO NODE
                                                                                                                                        880.00 IS CODE = 81
             122.10
                                          4.227
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 122.10 Tc(MIN.) =

TOTAL AREA(ACRES) = 63.0
                                                                                        >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                         Tc(MIN.) = 13.88
                                                                                                           -----
                                                                                         100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.616
                                                                                              SPECIFIED(SUBAREA):
                                                                                       URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
 FLOW PROCESS FROM NODE 795.50 TO NODE 795.50 IS CODE = 12
                                                                                       S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                                                    8.54 SUBAREA RUNOFF(CFS) = 10.81
238.9 TOTAL RUNOFF(CFS) = 302.
                                                                                        SUBAREA AREA(ACRES) =
  >>>> CLEAR MEMORY BANK # 1 <<<<<
               HEMORY DANA # 1 \\\\\
                                                                                                                                                         302.33
                                                                                       TC(MIN.) =
                                                                                     *************************
 FLOW PROCESS FROM NODE 795.50 TO NODE 903.00 IS CODE = 31
                                                                                      - FLOW PROCESS FROM NODE 880.00 TO NODE 880.00 IS CODE = 1
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                         >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
              ______
                                                                                 = 743.00 DOWNSTREAM(FEET) = 695.00 MANNING'S N = 0.013
 ELEVATION DATA: UPSTREAM(FEET) =
                                                                                        TOTAL NUMBER OF STREAMS = 2
 FLOW LENGTH(FEET) = 2502.00 MANNING'S N = 0.0 DEPTH OF FLOW IN 42.0 INCH PIPE IS 31.1 INCHES
                                                                                        CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                        TIME OF CONCENTRATION(MIN.) = 17.68
RAINFALL INTENSITY(INCH/HR) = 3.62
TOTAL STREAM AREA(ACRES) = 238.87
 PIPE-FLOW VELOCITY(FEET/SEC.) = 15.97
ESTIMATED PIPE DIAMETER(INCH) = 42.00
                                                NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 122.10
PIPE TRAVEL TIME(MIN.) = 2
 302.33
                                                                                       FLOW PROCESS FROM NODE 882.00 TO NODE 883.00 IS CODE = 21
*************************
 FLOW PROCESS FROM NODE 903.00 TO NODE 903.00 IS CODE =
                                                                                        >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                  ._____
  >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<
                                                                                        *USER SPECIFIED(SUBAREA):
                                                                                       LINITIAL SUBARRA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 1530.00
DOWNSTREAM ELEVATION(FEET) = 1520.00
ELEVATION DIFFERENCE(FEET) = 100.00
SUBARRA OVERLAND TITLE
WADDWITT
                                                                                        URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                       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) =
 FLOW PROCESS FROM NODE
                              857.00 TO NODE 857.00 IS CODE =
                                                                                                                       0.49
                                                                                       TOTAL AREA(ACRES) =
                                                                                                                    0.20 TOTAL RUNOFF(CFS) =
  >>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE << < <
_____*
 USER-SPECIFIED VALUES ARE AS FOLLOWS:
                                                                                       FLOW PROCESS FROM NODE 883.00 TO NODE 884.00 IS CODE = 52
              16.01
                      RAIN INTENSITY(INCH/HOUR) = 3.86
  TOTAL AREA(ACRES) = 223.70 TOTAL RUNOFF(CFS) = 301.88
                                                                                       >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA<
```

```
ELEVATION DATA: UPSTREAM(FEET) = 1520.00 DOWNSTREAM(FEET) = 1180.0
CHANNEL LENGTH THRU SUBAREA(FEET) = 987.00 CHANNEL SLOPE = 0.3445
NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
                                                                                     1180.00 LONGEST FLOWPATH FROM NODE 882.00 TO NODE 880.00 = 4251.00 FEET.
                                                                                                 FLOW PROCESS FROM NODE 890.00 TO NODE 880.00 IS CODE = 81
 TRAVEL TIME(MIN.) = 3.47 TC(MIN.) = 9.73 = 1087.00 FEET.
                                                                                                   >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                _____
                                                                                                    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.199
                                                                                                   *USER SPECIFIED(SUBAREA):
                                                                                                  *USER SPECIAL ...
URBAN NEWLY GRADED AREAS RUNOFF
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) = 30.66 SUBAREA RUNOFF(CFS) = 45.06
MODIFICAREA(ACRES) = 93.8 TOTAL RUNOFF(CFS) = 137.7
 FLOW PROCESS FROM NODE 883.00 TO NODE 884.00 IS CODE = 81
  >>>>ADDITION OF SUBARRA TO MAINLINE PRAK FLOW.
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.315
  *USER SPECIFIED(SUBAREA):
 *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) = 12.73 SUBAREA RUNOFF(CFS) = 23.68

TOTAL AREA(ACRES) = 12.9 TOTAL RUNOFF(CFS) = 24.6
                                                                                                  FLOW PROCESS FROM NODE 880.00 TO NODE 880.00 IS CODE =
                                                                                                      >>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
                                                                         24.05
                                                                                                   >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
  TC(MIN.) =
                   9.73
                                                                                                   TOTAL NUMBER OF STREAMS =
                                                                                                   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                  CONFLUENCE VALUES USED FOR INDEFENDENT
TIME OF CONCENTRATION(MIN.) = 14.03
RAINFALL INTENSITY(INCH/HR) = 4.20
 FLOW PROCESS FROM NODE 884.00 TO NODE 885.00 IS CODE = 52
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
                                                                                                   TOTAL STREAM AREA(ACRES) =
                                                                                                                                         93.75
>>>>COMPUTE NATURAL VALLET CHARNEL FLOWS...
>>>>TRAVELTIME THRU SUBAREA<<<<
                                                                                                   PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                      940.00 ** CONFLUENCE DATA **
 ELEVATION DATA: UPSTREAM(FEET) = 1180.00 DOWNSTREAM(FEET) = 940.0 CHANNEL LENGTH THRU SUBAREA(FEET) = 1011.00 CHANNEL SLOPE = 0.2374 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
                                                                                                                RUNOFF
(CFS)
                                                                                                                                            INTENSITY
                                                                                                                               (MIN.) (INCH/HOUR)
                                                                                                   NUMBER
                                                                                                                                                              (ACRE)
 CHANNEL FLOW THRU SUBARBA(CFS) = 24.05
FLOW VELOCITY (FEET/SEC) = 9.96 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.69
TC(MIN.) = 11.43
LONGEST FLOWPATH FROM NODE 882.00 TO NODE 885.00 = 2098.00 FEET.
                                                                                                                 302.33
                                                                                                                             17 68
                                                                                                                                              3.616
4.199
                                                                                                                                                               238 87
                                                                                                  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                   CONFLUENCE FORMULA USED FOR 2 STREAMS.
.....
 FLOW PROCESS FROM NODE 884.00 TO NODE 885.00 IS CODE = 81
                                                                                                    ** PEAK FLOW RATE TABLE **
                                                                                                   STREAM
                                                                                                                                           INTENSITY
                                                                                                                 RUNOFF TC (CFS) (MIN.)
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                   NUMBER
                                                                                                                                         (TNCH/HOUR)
                                                                                                                             14.03
                                                                                                                                             4.199
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.793
                                                                                                                 420.99
   *USER SPECIFIED(SUBAREA):
  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                                   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                                  TOTAL AREA(ACRES) = 420.99 Tc(MIN.) = 17.68

TOTAL AREA(ACRES) = 332.6

LONGEST FLOWPATH FROM NODE 755.00 TO NODE 880.00 = 7803.00 FEET.
  SUBAREA AREA(ACRES) = 22.07 SUBAREA RUNOFF(CFS) = 37.02
TOTAL AREA(ACRES) = 35.0 TOTAL RUNOFF(CFS) = 58.7
                                                                           58.71
  TC(MIN.) =
                 11.43
                                                                                                  FLOW PROCESS FROM NODE 880.00 TO NODE 895.00 IS CODE = 52
  FLOW PROCESS FROM NODE 885.00 TO NODE 886.00 IS CODE = 52
                                                                                                  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA<
                                                                                                ______
                                                                                                  ELEVATION DATA: UPSTREAM(FEET) = 700.00 DOWNSTREAM(FEET) = 680.0
CHANNEL LENGTH THRU SUBAREA(FEET) = 1000.00 CHANNEL SLOPE = 0.0200
CHANNEL FLOW THRU SUBAREA(CFS) = 420.99
FLOW VELOCITY(FEET/SPO) = 70.7
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
   >>>>TRAVELTIME THRU SUBAREA
-----
                                                                                       830.00
 ELEVATION DATA: UPSTREAM(FEET) = 940.00 DOWNSTREAM(FEET) = 830.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 641.00 CHANNEL SLOPE = 0.1716 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
                                                                                                  CHANNEL FLOW THRU SUBAREA(CFS) = 420.99
FLOW VELOCITY(FEET/SEC) = 10.48 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.59 TC(MIN.) = 19.27
LONGEST FLOWPATH FROM NODE 755.00 TO NODE 895.00 = 8803.00 FEET.
 CHANNEL FLOW THRU SUBARBA(CFS) = 58.71

LONGEST FLOWPATH FROM NODE 755.00 TO NODE 895.00 = 8803.

TRAVEL TIME(MIN.) = 0.83

TC(MIN.) = 1.26

LONGEST FLOWPATH FROM NODE 755.00 TO NODE 895.00 = 8803.
...........
                                                                                                  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
 FLOW PROCESS FROM NODE 885.00 TO NODE 886.00 IS CODE = 81
                                                                                                    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.421
                                                                                                   *USER SPECIFIED(SUBAREA):
  >>>>ADDITION OF SUBARRA TO MAINLINE PEAK FLOW<
                                                                                                  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.580
  *USER SPECIFIED(SUBAREA):
  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                                                                   22.59 SUBAREA RUNOFF(CFS) = 27.05
355.2 TOTAL RUNOFF(CFS) = 425.
                                                                                                   SUBAREA AREA(ACRES) = 22.59
                                                                                                   TOTAL AREA(ACRES) =
                                                                                                                                                                            425.29
                                                                                                  TC(MIN.) = 19.27
  SUBAREA AREA(ACRES) = 28.09
                                  88.09 SUBAREA RUNOFF(CFS) = 45.03
63.1 TOTAL RUNOFF(CFS) = 101.
                                                                                                ******************
                                                                           101.14
  TOTAL AREA(ACRES) =
  TC(MIN.) =
                                                                                                  FLOW PROCESS FROM NODE 895.00 TO NODE 896.00 IS CODE = 52
                 12.26
                                                                                               ** >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA<
 FLOW PROCESS FROM NODE 886.00 TO NODE 890.00 IS CODE = 31
                                                                                                    -----
                                                                                                  ELEVATION DATA: UPSTREAM(FEET) = 680.00 DOWNSTREAM(FEET) = 660.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 1260.00 CHANNEL SLOPE = 0.0159 CHANNEL FLOW THRU SUBAREA(CFS) = 425.29 FLOW VELOCITY(FEET/SEC) = 9.37 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME(MIN.) = 2.24 TC(MIN.) = 21.51 LONGEST FLOWPATH FROM NODE 755.00 TO NODE 896.00 = 10063.00 FEET.
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
  ELEVATION DATA: UPSTREAM(FEET) = 820.00 DOWNSTREAM(FEET) = 780.00 FLOW LENGTH(FEET) = 413.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 30.0 INCH PIPE IS 20.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) = 28.24
ESTIMATED PIPE DIAMETER(INCH) = 30.00
                                                      NUMBER OF PIPES =
  PIPE-FLOW(CFS) = 101.14
PIPE TRAVEL TIME(MIN.) = (
                                                                                                  FLOW PROCESS FROM NODE 895.00 TO NODE 896.00 IS CODE = 81
                                                                                                  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.187
 FLOW PROCESS FROM NODE 890.00 TO NODE 880.00 IS CODE = 52
                                                                                                    *USER SPECIFIED(SUBAREA):
                                                                                                  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
  >>>>TRAVELTIME THRU SUBAREA<
                                                                                                  SUBAREA AREA(ACRES) = 21.20 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 376.4 TOTAL RUNOFF(CFS) =
------
                                                                                                                                                                           23.64
  ELEVATION DATA: UPSTREAM(FEET) = 780.00 DOWNSTREAM(FEET) = 710.0
CHANNEL LENGTH THRU SUBAREA(FEET) = 1099.00 CHANNEL SLOPE = 0.0637
                                                                                                   TOTAL AREA(ACRES) =
                                                                                                                                                                             425.29
                                                                                                                   21.51
                                                                                                   TC(MIN.) =
  CHANNEL FLOW THRU SUBAREA(CFS) = 101.14

FLOW VELOCITY(FEET/SEC) = 12.02 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)

TRAVEL TIME(MIN.) = 1.52 TC(MIN.) = 14.03
                                                                                                   NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

```
896.00 IS CODE = 1 ** PEAK
  FLOW PROCESS FROM NODE
                                         896.00 TO NODE
                                                                                                                       ** PEAK FLOW RATE TABLE **
                                                                                                                                        RUNOFF TC (CFS) (MIN.) 414.86 16.21
                                                                                                                                                                       THTENSITY
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<-
                                                                                                                     NUMBER
                                                                                                                                                                     (INCH/HOUR)
                                                                                                                                                                      3.824
                                                                                                                                                     21.51
  TOTAL MIMBER OF STREAMS - 2
                                                                                                                                         475.69
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
  TIME OF CONCENTRATION(MIN.) = 21.51
RAINFALL INTENSITY(INCH/HR) = 3.19
TOTAL STREAM AREA(ACRES) = 376.41
                                                                                                                       COMPUTED CONFIJIENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                       PEAK FLOW RATE(CFS) = 475.69 Tc(MIN.) = TOTAL AREA(ACRES) = 421.6
                                                                                                                                                                                                 21.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                              425.29
                                                                                                                       LONGEST FLOWPATH FROM NODE 755.00 TO NODE 896.00 = 10063.00 FEET.
  FLOW PROCESS FROM NODE 893.00 TO NODE 894.00 IS CODE = 21
                                                                                                                       FLOW PROCESS FROM NODE 896.00 TO NODE 897.00 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
                                                                                                                       ELEVATION DATA: UPSTREAM(FEET) = 660.00 DOWNS:
FLOW LENGTH(FEET) = 406.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 75.0 INCH PIPE IS 57.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 18.91
ESTIMATED PIPE DIAMETER(INCH) = 75.00 NUMBER
PIPE-FLOW(CFS) = 475.69
PIPE TRAVEL TIME(MIN.) = 0.36 TC(MIN.) = 2
                                                     0) = 100.00
  S.C.S. CURVE NUMBER (AMC II) =
INITIAL SUBAREA FLOW-LENGTH(FEET)
                                                                                                                                                                                               0.013
  UPSTREAM ELEVATION(FEET) = 980.00

DOWNSTREAM ELEVATION(FEET) = 970.00

ELEVATION DIFFERENCE(FEET) = 10.00
                                                                                                                                                                                        NUMBER OF PIPES =
                                                      10.00
                                                                                                                                                                           Tc(MIN.) =
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                 6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION! LONGEST FLOWPATH FROM NODE 755.00 TO NODE 897.00 = 10469.00 FEET.

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
  SUBAREA RUNOFF(CFS) = 2.82
TOTAL AREA(ACRES) = 1.14 TOTAL RUNOFF(CFS) =
                                                                                                                       FLOW PROCESS FROM NODE 897.00 TO NODE 897.00 IS CODE = 10
FLOW PROCESS FROM NODE 894.00 TO NODE 894.10 IS CODE = 53
  >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA<
                                                                                                                       FLOW PROCESS FROM NODE 900.00 TO NODE 901.00 IS CODE = 21
FI.FVATION DATA: HDSTPFAM(FFFT) -
                                                         980.00 DOWNSTREAM(FEET) =
                                                                                                        750 00
                                                                                                                     >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
  ELEVATION DATA: UPSTREAM(FEET) = 980.00 DUWNSIREAM(FEET) = 730.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 1455.00 CHANNEL SLOPE = 0.1581 =
                                                                                                                                                         .=============
  CHANNEL FLOW THRU SUBAREA(CFS) =
                                                             2.82
                                                                                                                        *USER SPECIFIED(SUBAREA):
  CHANNEL FLOW INRU SUBARBA(CFS) = 2.02
FLOW VELOCITY(FEET/SEC) = 3.14 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 7.71 Tc(MIN.) = 13.98
LONGEST FLOWPATH FROM NODE 893.00 TO NODE 894.10 = 1555.00 FEET.
                                                                                                                       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) = 790.00
DOWNSTREAM ELEVATION(FEET) = 780.0
.....
                                                                                                                                                                      780.00
                                                                                                                      DOWNSTREAM ELEVATION(FEET) = 780.00
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
  FLOW PROCESS FROM NODE 894.00 TO NODE 894.10 IS CODE = 81
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                                       SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) =
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.208
                                                                                                                                                                  1.43
                                                                                                                                                              0.58 TOTAL RUNOFF(CFS) =
   *USER SPECIFIED(SUBAREA):
  "USBAN RAPEA(GES) = 23.16 SUBAREA RUNOFF(CFS) = 34.11
TOTAL AREA(ACRES) = 24.3 TOTAL RUNOFF(CFS) = 35.7
                                                                                                                    ......
                                                                                                                     FLOW PROCESS FROM NODE 901.00 TO NODE 902.00 IS CODE = 52
                                                                                                                       >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>
>>>>TRAVELTIME THRU SUBAREA<
  TC(MIN.) =
                     13.98
 ### STANDER OF THE SUBAREA (FET) = 750.00 DOWNSTREAM (FET) = 750.00 DOWNSTREAM (FET) = 710.00 DOWNSTREAM (FET) = 1.43 
                                                                                                                                                                    Tc(MIN.) = 16.12
900.00 TO NODE 902.00 = 1318.00 FEET.
  100 YEAR RAINFALL INTENSITY(INCH, HOCH,
*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) = 8.67 SUBAREA RUNOFF(CFS) = 11.65
TOTAL AREA(ACRES) = 9.2 TOTAL RUNOFF(CFS) = 12.4
                                                                                                                         100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.839
FLOW PROCESS FROM NODE 894.10 TO NODE 896.00 IS CODE = 81
    >>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.824
  **USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
  URBAN NEWLY GRADED ARRAS KUNOFF COEFFICIENT

S.C.S. CURVE NUMBER (AMC II) = 0
ARRA-AVERAGE RUNOFF COEFFICIENT = 0.3500

SUBAREA AREA(ACRES) = 20.89 SUBAREA RUNOFF(CFS) = 27.96
TOTAL AREA(ACRES) = 45.2 TOTAL RUNOFF(CFS) = 60.4
                                                                                                                      FLOW PROCESS FROM NODE 902.00 TO NODE 903.00 IS CODE =
                                                                                           60.49
                                                                                                                       >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA<
                     16.21
  TC(MIN.) =
                                                                                                                       ELEVATION DATA: UPSTREAM(FEET) = 710.00 DOWNSTREAM(FEET) = 75.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 917.00 CHANNEL SLOPE = 0.0055
896.00 IS CODE = 1
  FLOW PROCESS FROM NODE
                                        896.00 TO NODE
                                                                                                                   -- CHANNEL FLOW THRU SUBAREA(CFS) = 12.43
FLOW VELOCITY(FEET/SEC) = 1.95 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 7.83 TC(MIN.) = 23.95
== LONGEST FLOWPATH FROM NODE 900.00 TO NODE 903.00 = 2235.00 FEET
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                                                                                                                                     900.00 TO NODE 903.00 = 2235.00 FEET.
______
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  CONFLOENCE VALUES SEEF FOR THE CONCENTRATION(MIN.) = 16.21
RAINFALL INTENSITY(INCH/HR) = 3.82
TOTAL STREAM AREA(ACRES) = 45.19
                                                                                                                       FLOW PROCESS FROM NODE 902.00 TO NODE 903.00 IS CODE = 81
                                                                                                                       >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                                                  .===========
                                                                60.49
                                                                                                                         100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.974
   ** CONFLUENCE DATA **
                                                                                                                        *USER SPECIFIED(SUBAREA):
                                                                                                                       "USEA SPECIFIED(SUBAREA).
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                  RUNOFF
(CFS)
  STREAM
                                      тс
                                                    INTENSITY
                                                                           AREA
                                    (MIN.)
                                               (INCH/HOUR)
                                                                          (ACRE)
  NUMBER
                                                   3.187
                   425.29
                                  21.51
                                                                           376.41
                                                                                                                       SUBAREA AREA(ACRES) = 9.25 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 18.5 TOTAL RUNOFF(CFS) =
                    60.49
                                  16.21
                                                                                                                                                                                                                 19.25
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                       TC(MIN.) = 23.95
```

```
RAINFALL INTENSITY(INCH/HR) =
 FLOW PROCESS FROM NODE
                           903.00 TO NODE
                                              903.00 IS CODE = 11
                                                                                                               3.12
                                                                   TOTAL STREAM AREA(ACRES) =
                                                                                                            503 15
                                                                              PEAK FLOW RATE(CFS) AT CONFLUENCE =
 >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY
 ** MAIN STREAM CONFIDENCE DATA **
                                                                               FLOW PROCESS FROM NODE 905.00 TO NODE 904.00 IS CODE =
                                 INTENSITY
 STREAM
            RUNOFF
                        TC
                                                AREA
                      (MIN.)
                               (INCH/HOUR)
2.974
             (CFS)
                                              (ACRE)
18.50
                                                                               >>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE <<->
                       23.95
                               900.00 TO NODE 903.00 =
 LONGEST FLOWPATH FROM NODE
                                                               2235.00 FEET. USER-SPECIFIED VALUES ARE AS FOLLOWS:
                                                                              TC(MIN) = 17.33 RAIN INTENSITY(INCH/HOUR) = 3.66
TOTAL AREA(ACRES) = 192.83 TOTAL RUNOFF(CFS) =
  ** MEMORY BANK # 1 CONFLUENCE DATA **
            RUNOFF
 STREAM
                                 INTENSITY
                                               AREA
                         TC
                     (MIN.)
                                                                             **********************
             (CFS)
122.10
                                (INCH/HOUR)
                                              (ACRE)
                                                                              FLOW PROCESS FROM NODE 904.00 TO NODE 904.00 IS CODE = 1
                       16.49
                                   3.783
                                               63.05
 LONGEST FLOWPATH FROM NODE
                                755.00 TO NODE
                                                  903.00 =
                                                               6188.00 FEET. --
                                                                               >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
 ** PEAK FLOW RATE TABLE **
                                                                               >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES << < <
           RUNOFF
 STREAM
                                 INTENSITY
                                                                                            (CFS)
                      (MIN.)
                               (INCH/HOUR)
           135.36
                                                                               CONFIDENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                        16.49
                                     3.783
                     23.95
                                                                               TIME OF CONCENTRATION(MIN.) = 17.33
RAINFALL INTENSITY(INCH/HR) = 3.66
     2
           115.23
                                     2.974
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                               TOTAL STREAM AREA(ACRES) =
                                                                                                            192.83
 PEAK FLOW RATE(CFS) = 135.36
TOTAL AREA(ACRES) = 81.5
                                     Tc(MIN.)
                                              - 16 49
                                                                               PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                      370.37
                                                                               ** CONFLUENCE DATA **
RUNOFF
(CFS)
                                                                                                                INTENSITY
                                                                                                     (MIN.) (INCH/HOUR)
 FLOW PROCESS FROM NODE 903.00 TO NODE 903.00 IS CODE = 12
                                                                              NUMBER
                                                                                                                              (ACRE)
                                                                                                              3.116
                                                                                                    22.27
17.33
                                                                                          590 52
                                                                                                                               503 15
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
FLOW PROCESS FROM NODE 903.00 TO NODE 897.00 IS CODE = 31
                                                                               ** PEAK FLOW RATE TABLE **
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<-
                                                                                      RUNOFF
(CFS)
                                                                               STREAM
                                                                                                               INTENSITY
                                                                                                    (MIN.)
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
                                                                               NUMBER
                                                                                                              (INCH/HOUR)
                                                                                                             3.664
ELEVATION DATA: UPSTREAM(FEET) = 710.00 DOWNSTREAM
                                 = 710.00 DOWNSTREAM(FEET) = 690.00 MANNING'S N = 0.013
                                                                                          829 83
                                                                                                    17.33
                                                                                                   22.27
                                                                                          905.54
                                                                                                                3.116
 ELEVATION DATA: OPSIREAM (FEET) = /10.00 DOWNS)
FLOW LENGTH (FEET) = 566.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 39.0 INCH PIPE IS 28.8 INCHES
PIPE-FLOW VELOCITY (FEET/SEC.) = 20.62
ESTIMATED PIPE DIAMETER (INCH) = 39.00 NUMBER
PIPE-FLOW (CFS) = 135.36
                                                                              COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 905.54 Tc(MIN.) = 22.27 TOTAL AREA(ACRES) = 696.0 LONGEST FLOWPATH FROM NODE 755.00 TO NODE 904.00 = 11219.00 FEET.
                                           NUMBER OF PIPES = 1
                                                                               LONGEST FLOWPATH FROM NODE
 PIPE-FLOW(CFS) = 135.36
PIPE TRAVEL TIME(MIN.) =
 PIPE-FLOW(CFS) = 135.36

PIPE TRAVEL TIME(MIN.) = 0.46 Tc(MIN.) = LONGEST FLOWPATH FROM NODE 755.00 TO NODE
                                    Tc(MIN.) =
                                                  16.95
                                                 FLOW PROCESS FROM NODE 904.00 TO NODE 906.00 IS CODE = 31
 FLOW PROCESS FROM NODE 897.00 TO NODE 897.00 IS CODE = 11
                                                                               >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
 >>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<
                                                                             ______
                                                                              ELEVATION DATA: UPSTREAM(FEET) = 660.00 DOWNSTREAM(FEET) = 630.00 FLOW LENGTH(FEET) = 488.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 69.0 INCH PIPE IS 56.0 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 40.11 ESTIMATED PIPE DIAMETER(INCH) = 69.00 NUMBER OF PIPES = 1
 ** MAIN STREAM CONFLUENCE DATA **
            RUNOFF
                      TC INTENSITY AREA (MIN.) (INCH/HOUR) (ACRE)
 NUMBER
              (CFS)
                                                                              PIPE-FLOW(CFS) = 905.54

PIPE TRAVEL TIME(MIN.) = 0.20 Tc(MIN.) = 22.48

LONGEST FLOWPATH FROM NODE 755.00 TO NODE 906.0
            135.36
                       16.95
                                   3.717
                                               81.55
 LONGEST FLOWPATH FROM NODE
                              755.00 TO NODE
                                                   897.00 = 6754.00 FEET.
                                                                                                                                906.00 = 11707.00 FEET.
  ** MEMORY BANK # 2 CONFLUENCE DATA **
                                                                             RUNOFF TC INTENSITY AREA (CFS) (MIN.) (INCH/HOUR) (ACRE)
            RUNOFF
                                                                               END OF STUDY SUMMARY:
                                                                              END OF SIOUT SUMMARY.

TOTAL AREA(ACRES) = 696.0 TC(MIN.) = 22.48

PEAK FLOW RATE(CFS) = 905.54
 NUMBER
             475.69
                      21.87
                                   3.153
                                               421.60
                               755.00 TO NODE
                                                 897.00 = 10469.00 FEET.=
 LONGEST FLOWPATH FROM NODE
                                                                             ** PEAK FLOW RATE TABLE **
                                                                              END OF RATIONAL METHOD ANALYSIS
 STREAM
           RUNOFF Tc
(CFS) (MIN.)
 NUMBER
                               (TNCH/HOUR)
                     16.95
21.87
           503 97
           590.52
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 590.5
TOTAL AREA(ACRES) = 503.1
                            590.52 Tc(MIN.) =
                                                  21 87
FLOW PROCESS FROM NODE 897.00 TO NODE 897.00 IS CODE = 12
 >>>>CLEAR MEMORY BANK # 2 <<<<
 FLOW PROCESS FROM NODE 897.00 TO NODE 904.00 IS CODE = 31
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
 ELEVATION DATA: UPSTREAM(FEET) = 690.00 DOWNSTREAM(FEET) = 660.00 FLOW LENGTH(FEET) = 750.00 MANNING'S N = 0.013
 ELEVATION DATA: UPSTREAM (FEET) = 690.00 DOWNST
FLOW LENGTH(FEET) = 750.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 66.0 INCH PIPE IS 49.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 31.19
ESTIMATED PIPE DIAMETER(INCH) = 66.00 NUMBER
                                           NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 590.52
PIPE TRAVEL TIME(MIN.) = 0
                                  Tc(MIN.) = 22.27
                            0.40
 LONGEST FLOWPATH FROM NODE 755.00 TO NODE 904.00 = 11219.00 FEET.
******************
 FLOW PROCESS FROM NODE 904.00 TO NODE 904.00 IS CODE = 1
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
-----
 TOTAL NUMBER OF STREAMS = 2 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 22.27
```

CHAPTER 5

5.1.3 – Rational Method Hydrologic Analysis (AES 2015)

Drainage Area Tributary to V14 South WQ Basin

OTAY RANCH VILLAGE 14 & PA 16/19 DRAINAGE AREA TRIBUTARY TO V14 SOUTH WQ BASIN V14 SOUTH WQ BASIN

Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT 2003,1985,1981 HYDROLOGY MANUAL >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA (c) Copyright 1982-2015 Advanced Engineering Software (aes) >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>> Ver. 22.0 Release Date: 07/01/2015 License ID 1239 ELEVATION DATA: UPSTREAM(FEET) = 760.00 DOWNSTREAM(FEET) = 729.00 ELBUATION DAIA. UPSIRLAM(FEET) = 760.00 DOWNSTREAM(FEET) = FLOW LENGTH(FEET) = 565.00 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.) = 13.47

ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1 Analysis prepared by: HUnsaker & Associates San Diego, Inc. 9707 Waples Street San Diego CA 92121 PIPE TRAVEL TIME(MIN.) = 0.70 Tc(MIN.) = 11.84 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 103.00 = FILE NAME: R:\1235\HYD\CALCS\AES\SRP\V14S.DAT ************************ TIME/DATE OF STUDY: 15:28 10/04/2016 FLOW PROCESS FROM NODE 103.00 TO NODE 103.00 IS CODE = 1 USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION: >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE 2003 SAN DIEGO MANUAL CRITERIA TOTAL NUMBER OF STREAMS = 2 TOTAL NORDER OF SIRBARS - 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 11.84
RAINFALL INTENSITY(INCH/HR) = 4.68 USER SPECIFIED STORM EVENT(YEAR) = 100.00 6-HOUR DURATION PRECIPITATION (INCHES) = SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00 SPECIFIED MINIMOM PIPE SIZE(INCH) = 18.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL
HALF- CROWN TO STREET-CROSSFALL: CURB GUTTER-GEOMETRIES: MANNII TOTAL STREAM AREA(ACRES) = 4.59
PEAK FLOW RATE(CFS) AT CONFLUENCE = 11.63 ******************* FLOW PROCESS FROM NODE 105.00 TO NODE 106.00 IS CODE = 21 CURB GUTTER-GEOMETRIES: MANNING WIDTH CROSSFALL IN- / OUT-/PARK-(FT) (FT) SIDE / SIDE/ WAY HEIGHT WIDTH LIP HIKE FACTOR (FT) (FT) (FT) (FT) (n) (FT) (FT) (FT) (FT) (n) (FT) SIDE / SIDE / WAY >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS === 0.020/0.020/0.020 0.020/0.020/0.020 2.00 0.0313 0.125 0.0150 1.50 0.0313 0.125 0.0130 16 0 8 0 0.50 *HIGER SDECTETER (SHEAREA): *USER SPECIFIED(SUBAREA):

RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00

UPSTREAM ELEVATION(FEET) = 763.85

DOWNSTREAM ELEVATION(FEET) = 763.15

ELEVATION DIEPEDENCE(FEET) = 0.70 0.50 12.0 GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb) DOWNSTREAM ELEVATION(FEET) = 763.15

ELEVATION DIFFERENCE(FEET) = 0.70

SUBARBA OVERLAND TIME OF FLOW(MIN.) = 8.735

WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

THE MAXIMUM OVERLAND FLOW LENGTH = 70.00

(Reference: Table 3-1B of Hydrology Manual)

THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699

SUBARBA BUNNEFE(CES) = 0.02 2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
SIZE PIPE WITH A FLOW CAPACITY GREATER THAN OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.* ********************** FLOW PROCESS FROM NODE 100.00 TO NODE 101.00 IS CODE = 21>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS< SUBAREA RUNOFF(CFS) = 0.92 TOTAL AREA(ACRES) = 0.31 TOTAL RUNOFF(CFS) = *USER SPECIFIED(SUBAREA): RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00 FLOW PROCESS FROM NODE 106.00 TO NODE 107.00 IS CODE = 61 | UPSTREAM ELEVATION(FEET) = 783.85 | DOWNSTREAM ELEVATION(FEET) = 783.15 | ELEVATION DIFFERENCE(FEET) = 0.70 >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA< >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<>
>>>>> (STANDARD CURB SECTION USED) < 762.00 DOWNSTREAM ELEVATION(FEET) = 735.00
STREET LENGTH(FEET) = 658.00 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00 0.70 ELEVATION DIFFERENCE (FEET) = 0.70
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 70.00
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TC CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020 SUBAREA RUNOFF(CFS) = 0.92 TOTAL AREA(ACRES) = 0.31 TOTAL RUNOFF(CFS) = SPECIFIED NUMBER OF HALFSTREETS 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 = 0.0 FLOW PROCESS FROM NODE 101.00 TO NODE 102.00 IS CODE = 61 0.0150 0.0200 >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<>>>>(STANDARD CURB SECTION USED) **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) : ··· · · · · STREETFLOW MODEL RESULTS USING ESTIMATED FLOW: STREET FLOW DEPTH(FEET) = 0.28 HALFSTREET FLOOD WIDTH(FEET) = 7.56 UPSTREAM ELEVATION(FEET) = 782.00 DOWNSTREAM ELEVATION(FEET) = 765.70 STREET LENGTH(FEET) = 527.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00 HALFSTREET FLOOD WIDTH(FEET) = 7.56
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.98
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.11
STREET FLOW TRAVEL TIME(MIN.) = 2.75 Tc(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.776 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020 *USER SPECIFIED(SUBAREA): -USEK 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
SUBAREA AREA(ACRES) = 3.67 SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 4.0 PEAK FLOW RATE(CFS) = 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 0.0200 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = PEAK FLOW RATE(CFS) = *TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = END OF SUBAREA STREET FLOW HYDRAULICS: ***TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.30
HALFSTREET FLOOD WIDTH(FEET) = 8.68
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.65
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.10
STREET FLOW TRAVEL TIME(MIN.) = 2.40 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.872
*USER SPECIFIED(SUBAREA): DEPTH(FEET) = 0.32 HALFSTREET FLOOD WIDTH(FEET) = 9.88
FLOW VELOCITY(FEET/SEC.) = 4.52 DEPTH*VELOCITY(FT*FT/SEC.) =
LONGEST FLOWPATH FROM NODE 105.00 TO NODE 107.00 = 72: 728.00 FEET. ******************* 11.14 FLOW PROCESS FROM NODE 107.00 TO NODE 103.00 IS CODE = 1>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>> *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
SUBAREA AREA(ACRES) = 4.28
SUBAREA RAEA(ACRES) = 4.28
TOTAL AREA(ACRES) = 4.6 PEAK FLOW RATE(CFS) = 10.84 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES TOTAL NUMBER OF STREAMS = TOTAL NUMBER OF SIREARS - 2 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 11.49
RAINFALL INTENSITY(INCH/HR) = 4.78
TOTAL STREAM AREA(ACRES) = 3.98 END OF SUBAREA STREET FLOW HYDRAULICS: DEPTH(FEET) = 0.35 HALFSTREET FLOOD WIDTH(FEET) = TOTAL STREAM AREA(ACRES) = 3.98
PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.88 DEPTH(FEET) = 0.35 HALFSTREET FLOOD WIDIN(FEE), - 11.21 FLOW VELOCITY(FEET/SEC.) = 4.23 DEPTH*VELOCITY(FT*FT/SEC.) = 1.48

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 102.00 =

FLOW PROCESS FROM NODE 102.00 TO NODE 103.00 IS CODE = 31

597.00 FEET.

```
DEPTH(FEET) = 0.33 HALFSTREET FLOOD WIDTH(FEET) = 10.16
   ** CONFLUENCE DATA *
                                                                                                               DEPTH(FEEI) = 0.33 mans/sred; floor mininges; - 2....
FLOW VELOCITY(FEET/SEC.) = 4.08 DEPTH*VELOCITY(FFE*FT/SE LONGEST FLOWPATH FROM NODE 110.00 TO NODE 112.00 =
  STREAM
                 RIINOFF
                                   Tc
                                               INTENSITY
                                                                   AREA
                                                                                                                                                               DEPTH*VELOCITY(FT*FT/SEC.) =
                                                                                                                                                                                                          1 34
                   (CFS)
11.63
                                 (MIN.)
                                           (INCH/HOUR)
                                                                   (ACRE)
  NUMBER
                               11.84
                                                                      4.59
                                                  4.685
       2
                    9.88
                              11.49
                                                  4.776
                                                                      3.98
                                                                                                              FLOW PROCESS FROM NODE 112.00 TO NODE 108.00 IS CODE = 1
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                               >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
    * PEAK FLOW RATE TABLE **
                                                                                                              ______
                                                                                                              TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  STREAM
NUMBER
                 RUNOFF
(CFS)
                               Tc (MIN.)
                                              TNTENSTTV
                                           (INCH/HOUR)
                              11.49
11.84
                                                                                                               TIME OF CONCENTRATION(MIN.) = 11.20
RAINFALL INTENSITY(INCH/HR) = 4.85
TOTAL STREAM AREA(ACRES) = 3.72
                   21 17
                                                4 776
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 21.32 Tc(MIN.) = TOTAL AREA(ACRES) = 8.6
                                                                                                               PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                       9.39
                                                                                                               ** CONFLUENCE DATA **
  LONGEST FLOWPATH FROM NODE 100.00 TO NODE
                                                                   103.00 = 1162.00 FEET.
                                                                                                               STREAM
                                                                                                                              RUNOFF
                                                                                                                                                            INTENSITY
                                                                                                                                                                                AREA
                                                                                                                                                         (INCH/HOUR)
                                                                                                                               (CFS)
                                                                                                                                             (MIN.)
                                                                                                                                                                               (ACRE)
21.32
                                                                                                                                           12.01
                                                                                                                                                             4.641
                                                                                                                                                                                   8.57
  FLOW PROCESS FROM NODE 103.00 TO NODE 108.00 IS CODE = 31
                                                                                                                                9.39
                                                                                                                                          11.20
                                                                                                                                                              4.854
                                                                                                                                                                                   3.72
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                               RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR 2 STREAMS.
  ______
  ELEVATION DATA: UPSTREAM(FEET) = 730.00 DOWNST
FLOW LENGTH(FEET) = 167.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 18.0 INCH PIPE IS 12.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 16.25
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
                                                                                                               ** PEAK FLOW RATE TABLE **
                                                   730.00 DOWNSTREAM(FEET) = 719.50
                                                                                                                             RUNOFF
(CFS)
                                                                                                                                           Tc (MIN.)
                                                                                                               STREAM
                                                                                                                                                          INTENSITY
                                                                                                               NUMBER
                                                                                                                                                       (INCH/HOUR)
                                                                                                                               29.78
                                                                                                                                         11.20
12.01
                                                                                                                                                         4.854
4.641
                                                            NUMBER OF PIPES = 1
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 30.30 Tc(MIN.) =

TOTAL AREA(ACRES) = 12.3
********************
                                                                                                                                                    100.00 TO NODE 108.00 =
                                                                                                               LONGEST FLOWPATH FROM NODE
                                                                                                                                                                                                1329 00 EFFT
  FLOW PROCESS FROM NODE 108.00 TO NODE 108.00 IS CODE = 1
                                                                                                               *****************
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<-
                                                                                                               FLOW PROCESS FROM NODE 108.00 TO NODE 113.00 IS CODE = 31
TOTAL NUMBER OF STREAMS = 2
                                                                                                               >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  TOTAL INDEDER OF SIREAUS - 2 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 12.01
RAINFALL INTENSITY(INCH/HR) = 4.64
TOTAL STREAM AREA(ACRES) = 8.57
                                                                                                              ._____
                                                                                                              ELEVATION DATA: UPSTREAM(FEET) = 725.00 DOWNST
FLOW LENGTH(FEET) = 75.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 24.0 INCH PIPE IS 15.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 14.07
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER
                                                                                                                                                               725.00 DOWNSTREAM(FEET) =
                                                                                                                                                                                                       722.50
          STREAM AREA(ACRES)
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                          21 32
NUMBER OF PIPES =
                                                                                                               PIPE TRAVEL TIME(MIN.) = 0
                                                                                                               LIFE-FLOW(CFS) = 30.30

PIPE TRAVEL TIME(MIN.) = 0.09 Tc(MIN.) = 12.10

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 113.00 =
  FLOW PROCESS FROM NODE 110.00 TO NODE 111.00 IS CODE = 21
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
______
                                                                                                            ******************
  *USER SPECIFIED(SUBAREA):
RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
                                                                                                              FLOW PROCESS FROM NODE 113.00 TO NODE 113.00 IS CODE = 1
  S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
UPSTREAM ELEVATION(FEET) = 743.85
DOWNSTREAM ELEVATION(FEET) = 743.15
ELEVATION DIFFERENCE(FEET) = 7.70
                                                                                                              >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                                            _____
                                                                                                               TOTAL NUMBER OF STREAMS = 2
  DOWNSTREAM ELEVATION(FEET) = 743.15

ELEVATION DIFFERENCE(FEET) = 0.70

SUBARBA OVERLAND TIME OF FLOW(MIN.) = 8.735

WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

THE MAXIMUM OVERLAND FLOW LENGTH = 70.00

(Reference: Table 3-1B of Hydrology Manual)

THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699

SUBARBA BINOFF(CES) = 0.83
                                                                                                              TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 12.10
RAINFALL INTENSITY(INCH/HR) = 4.62
TOTAL STREAM AREA (ACRES) = 12.29
PEAK FLOW RATE(CFS) AT CONFLUENCE = 30.30
                                                                                                            ......
  SUBAREA RUNOFF(CFS) = 0.83
TOTAL AREA(ACRES) = 0.28 TOTAL RUNOFF(CFS) =
                                                                                                              FLOW PROCESS FROM NODE 120.00 TO NODE 121.00 IS CODE = 21
                                                                                                               >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
  **************
                                                                                                                                   _____
  FLOW PROCESS FROM NODE 111.00 TO NODE 112.00 IS CODE = 61
                                                                                                               *USER SPECIFIED(SUBAREA):
                                                                                                               RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600 S.C.S. CURVE NUMBER (AMC II) = 0
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
>>>>(STANDARD CURB SECTION USED)<
                                                                                                               INITIAL SUBAREA FLOW-LENGTH(FEET)
                                                                                                               UPSTREAM ELEVATION(FEET) = 770.35
DOWNSTREAM ELEVATION(FEET) = 769.65
  UPSTREAM ELEVATION(FEET) = 742.00 DOWNSTREAM ELEVATION(FEET) = 725.00 STREET LENGTH(FEET) = 529.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                              DONNSTREAM ELEVATION(FEET) = 769.65
ELEVATION DIFFFERENCE(FEET) = 0.70
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)
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.03
                                                                                                                THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION!

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.349
                                                                                                               SUBAREA RUNOFF(CFS) = 0.84

TOTAL AREA(ACRES) = 0.34

TOTAL RUNOFF(CFS) =
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
  STREET PARKMAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb)
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0
                                                                                                0.0150
                                                                                     0.0200
                                                                                                              FLOW PROCESS FROM NODE 121.00 TO NODE 122.00 IS CODE = 61
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.28
HALFSTREET FLOW DIDTH(FEET) = 7.80
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.57
PRODUCT OF DEPTHAVELOCITY(FT*FT/SEC.) = 1.01
STREET FLOW TRAVEL TIME(MIN.) = 2.47 Tc(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.854
                                                                                                               >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                            >>>> (STANDARD CURB SECTION USED) <<<<>
                                                                                                              UPSTREAM ELEVATION(FEET) = 769.00 DOWNSTREAM ELEVATION(FEET) = 722.50 STREET LENGTH(FEET) = 1711.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
  STREE 1 20...
100 YEAR RAINFALL INTENSITY(INCH, INCL.)
*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
SUBAREA AREA(ACRES) = 3.44 SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 3.7 PEAK FLOW RATE(CFS) =
                                                                                                              DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                               SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
                                                                                     8.68
                                                                                                              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 = 0.0
                                                      PEAK FLOW RATE(CFS) =
                                                                                                                                                                                                           0.0150
  END OF SUBAREA STREET FLOW HYDRAULICS:
```

```
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.576
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                6 19
                                                                                                          *USER SPECIFIED(SUBAREA):
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.36
                                                                                                         RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
S.C.S. CURVE NUMBER (AMC II) = 0
 STREET FLOW DEPTH(FEET) = 0.36
HALPSTREET FLOW DEPTH(FEET) = 11.85
AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.07
PRODUCT OF DEPTHEVELOCITY(FT*FT/SEC.) = 1.48
STREET FLOW TRAVEL TIME(MIN.) = 7.01 Tc(MIN.) = 16.65
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.759
                                                                                                         AREA-AVERAGE RUNOFF COEFFICIENT = 0.520
                                                                                                         SUBAREA AREA(ACRES) = 3.17
                                                                                                                                                      SUBAREA RUNOFF(CFS) = 7.54
PEAK FLOW RATE(CFS) =
                                                                                                                                            3.5
                                                                                                         TOTAL AREA(ACRES) =
                                                                                                         END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                         DEPTH(FEET) = 0.37 HALFSTREET FLOOD WIDTH(FEET) = 12.34 FLOW VELOCITY(FEET/SEC.) = 5.03 DEPTH*VELOCITY(FT*FT/SEC.) = 1.88 LONGEST FLOWPATH FROM NODE 125.00 TO NODE 127.00 = 1005.00 FE
  *USER SPECIFIED(SUBAREA):
 *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) = 6.08
SUBAREA AREA(ACRES) = 10.51
TOTAL AREA(ACRES) = 6.4
PEAK FLOW RATE(CFS) = 10.51
                                                                                                                                                                                        1005.00 FEET.
                                                                                                      FLOW PROCESS FROM NODE 127.00 TO NODE 128.00 IS CODE = 1
  END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                         >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
  DEPTH(FEET) = 0.43 HALFSTREET FLOW MIDTH(FEET) = 15.01
FLOW VELOCITY(FEET/SEC.) = 4.68 DEPTH*VELOCITY(FT*FT/SEC.) = 2.00
LONGEST FLOWPATH FROM NODE 120.00 TO NODE 122.00 = 1781.00 FEET.
                                                                                                                                      TOTAL NUMBER OF STREAMS = 2 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                         TIME OF CONCENTRATION(MIN.) = 12.27
RAINFALL INTENSITY(INCH/HR) = 4.58
TOTAL STREAM AREA(ACRES) = 3.47
 FLOW PROCESS FROM NODE 122.00 TO NODE 113.00 IS CODE = 1
                                                                                                         PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                              8.26
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE <---
                                                                                                       >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                                                                         FLOW PROCESS FROM NODE 130.00 TO NODE 131.00 IS CODE = 21
_____
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                         >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  TIME OF CONCENTRATION(MIN.) = 16.65
RAINFALL INTENSITY(INCH/HR) = 3.76
                                                                                                      ______
                                                                                                         *USER SPECIFIED(SUBAREA):
                                                                                                         URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
  TOTAL STREAM AREA(ACRES) =
                                                                                                                                                    0 100.00
                                                                                                         S.C.S. CURVE NUMBER (AMC II) =
INITIAL SUBAREA FLOW-LENGTH(FEET)
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                      11.10
  ** CONFLUENCE DATA **
                                                                                                         UPSTREAM ELEVATION(FEET) = 740.00
DOWNSTREAM ELEVATION(FEET) = 730.00
  STREAM
                DIINOFF
                                 тс
                                            TNTFNSTTV
                                                                APFA
                                                                                                         DOWNSTREAM ELEVATION(FEET) = 750.00
ELEVATION DIFFERENCE(FEET) = 10.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                               (MIN.)
                 (CFS)
                                        (INCH/HOUR)
                                                               (ACRE)
                                                                                                                                                     10.00
  NUMBER
                                           4.619
3.759
                                                                                                                                                              6.267
                  30.30
                             12.10
                                                                 12.29
                                                                                                         WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
       2
                 11.10
                           16.65
                                                                   6.42
                                                                                                         SUBAREA RUNOFF(CFS) = 0.57
TOTAL AREA(ACRES) = 0.23 TOTAL RUNOFF(CFS) =
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
   ** PEAK FLOW RATE TABLE **
  STREAM
                RUNOFF TC
(CFS) (MIN.)
                                           INTENSITY
                                                                                                         FLOW PROCESS FROM NODE 131.00 TO NODE 132.00 IS CODE = 31
  NUMBER
                                        (INCH/HOUR)
                  38.37
                            12.10
                                              4.619
                                                                                                         >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>
>>>SUSING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                         ELEVATION DATA: UPSTREAM(FEET) = 730.00 DOWNSTREAM(FEET) = 7
FLOW LENGTH(FEET) = 201.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 38.37 Tc(MIN.) =
TOTAL AREA(ACRES) = 18.7
                                                                                                                                                                                             726.00
  LONGEST FLOWPATH FROM NODE 120.00 TO NODE
                                                                                                         DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.96
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                               113.00 = 1781.00 FEET.
  *************
                                                                                                         ESTIMATED PIPE DIAMETER(INCH, - 10.00)
PIPE-FLOW(CFS) = 0.57
PIPE TRAVEL TIME(MIN.) = 0.85 Tc(MIN.) = 7.11
LONGEST FLOWPATH FROM NODE 130.00 TO NODE 132.00 =
 FLOW PROCESS FROM NODE 113.00 TO NODE 113.00 IS CODE = 10
  >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
                                                                                                                                                                                         301.00 FEET.
                                                                                                        FLOW PROCESS FROM NODE 131.00 TO NODE 132.00 IS CODE = 81
  FLOW PROCESS FROM NODE 125.00 TO NODE 126.00 IS CODE = 21
                                                                                                         >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                          100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.507
                               *USER SPECIFIED(SUBAREA):
                                                                                                          *USER SPECIFIED(SUBAREA):
                                                                                                         *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) = 0.75 SUBAREA RUNOFF(CFS) = 1.71
TOTAL AREA(ACRES) = 1.0 TOTAL RUNOFF(CFS) = 2.3
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
  UPSTREAM ELEVATION(FEET) = 769.05

DOWNSTREAM ELEVATION(FEET) = 768.35

ELEVATION DIFFERENCE(FEET) = 0.70
                                              0.70
                                                                                                         TC(MIN.) =
                                                                                                                           7.11
  SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
  FLOW PROCESS FROM NODE 132.00 TO NODE 128.00 IS CODE = 1
                                                                                                         >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                                         >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES << < <
 FLOW PROCESS FROM NODE 126.00 TO NODE 127.00 IS CODE = 61
                                                                                                         TOTAL NUMBER OF STREAMS = 2
                                                                                                         CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 7.11
RAINFALL INTENSITY(INCH/HR) = 6.51
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<>>>>>(STANDARD CURB SECTION USED)<
UPSTREAM ELEVATION(FEET) = 767.50 DOWNSTREAM ELEVATION(FEET) = 730.00 STREET LENGTH(FEET) = 935.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                         TOTAL STREAM AREA(ACRES) = 0.98
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                         ** CONFLUENCE DATA **
                                                                                                                    RUNOFF
(CFS)
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
                                                                                                         STREAM
                                                                                                                                                    INTENSITY
                                                                                                                                                                       AREA
  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                                                                                      (ACRE)
                                                                                                         NUMBER
                                                                                                                                      (MIN.)
                                                                                                                                                  (INCH/HOUR)
                                                                                                                          2.23
                                                                                                                                      7.11
                                                                                                                                                      6.507
                                                                                                                                                                          0.98
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
  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 = 0.02
                                                                                                         RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                         CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                           0.0150
                                                                                 0.0200
                                                                                                         ** PEAK FLOW RATE TABLE **
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                4.69
                                                                                                         STREAM
                                                                                                                       RUNOFF
                                                                                                                                       TC
                                                                                                                                                  INTENSITY
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.32
HALFSTREET FLOOD WIDTH(FEET) = 9.74
                                                                                                                                    (MIN.)
                                                                                                         NIIMBER
                                                                                                                         (CFS)
                                                                                                                                                (INCH/HOUR)
                                                                                                                                                    6.507
4.576
                                                                                                                                   7.11
12.27
                                                                                                                          9.83
    AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.40
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.41
                                                                                                         COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

PEAK FLOW RATE(CFS) =

9.83 Tc(MIN.) =

12.27

STREET FLOW TRAVEL TIME(MIN.) = 3.54 Tc(MIN.) = 12.27

```
STREET LENGTH(FEET) = 660.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
  TOTAL AREA(ACRES) = 4.4 LONGEST FLOWPATH FROM NODE 125.00 TO NODE 128.00 = 1005.00 FEET.
.....
                                                                                       DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
 FLOW PROCESS FROM NODE 128.00 TO NODE 113.00 IS CODE = 31
                                                                                       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)
                                                                                       SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
                                                                                       STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
 ELEVATION DATA: UPSTREAM(FEET) = 726.00 DOWNSTFLOW LENGTH(FEET) = 228.00 MANNING'S N = 0.00 DEPTH OF FLOW IN 18.0 INCH PIPE IS 11.9 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 7.93 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
                                        726.00 DOWNSTREAM(FEET) = 722.50
                                                                                       Manning's FRICTION FACTOR for Back-of-Walk Flow Section =
                                                                                                                                                        0.0200
                                                    0.013
                                                                                          **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                         STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.30
                                               NUMBER OF PIPES = 1
  PIPE-FLOW(CFS) = 9.83
PIPE TRAVEL TIME(MIN.) = (
  FIFE-FLOW(CFS) = 9.83

PIPE TRAVEL TIME(MIN.) = 0.48 Tc(MIN.) = 12.75

LONGEST FLOWPATH FROM NODE 125.00 TO NODE 113.00 =
                                                                                         HALFSTREET FLOOD WIDTH(FEET) =
                                                                                         PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 3.80
***********************
                                                                                       STREET FLOW TRAVEL TIME(MIN.) = 2.89 Tc(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.739
                                                                                                                                                 11.63
  FLOW PROCESS FROM NODE 113.00 TO NODE 113.00 IS CODE = 11
                                                                                       *USER SPECIFIED(SUBAREA):
                                                                                      *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

SUBAREA AREA(ACRES) = 2.07

SUBAREA RAEA(ACRES) = 2.07

TOTAL AREA(ACRES) = 2.3

PEAK FLOW RATE(CFS) =
  >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY
                                                                                                                             SUBAREA RUNOFF(CFS) = 5.10
PEAK FLOW RATE(CFS) =
  ** MAIN STREAM CONFILIENCE DATA **
  STREAM
             RUNOFF
                                   INTENSITY
                           Tc
                        (MIN.)
  NUMBER
              (CFS)
                                  (INCH/HOUR)
                                                 (ACRE)
                                                                                      4.465
125.00 TO NODE
                                                    4.45
  LONGEST FLOWPATH FROM NODE
                                                      113.00 =
                                                                   1233.00 FEET.
  ** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM RUNOFF TC INTENSI
                                   INTENSITY
                                                   AREA
                      (MIN.)
                                                                                     ******************
               (CFS)
38.37
                                                 (ACRE)
18.71
  NUMBER
                                  (INCH/HOUR)
                                 4.619
120.00 TO NODE
                                                                                       FLOW PROCESS FROM NODE 137.00 TO NODE 133.00 IS CODE =
  LONGEST FLOWPATH FROM NODE
                                                     113.00 =
                                                                   1781.00 FEET.
                                                                                       >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIDENCE<
  ** PEAK FLOW RATE TABLE **
                                                                                       >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                   INTENSITY
  STREAM
            RUNOFF
                           Tc
  NUMBER
              (CFS)
                        (MIN.)
                                  (INCH/HOUR)
                                                                                      TOTAL NUMBER OF STREAMS = 2
                                                                                       CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
              47.69
46.91
                        12.10
12.75
                                        4.619
4.465
                                                                                       TIME OF CONCENTRATION(MIN.) = 11.63
RAINFALL INTENSITY(INCH/HR) = 4.74
TOTAL STREAM AREA(ACRES) = 2.31
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) = 47.0
TOTAL AREA(ACRES) = 23.2
                                       Tc(MIN.) =
                               47.69
                                                     12.10
                                                                                       PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                       ** CONFLUENCE DATA **
                                                                                       STREAM
                                                                                                RUNOFF
                                                                                                                          INTENSITY
                                                                                                                                          AREA
                                                                                                    (CFS)
 FLOW PROCESS FROM NODE 113.00 TO NODE 113.00 IS CODE = 12
                                                                                                              (MIN.)
                                                                                                                         (INCH/HOUR)
                                                                                                                                         (ACRE)
                                                                                                    47.69
                                                                                                              12.35
                                                                                                                           4.557
                                                                                                                                           23.16
  >>>>CLEAR MEMORY BANK # 1 <<<<<
                                                                                                     5.69
                                                                                                             11.63
                                                                                                                            4.739
                                                                                       RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
.....
                                                                                                                     2 STREAMS.
                                                                                       CONFLUENCE FORMULA USED FOR
 FLOW PROCESS FROM NODE 113.00 TO NODE 133.00 IS CODE = 31
                                                                                       ** PEAK FLOW RATE TABLE **
                                                                                                  RUNOFF
(CFS)
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                       STREAM
                                                                                                             Tc (MIN.)
                                                                                                                         INTENSITY
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
                                                                                       NUMBER
                                                                                                                       (INCH/HOUR)
-----
                                                                                                    50.57
                                                                                                              11.63
                                                                                                                          4.739
  ELEVATION DATA: UPSTREAM(FEET) = 717.50 DOWNSTREAM(FEET) = 709.50 FLOW LENGTH(FEET) = 240.00 MANNING'S N = 0.013
                                                                                                    53.17
                                                                                                          12.35
 ELEVATION DATA: UPSTREAM (FEET) = /17.50 DOWNST
FLOW LENGTH(FEET) = 240.00 MANING'S N = 0.0
DEPTH OF FLOW IN 27.0 INCH PIPE IS 19.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 15.60
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER
                                                                                       COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 53.17 Tc(MIN.) =

TOTAL AREA(ACRES) = 25.5
                                               NUMBER OF PIPES =
  PIPE-FLOW(CFS) = 47.69
PIPE TRAVEL TIME(MIN.) = (
                                                                                       LONGEST FLOWPATH FROM NODE 120.00 TO NODE
                                                                                                                                          133.00 = 2021.00 FEET.
  ......
                                                                                      FLOW PROCESS FROM NODE 133.00 TO NODE 138.00 IS CODE = 31
.....
                                                                                      FLOW PROCESS FROM NODE 133.00 TO NODE 133.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
_____
                                                                                      ELEVATION DATA: OPPIREAM(FEET) = 709.50 DOWNS)
FLOW LENGTH(FEET) = 55.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 27.0 INCH PIPE IS 17.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 19.48
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
  CONFIDENCE VALUES USED FOR THESE SECTION TIME OF CONCENTRATION(MIN.) = 12.35 RAINFALL INTENSITY(INCH/HR) = 4.56 TOTAL STREAM AREA(ACRES) = 23.16
                                                                                                                                     NUMBER OF PIPES = 1
                                                                                       PIPE-FLOW(CFS) =
                                                                                                             53.17
                                                                                       PIPE TRAVEL TIME(MIN.) = 0.05 Tc(MIN.) = 12.40 LONGEST FLOWPATH FROM NODE 120.00 TO NODE 138.00 =
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                             47.69
                                                                                                                                                      2076.00 FEET.
******************
 FLOW PROCESS FROM NODE 135.00 TO NODE 136.00 IS CODE = 21
                                                                                      FLOW PROCESS FROM NODE 138.00 TO NODE 138.00 IS CODE = 1
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                      >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
  *USER SPECIFIED(SUBAREA):
                                                                                     -----
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
                                                                                      TOTAL NUMBER OF STREAMS =
                                                                                       TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 12.40
RAINFALL INTENSITY(INCH/HR) = 4.55
  UPSTREAM ELEVATION(FEET) = 732.15
DOWNSTREAM ELEVATION(FEET) = 731.
                                                                                             STREAM AREA(ACRES)
                                                                                       PEAK FLOW RATE(CFS) AT CONFLUENCE =
  ELEVATION DIFFERENCE (FEET)
                                       0.70
                                                                                                                                 53.17
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                              8.735
                                                                                     ***************
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
  SUBAREA RUNOFF(CFS) = 0.71
TOTAL AREA(ACRES) = 0.24 TOTAL RUNOFF(CFS) =
                                                                                      FLOW PROCESS FROM NODE 140.00 TO NODE 141.00 IS CODE = 21
                                                               0.71
                                                                                       >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                    ______
 FLOW PROCESS FROM NODE 136.00 TO NODE 137.00 IS CODE = 61
                                                                                       *HISER SPECIFIED(SHEAREA):
                                                                                       RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
                                                                                       S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
>>>>(STANDARD CURB SECTION USED)
                                                                                      UPSTREAM ELEVATION(FEET) = 732.95
DOWNSTREAM ELEVATION(FEET) = 732.
 UPSTREAM ELEVATION(FEET) = 736.00 DOWNSTREAM ELEVATION(FEET) = 714.00
                                                                                                                         732.25
```

```
ELEVATION DIFFERENCE(FEET) =
                                                                                                                               >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  ELEVATION DIFFERENCE(FEET) = 0.70
SUBARRA OVERLAND TIME OF FLOW(MIN.) = 9.186
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.517
SUBAREA RUNOFF(CFS) = 1.03
TOTAL AREA(ACRES) = 0.38 TOTAL RUNOFF(CFS)
                                                                                                                              RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
                                          0.38 TOTAL RUNOFF(CFS) =
                                                                                                                              S.C.S. CURVE NUMBER (AMC II) = (INITIAL SUBAREA FLOW-LENGTH(FEET)
                                                                                                                                                                                 0 70.00
                                                                                                                              UPSTREAM ELEVATION(FEET) = 753.35

DOWNSTREAM ELEVATION(FEET) = 752.65

ELEVATION DIFFERENCE(FEET) = 0.70
  FLOW PROCESS FROM NODE 141.00 TO NODE 142.00 IS CODE = 61
                                                                                                                              ELEVATION DIFFERENCE(FEET) = 0.70
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.735
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 70.00
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TC CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
   >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
>>>>(STANDARD CURB SECTION USED)<
  UPSTREAM ELEVATION(FEET) = 731.00 DOWNSTREAM ELEVATION(FEET) = 711.00 STREET LENGTH(FEET) = 1013.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                                               SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) =
                                                                                                                                                                    0.68
0.23 TOTAL RUNOFF(CFS) =
   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =
  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.0
                                                                                                                           ********************************
                                                                                                                              FLOW PROCESS FROM NODE 151.00 TO NODE 152.00 IS CODE = 61
   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
  SPECIFIED NUMBER OF HARFSTREETS CARATING AGAINST

STREET PARKWAY CROSSPALL (DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.020
                                                                                                                           >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                 0.0200
                                                                                                                              UPSTREAM ELEVATION(FEET) = 751.80 DOWNSTREAM ELEVATION(FEET) = 723.50 STREET LENGTH(FEET) = 545.00 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) = 0.35
HALFSTREET FLOOD WIDTH(FEET) = 11.43
  STREET FLOW DEPTH(FEET) = 0.35
HALFSTREET FLOOD WIDTH(FEET) = 11.43
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.39
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.20
STREET FLOW TRAVEL TIME(MIN.) = 4.98 TC(MIN.) =
                                                                                                                              DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =
                                                                                                                               INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                     14.17
  STREET FLOW TRAVEL TIME(MIN.) = 4.98 Tc(MIN.) = 14.17

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.172
**USER SPECIFIED(SUBAREA):
RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.490
SUBAREA AREA(ACRES) = 3.67 SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 4.1 PEAK FLOW RATE(CFS) =
                                                                                                                               SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                                              SPECIFIED NUMBER OF HAUFSIREDIS CARRIING RUNDFF - 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 = 0.0
                                                                                                                                                                                                                                        0.0150
                                                                                                                                                                                                                              0.0200
                                                                                                                                  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                                                                                                                            8.38
                                                                                                                              **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.30

HALFSTREET FLOW DUDTH(FEET) = 8.74

AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.75

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.43

STREET FLOW TRAVEL TIME(MIN.) = 1.91 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.016

**HISER SERCITIFED(SURAPEA):
                                                              PEAK FLOW RATE(CFS) =
   END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41 HALFSTREET FLOOD WIDTH(FEET) = 14.24
FLOW VELOCITY(FEET/SEC.) = 3.86 DEPTH*VELOCITY(FT*FT/SEC.)
LONGEST FLOWPATH FROM NODE 140.00 TO NODE 142.00 = 10
                                                                                                1083.00 FEET.
*USER SPECIFIED(SUBAREA):
                                                                                                                              *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
SUBAREA AREA(ACRES) = 5.88 SUBAREA RUNOFF(CFS) = 15.34
TOTAL AREA(ACRES) = 6.1 PEAK FLOW RATE(CFS) =
  FLOW PROCESS FROM NODE 142.00 TO NODE 138.00 IS CODE = 31
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
  ELEVATION DATA: UPSTREAM(FEET) = 707.00 DOWNSTREAM(FEET) = 706.00 FLOW LENGTH(FEET) = 36.54 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                                               END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                              END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.36 HALFSTREET FLOOD WIDTH(FEET) = 11.50
FLOW VELOCITY(FEET/SEC.) = 5.54 DEPTH*VELOCITY(FT*FT/SEC.) =
LONGEST FLOWPATH FROM NODE 150.00 TO NODE 152.00 = 61
   DEPTH OF FLOW IN 18.0 INCH PIPE IS 8.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) = 9.53
ESTIMATED PIPE DIAMETER(INCH) = 18.00
                                                                                                                                                                                                                               615.00 FEET.
                                                                   NUMBER OF PIPES =
  ESTIMATED PLPE DIAGRETALISM, PIPE-FLOW(CFS) = 8.28
PIPE-TRAVEL TIME(MIN.) = 0.06 TC(MIN.) = 14.23
LONGEST FLOWPATH FROM NODE 140.00 TO NODE 138.00 = 1119.54 FEET.
                                                                                                                           FLOW PROCESS FROM NODE 152.00 TO NODE 153.00 IS CODE = 31
                                                                                                                               >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
***********************
                                                                                                                               >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
  FLOW PROCESS FROM NODE 138.00 TO NODE 138.00 IS CODE = 1
                                                                                                                               ______
                                                                                                                              ELEVATION DATA: UPSTREAM(FEET) = 718.50 DOWNSTREAM(FEET) = FLOW LENGTH(FEET) = 624.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 14.2 INCHES
                                                                                                                                                                                                                                   708.00
   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
   >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES << < <
                                                                                                                              PIPE-FLOW VELOCITY(FEET/SEC.) = 9.24
ESTIMATED PIPE DIAMETER(INCH) = 21.00
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                                                                                                NUMBER OF PIPES =
                                                                                                                              PIPE-FLOW(CFS) = 15.94
PIPE TRAVEL TIME(MIN.) = 1.13 Tc(MIN.) = 11.77
LONGEST FLOWPATH FROM NODE 150.00 TO NODE 153.00 =
  CONFIUENCE VALUES USED FOR INDEFENDENT TIME OF CONCENTRATION(MIN.) = 14.23 RAINFALL INTENSITY(INCH/HR) = 4.16 TOTAL STREAM AREA(ACRES) = 4.05
   PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                              FLOW PROCESS FROM NODE 153.00 TO NODE 153.00 IS CODE = 1
   ** CONFLUENCE DATA **
                   RUNOFF
(CFS)
                                    Tc (MIN.)
                                                                                                                               >>>>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) = 6.11
DEAV EIGH PARTE (GES) AT COMPUTENCE = 11.04
                                                (INCH/HOUR)
  NUMBER
                                                                            (ACRE)
                     53 17
                                   12.40
                                                       4 546
                                                                              25.47
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR \ 2\ STREAMS.
                                                                                                                              PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                                              15.94
   ** PEAK FLOW RATE TABLE **
                                                                                                                           *******************
   STREAM
                   RUNOFF
                                       Tc
                                                    INTENSITY
                                   (MIN.)
                                                                                                                              FLOW PROCESS FROM NODE 155.00 TO NODE 156.00 IS CODE = 21
   NUMBER
                     (CFS)
                                                 (INCH/HOUR)
                                 12.40
                                                      4.546
                     60.38
                                                                                                                               >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                     56.92
   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                               *USER SPECIFIED(SUBAREA):
                                                                              12.40
                                                                                                                              RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
   PEAK FLOW RATE(CFS) = 60.3
TOTAL AREA(ACRES) = 29.5
                                             60.38 Tc(MIN.) =
   LONGEST FLOWPATH FROM NODE 120.00 TO NODE 138.00 = 2076.00 FEET.
                                                                                                                              UPSTREAM ELEVATION(FEET) = 732.00
DOWNSTREAM ELEVATION(FEET) = 730.00
ELEVATION DIFFERENCE(FEET) = 2.00
  FLOW PROCESS FROM NODE 138.00 TO NODE 138.00 IS CODE = 10
                                                                                                                              SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.156
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.142
SUBAREA RUNOFF(CFS) = 0.45
TOTAL AREA(ACRES) = 0.12 TOTAL RUNOFF(CFS)
  >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<
                                                                                                                                                                     0.12 TOTAL RUNOFF(CFS) =
  FLOW PROCESS FROM NODE 150.00 TO NODE 151.00 IS CODE = 21
                                                                                                                              FLOW PROCESS FROM NODE 156.00 TO NODE 157.00 IS CODE = 61
```

```
** PEAK FLOW RATE TABLE **
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SURAREACCCC
                                                                                                            STREAM
                                                                                                                         RIINOFF
                                                                                                                                           тс
                                                                                                                                                      INTENSITY
 >>>>(STANDARD CURB SECTION USED)<
                                                                                                                                        (MIN.)
                                                                                                            NUMBER
                                                                                                                           (CFS)
                                                                                                                                                    (INCH/HOUR)
                                                                                                                           85.00
                                                                                                                                         11.86
                                                                                                                                                           4.679
 UPSTREAM ELEVATION(FEET) = 730.00 DOWNSTREAM ELEVATION(FEET) = 713.00 STREET LENGTH(FEET) = 942.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                                 2
                                                                                                                           86.86
                                                                                                                                         12.40
                                                                                                                                                           4.546
                                                                                                            COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                            PEAK FLOW RATE(CFS) = 86.86
TOTAL AREA(ACRES) = 40.3
                                                                                                                                                           Tc(MIN.) = 12.40
  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 138.00 TO NODE 138.00 IS CODE = 12
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
  STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
                                                                                                            >>>>CLEAR MEMORY BANK # 1 <<<<
                                                                                             0.0150
                                                                                                         Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
       TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                           FLOW PROCESS FROM NODE 138.00 TO NODE 158.00 IS CODE = 31
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.39
HALFSTREET FLOOD WIDTH(FEET) = 13.11
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.51
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.36
STREET FLOW TRAVEL TIME(MIN.) = 4.47 Tc(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.022
**UISER SPECIFIED(SURAREA):
                                                                                                            >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                            ELEVATION DATA: UPSTREAM(FEET) = 706.50 DOWNSTREAM(FEET) =
                                                                                                            FLOW LENGTH(FEET) = 302.00 MANNING'S N = 0.
DEPTH OF FLOW IN 33.0 INCH PIPE IS 22.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 20.68
ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER
                                                                                                                                                     MANNING'S N =
  STREET FLOW TRAVEL TIME(MIN.)
                                                                          10.63
                                                                                                                                                                          0.013
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
                                                                                                                                                                   NUMBER OF PIPES = 1
                                                                                                           RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CUTVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.520 SUBAREA RUNOFF(CFS) = 11.78
TOTAL AREA(ACRES) = 4.6 PEAK FLOW RATE(CFS) = 11.78
                                                                                                                                                                                           2378.00 FEET.
 END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.46 HALFSTREET FLOOD WIDTH(FEET) = 16.84
FLOW VELOCITY(FEET/SEC.) = 4.09 DEPTH*VELOCITY(FT*FT/SE
LONGEST FLOWPATH FROM NODE 155.00 TO NODE 157.00 =
                                                                                                           FLOW PROCESS FROM NODE 158.00 TO NODE 158.00 IS CODE = 10
                                                 DEPTH*VELOCITY(FT*FT/SEC.)
                                                                                            1.90
                                                                                                           >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<
                                                                                   1012 00 FFFT
******************
 FLOW PROCESS FROM NODE 157.00 TO NODE 153.00 IS CODE = 1
                                                                                                           FLOW PROCESS FROM NODE 170.00 TO NODE 171.00 IS CODE = 21
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE<
                                                                                                            >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                                                                            *USER SPECIFIED(SUBAREA):
______
                                                                                                           RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 0.22
  TOTAL NUMBER OF STREAMS = 2
 TOTAL NUMBER OF STREAMS = 2 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 10.63
RAINFALL INTENSITY(INCH/HR) = 5.02
TOTAL STREAM AREA(ACRES) = 4.63
                                                                                                            UPSTREAM ELEVATION(FEET) = 798.35
DOWNSTREAM ELEVATION(FEET) = 797.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                            ELEVATION DIFFERENCE(FEET) =
                                                        12.09
                                                                                                                                                          0.70
                                                                                                            SUBAREA OVERLAND TIME OF FLOW(MIN.) = 0.239
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!
  ** CONFLUENCE DATA **
                                                                                                           WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.9, 10 0500 in 10 100 YEAR RAINFALL INTENSITY IN BASED ON TC = 5-MINUTE.

SUBAREA RUNOFF(CFS) = 0.84

TOTAL AREA(ACRES) = 0.21 TOTAL RUNOFF(CFS) = 0.84
  STREAM
               RUNOFF
                                  тс
                                             INTENSITY
                                                                 AREA
                  (CFS)
15.94
                               (MIN.) (INCH/HOUR)
11.77 4.702
                                                                 (ACRE)
  NUMBER
                              11.77
       2
                  12.09
                             10.63
                                                5.022
                                                                    4.63
                                                                                                         ********************
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                           FLOW PROCESS FROM NODE 171.00 TO NODE 172.00 IS CODE = 61
  ** PEAK FLOW RATE TABLE **
                                                                                                            >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
                                                                                                           >>>>COMPOTE SIREET FLOW TRAVEL TIME THRU SUBAREACCCC
>>>>>(SATAMDARD CURB SECTION USED) <<<<>

UPSTREAM ELEVATION(FEET) = 797.00 DOWNSTREAM ELEVATION(FEET) = 734.00
STREET LENGTH(FEET) = 646.00 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00
  STREAM
                RIINOFF
                                TC
                                            INTENSITY
                              (MIN.)
                  (CFS)
  NUMBER
                                          (INCH/HOUR)
                  26.48
                              10.63
                                              5.022
       2
                 27.26
                            11.77
                                               4.702
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) = 27.26 Tc(MIN.) = TOTAL AREA(ACRES) = 10.7 LONGEST FLOWPATH FROM NODE 150.00 TO NODE
                                                                   11.77
                                                                                                           DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                  153.00 = 1239.00 FEET.
.....
                                                                                                            SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 FLOW PROCESS FROM NODE 153.00 TO NODE 138.00 IS CODE = 31
                                                                                                            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 = 0.02
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
                                                                                                                                                                                             0.0200
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
  ELEVATION DATA: UPSTREAM(FEET) = 708.00 DOWNSTREAM(FEET) =
                                                                                                               **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                            **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS):
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.28
HALFSTREET FLOOD WIDTH(FEET) = 7.92
AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.19
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.76
STREET FLOW TRAVEL TIME(MIN.) = 1.74
TC(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
                                                                                        706.50
 ELEVATION DATA: UPSIREAM [FEET] = 70.0.

FLOW LENGTH(FEET] = 64.00 MANNING'S

DEPTH OF FLOW IN 24.0 INCH PIPE IS 16.

PIPE-FLOW VELOCITY(FEET/SEC.) = 11.96

ESTIMATED PIPE DIAMETER(INCH) = 24.00

PIPE-FLOW(CFS) = 27.26

PIPE TRAVEL TIME(MIN.) = 0.09 TC(MI
                                           MANNING'S N = 0.013
                                                    16.4 INCHES
                                                          NUMBER OF PIPES = 1
                                               Tc(MIN.) =
                                                                   11 86
                                                                                                            NOTE: RAINFALL INTENSITY IS BASED ON To = 5-MINUTE.
*USER SPECIFIED(SUBAREA):
                                        150.00 TO NODE
  LONGEST FLOWPATH FROM NODE
                                                                   138.00 = 1303.00 FEET.
                                                                                                            *USER SPECIFIED(SUBAREA):
RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.490
  FLOW PROCESS FROM NODE 138.00 TO NODE 138.00 IS CODE = 11
                                                                                                            SUBAREA AREA(ACRES) = 4.19
TOTAL AREA(ACRES) = 4.4
  >>>>CONFLIENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY
                                                                                                                                                          SUBAREA RUNOFF(CFS) =
                                                                                                                                                               PEAK FLOW RATE(CFS) =
  ** MAIN STREAM CONFLUENCE DATA **
                                                                                                            END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                            END OF SUBAREA STREET FLOW HIDRAULICS.

DEPTH(FEET) = 0.34 HALFSTREET FLOOD WIDTH(FEET) = 10.51

FLOW VELOCITY(FEET/SEC.) = 7.20 DEPTH*VELOCITY(FT*FT/SEC.) :

LONGEST FLOWPATH FROM NODE 170.00 TO NODE 172.00 = 6.
  STREAM
                RUNOFF
                           Tc (MIN.)
                                            INTENSITY
                                         (INCH/HOUR) (ACRE)
  NUMBER
                  (CFS)
                  27.26
                              11.86
                                               4.679
                                                               10.74
                                                                                                                                                                                               646.22 FEET.
  LONGEST FLOWPATH FROM NODE
                                         150.00 TO NODE
                                                                   138.00 =
                                                                                   1303.00 FEET.
  ** MEMORY BANK # 1 CONFLUENCE DATA **
                                                                                                           FLOW PROCESS FROM NODE 172.00 TO NODE 173.00 IS CODE = 31
                RUNOFF
                             Tc (MIN.)
                                            INTENSITY
                                                                                                            >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  NUMBER
                 (CFS)
                                         (INCH/HOUR)
                                                             (ACRE)
                  60.38
                              12.40
                                         4.546
120.00 TO NODE
                                                                                                            >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <---
                                                               29.52
                                                                  138.00 =
  LONGEST FLOWPATH FROM NODE
                                                                                   2076.00 FEET.
                                                                                                         ______
                                                                                                           ELEVATION DATA: UPSTREAM(FEET) = 729.20 DOWNSTREAM(FEET) = 693.00
```

```
FLOW LENGTH(FEET) = 606.00 MANNING'S N = 0.0 DEPTH OF FLOW IN 18.0 INCH PIPE IS 11.1 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 15.34 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
                                606.00 MANNING'S N = 0.013
                                                                                                             STREAM
                                                                                                                           RUNOFF
                                                                                                                                                       INTENSITY
                                                                                                            NUMBER
                                                                                                                             (CFS)
19.94
                                                                                                                                        (MIN.) (INCH/HOUR)
                                                                                                                                        2.64
                                                           NUMBER OF PIPES = 1
                                                                                                                             20.28
  ESTIMATED PAPE DIRECTION. 2007.

PIPE-FLOW(CFS) = 17.61

PIPE TRAVEL TIME(MIN.) = 0.66  Tc(MIN.) = 2.64

LONGEST FLOWPATH FROM NODE  170.00 TO NODE  173.00 = 1252.22 FEET.
                                                                                                             COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                            DEAK FLOW RATE(CFS) = 20.28 Tc(MIN.) = 10.93

TOTAL AREA(ACRES) = 8.2

LONGEST FLOWPATH FROM NODE 170.00 TO NODE 173.00 = 1252.22 FEET.
.....
  FLOW PROCESS FROM NODE 173.00 TO NODE 173.00 IS CODE = 1
                                                                                                             *************************
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                                             FLOW PROCESS FROM NODE 173.00 TO NODE 158.00 IS CODE = 31
_____
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                             >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<>>>
>>>SUSING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<
  CONFIDENCE VALUES GET FOR THE CONCENTRATION (MIN.) = 2.64
RAINFALL INTENSITY (INCH/HR) = 8.17
TOTAL STREAM AREA(ACRES) = 4.40
                                                                                                                                                      = 693.00 DOWNSTREAM(FEET) = MANNING'S N = 0.01?
                                                                                                             ______
                                                                                                             ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                             FLOW LENGTH(FEET) = 60.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 17.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.58
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
ESTIMATED PIPE DIAMELIA LANCH, - L...
PIPE-FLOW(CFS) = 20.28
PIPE TRAVEL TIME(MIN.) = 0.13 Tc(MIN.) = 11.06
LONGEST FLOWPATH FROM NODE 170.00 TO NODE 158.00 =
  FLOW PROCESS FROM NODE 175.00 TO NODE 176.00 IS CODE = 21
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                                                                                                            1312.22 FEET.
                                                                                                          .....
  *USER SPECIFIED(SUBAREA):
                                                                                                            FLOW PROCESS FROM NODE 158.00 TO NODE 158.00 IS CODE = 11
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
                                                                                                             >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY
  UPSTREAM ELEVATION(FEET) = 729.83

DOWNSTREAM ELEVATION(FEET) = 729.15

ELEVATION DIFFERENCE(FEET) = 0.68
                                                                                                          _____
                                                                                                             ** MAIN STREAM CONFLUENCE DATA **
                                                0.68
  ELEVATION DIFFERENCE (FEET) = U.68
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.747
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 68.86
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!
                                                                                                                           RUNOFF
(CFS)
                                                                                                             STREAM
                                                                                                                                                       TNTENSTTV
                                                                                                                                                                          APFA
                                                                                                                                           TC
                                                                                                             NUMBER
                                                                                                                                        (MIN.)
                                                                                                                                                    (INCH/HOUR) (ACRE)
                                                                                                                                                     4.894 8.16
170.00 TO NODE 15
                                                                                                                             20.28
                                                                                                                                          11.06
                                                                                                            LONGEST ELOWDATH FROM NODE
                                                                                                                                                                              158.00 =
                                                                                                                                                                                              1312 22 FFFT
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.694
                                                                                                             ** MEMORY BANK # 1 CONFLUENCE DATA **
                                   0.65
0.22 TOTAL RUNOFF(CFS) =
  SUBAREA RUNOFF(CFS) =
                                                                                                             STREAM
                                                                                                                           RUNOFF
                                                                                                                                        Tc (MIN.)
                                                                                                                                                       INTENSITY
                                                                                                                                                                          AREA
                                                                                                                             (CFS)
  TOTAL AREA(ACRES) =
                                                                                                            NUMBER
                                                                                                                                                     (INCH/HOUR)
                                                                                                                                                                       (ACRE)
                                                                                                                             86.86
                                                                                                                                         12.64
                                                                                                                                                         4.490
                                                                                                                                                                          40.26
*******************
                                                                                                             LONGEST FLOWPATH FROM NODE
                                                                                                                                                     120.00 TO NODE
                                                                                                                                                                           158.00 =
                                                                                                                                                                                             2378.00 FEET.
  FLOW PROCESS FROM NODE 176.00 TO NODE 177.00 IS CODE = 61
                                                                                                             ** PEAK FLOW RATE TABLE **
                                                                                                                        RUNOFF TC INTENSITY
(CFS) (MIN.) (INCH/HOUR)
96.26 11.06 4.894
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
                                                                                                             STREAM
  >>>>(STANDARD CURB SECTION USED) < < < <
                                                                                                            NUMBER
            11.06
  UPSTREAM ELEVATION(FEET) = 729.00 DOWNSTREAM ELEVATION(FEET) = 698.00 STREET LENGTH(FEET) = 571.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                            COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 105.46 Tc(MIN.) = TOTAL AREA(ACRES) = 48.4
                                                                                                                                                            Tc(MIN.) = 12.64
  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 158.00 TO NODE 158.00 IS CODE = 12
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
  SPECIFIED NUMBER OF HALFSIREEIS CARRIING ROMOFF - Z

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
                                                                                                             >>>>CLEAR MEMORY BANK # 1 <<<<
                                                                                                          0.0150
      *TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                   5 21
                                                                                                            FLOW PROCESS FROM NODE 158.00 TO NODE 178.00 IS CODE = 31
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOWICE
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FRET) = 0.26
HALFSTREET FLOOD WIDTH(FEET) = 6.92
                                                                                                            >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<
  STREET FLOW DEPTH(FEET) = 0.26
HALFSTREET FLOOD WIDTH(FEET) = 6.92
AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.36
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.15
STREET FLOW TRAVEL TIME(MIN.) = 2.18 Tc(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.932
                                                                                                            ELEVATION DATA: UPSTREAM(FEET) = 692.50 DOWNST
FLOW LENGTH(FEET) = 449.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 30.0 INCH PIPE IS 23.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 26.17
ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER
                                                                                                                                                            692.50 DOWNSTREAM(FEET) = 656.60
                                                                                                                                                                          0.013
   *USER SPECIFIED(SUBAREA):
  *USER SPECIFIED(SUBARRA):
RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
S.C.S. CURVE NUMBER (AMC II) = 0
ARRA-AVERAGE RUNOFF COEFFICIENT = 0.520
SUBAREA AREA(ACRES) = 3.54 SUBAREA RUNOFF(CFS) = 9.08
TOTAL AREA(ACRES) = 3.8 PEAK FLOW RATE(CFS) =
                                                                                                                                                                   NUMBER OF PIPES =
                                                                                                             PIPE-FLOW(CFS) = 105.46
PIPE TRAVEL TIME(MIN.) = 0
                                                                                                             FIRE-FLOW(CFS) = 105.46

PIPE TRAVEL TIME(MIN.) = 0.29 Tc(MIN.) = 12.93

LONGEST FLOWPATH FROM NODE 120.00 TO NODE 178.00 =
  FLOW PROCESS FROM NODE 178.00 TO NODE 178.00 IS CODE = 1
  DEPTH(FEEL) - 0.31 manestreet FEODE HADINGTON - 1.56
FLOW VELOCITY(FEET/SEC.) = 5.02 DEPTH*VELOCITY(FT*FT/SEC.) = 1.56
LONGEST FLOWPATH FROM NODE 175.00 TO NODE 177.00 = 641.00 FEET.
                                                                                                             >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<-
                                                                                                            TOTAL NUMBER OF STREAMS = 2
*********************
                                                                                                            TOTAL NUMBER OF SIREAUS - 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 12.93

RAINFALL INTENSITY(INCH/HR) = 4.43

TOTAL STREAM AREA(ACRES) = 48.42
  FLOW PROCESS FROM NODE 177.00 TO NODE 173.00 IS CODE = 1
                                                                                                             TOTAL STREAM AREA(ACRES) = 48.42
PEAK FLOW RATE(CFS) AT CONFLUENCE = 105.46
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
*******************************
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                            FLOW PROCESS FROM NODE 180.00 TO NODE 181.00 IS CODE = 21
  CONFIDENCE VALUES GET FOR THE TIME OF CONCENTRATION(MIN.) = 10.93 RAINFALL INTENSITY(INCH/HR) = 4.93 TOTAL STREAM AREA(ACRES) = 3.76
                                                                                                             >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                          PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                            *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) = 670.00
DOWNSTREAM ELEVATION(FEET) = 660.00
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 RUNOFF(CFS) = 0.99
TOTAL AREA(ACRES) = 0.40 TOTAL RUNOFF(CFS) = 0.99
                                                         9.64
                                                                                                             *USER SPECIFIED(SUBAREA):
  ** CONFLUENCE DATA **
                 RUNOFF
(CFS)
  STREAM
                                   TC
                                              INTENSITY
                                                                   AREA
                                                                (ACRE)
  NUMBER
                                (MIN.) (INCH/HOUR)
                  17.61
                                2.64
                                                8.168
                                                                     4.40
                   9.64
                             10.93
                                                 4.932
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
  ** PEAK FLOW RATE TABLE **
```

```
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                           SUBARRA GUERLAND TIME OF FLOW(MIN.) - 6.753
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
SUBARRA RUNOFF(CFS) = 0.56
TOTAL AREA(ACRES) = 0.19 TOTAL RUNOFF(CFS) =
***************
  FLOW PROCESS FROM NODE 181.00 TO NODE 182.00 IS CODE = 31
                                                                                                                                                                                                                0.56
  >>>>COMDITTE DIDE-FLOW TRAVEL TIME THRII SHRAPEA
                                                                                                                        .....
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
_____
                                                                                                                          FLOW PROCESS FROM NODE 186.00 TO NODE 187.00 IS CODE = 61
  ELEVATION DATA: UPSTREAM(FEET) = 660.00 DOWNSTREAM(FEET) = 658.00 FLOW LENGTH(FEET) = 545.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                                           >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                           >>>>(STANDARD CURB SECTION USED) < < < <
                                                                                                                          UPSTREAM ELEVATION(FEET) = 711.00 DOWNSTREAM ELEVATION(FEET) = 656.50

STREET LENGTH(FEET) = 805.00 CURB HEIGHT(INCHES) = 6.0

STREET HALFWIDTH(FEET) = 18.00
  DEPTH OF FLOW IN 18.0 INCH PIPE IS 4.5
PIPE-FLOW VELOCITY(FEET/SEC.) = 2.57
ESTIMATED PIPE DIAMETER(INCH) = 18.00
                                                            4.9 INCHES
                                                                  NUMBER OF PIPES = 1
  PIPE-FLOW(CFS) = 0.99
PIPE TRAVEL TIME(MIN.) = 3.53
                                                     Tc(MIN.) =
                                                                            9.80
  LONGEST FLOWPATH FROM NODE 180.00 TO NODE
                                                                                                                          DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                          182.00 =
                                                                                                645.00 FEET.
*************************
  FLOW PROCESS FROM NODE 181.00 TO NODE 182.00 IS CODE = 81
                                                                                                                           SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                                           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 = 0.02
                                                                                                                                                                                                                                  0.0150
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.291
   *USER SPECIFIED(SUBAREA):
  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
                                                                                                                              **TPANET, TIME COMPITED HIGING ESTIMATED FLOW(CES) -
                                                                                                                              STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                                                              STREET FLOW DEPTH(FEET) = 0.25
                                                                                                                           STREET FLOW DEPTH(FEET) = 0.25
HALFSTREET FLOOD WIDTH(FEET) = 6.16
AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.68
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.17
STREET FLOW TRAVEL TIME (MIN.) = 2.87 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.746
  SUBAREA AREA(ACRES) = 3.3 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 3.7 TOTAL RUNOFF(CFS) =
  TC(MIN.) = 9.80
***********
                                                                                                                           *USER SPECIFIED(SUBAREA):
RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  FLOW PROCESS FROM NODE 182.00 TO NODE 178.00 IS CODE = 1
                                                                                                                           S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.520
SUBAREA AREA(ACRES) = 3.30 SUBARE
TOTAL AREA(ACRES) = 3.5 PEA
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                                                                                                                    PEAK FLOW RATE(CFS) = 8.14
                                                                                                                                                                               SUBAREA RUNOFF(CFS) =
                                                                                                                                                                                                                                8 61
  TOTAL NUMBER OF STREAMS = 2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  CONFLUENCE VALUES USED FOR INDEPENDENT
TIME OF CONCENTRATION(MIN.) = 9.80
RAINFALL INTENSITY(INCH/HR) = 5.29
                                                                                                                           END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                           END OF SUBARBA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 0.29 HALFSTREET FLOOD WIDTH(FEET) = 8.3

FLOW VELOCITY(FEET/SEC.) = 5.31 DEPTH*VELOCITY(FT*FT/S

LONGEST FLOWPATH FROM NODE 185.00 TO NODE 187.00 =
  TOTAL STREAM AREA(ACRES) =
                                                                                                                                                                                DEPTH*VELOCITY(FT*FT/SEC.) =
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                 6.91
                                                                                                                                                                                                                         875.00 FEET.
  ** CONFLUENCE DATA **
                                                                                                                        ****
                                                                                                                          FLOW PROCESS FROM NODE 187.00 TO NODE 183.00 IS CODE = 1
                                                    INTENSITY
                                                                           AREA
  STREAM
                   RUNOFF
  NUMBER
                     (CFS)
                                    (MIN.) (INCH/HOUR)
                                                                         (ACRE)
                                                                                                                             >>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
        2
                     6.91
                                   9.80
                                                      5.291
                                                                              3.73
                                                                                                                           >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES << < <
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                                           TOTAL NUMBER OF STREAMS =
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                           CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                           TIME OF CONCENTRATION(MIN.) = 11.60
RAINFALL INTENSITY(INCH/HR) = 4.75
  ** PEAK FLOW RATE TABLE **
  STREAM
                   RUNOFF
                                     Tc
                                                  INTENSITY
                                                                                                                           TOTAL STREAM AREA(ACRES) =
                                                                                                                                                                           3.49
                                                (INCH/HOUR)
  NUMBER
                     (CFS)
                                  (MIN.)
                                                                                                                           PEAK FLOW RATE(CFS) AT CONFLUENCE
                     86.84
                                    9.80
                                                     5.291
                                                                                                                           ** CONFLUENCE DATA **
                                 12.93
        2
                   111.24
                                                     4.425
                                                                                                                                         RUNOFF
(CFS)
                                                                                                                                                            Tc (MIN.)
                                                                                                                                                                          INTENSITY (INCH/HOUR)
                                                                                                                           STREAM
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                           NUMBER
                                                                                                                                                                                                  (ACRE)
  PEAK FLOW RATE(CFS) = 111.24 Tc(MIN.) = TOTAL AREA(ACRES) = 52.2
                                                                            12 93
                                                                                                                                            111 24
                                                                                                                                                           13 04
                                                                                                                                                                               4 402
                                                                                                                                                                                                     52.15
  PEAK FLOW MATE(UFS) = 111...

TOTAL AREA(ACRES) = 52.2

LONGEST FLOWPATH FROM NODE 120.00 TO NODE
                                                                           178.00 =
                                                                                              2827.00 FEET.
                                                                                                                           RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
.....
                                                                                                                           CONFLUENCE FORMULA USED FOR 2 STREAMS.
  FLOW PROCESS FROM NODE 178.00 TO NODE 183.00 IS CODE = 31
                                                                                                                           ** PEAK FLOW RATE TABLE **
                                                                                                                                           RUNOFF
(CFS)
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                           STREAM
                                                                                                                                                          Tc (MIN.)
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                                                           NUMBER
                                                                                                                                                                        (TNCH/HOUR)
                                                                                                                                                       11.60
                                                                                                                                                                             4.746
                                                                                                                                            111.80
  ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                                                           119.23
                                                         656.60 DOWNSTREAM(FEET) = 652.00
  ELEVATION DATA: UPSTREAM(FEET) = 656.60 DOWNSTREAM(FEET) = FLOW LENGTH(FEET) = 125.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 36.0 INCH PIPE IS 26.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 19.94
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
                                                                                                                          COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 119.23 Tc(MIN.) =
TOTAL AREA(ACRES) = 55.6
                                                                                                                                                                                                    13 04
  PIPE TESTIMATED PIPE DIAMETER(INCH, - - - PIPE-FLOW(CFS) = 111.24

PIPE TRAVEL TIME(MIN.) = 0.10  Tc(MIN.) = 13.04

-- PIPE TRAVEL TIME(MIN.) = 120.00 TO NODE 183.00 = 2952.00 FEET.
                                                                                                                           LONGEST FLOWPATH FROM NODE 120.00 TO NODE 183.00 =
                                                                                                                          FLOW PROCESS FROM NODE 183.00 TO NODE 188.00 IS CODE =
  FLOW PROCESS FROM NODE 183.00 TO NODE 183.00 IS CODE = 1
                                                                                                                           >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                          ELEVATION DATA: UPSTREAM(FEET) = 651.50 DOWNSTREAM(FEET) = 647.50 FLOW LENGTH(FEET) = 97.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 36.0 INCH PIPE IS 26.8 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 21.14 ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<-
  TOTAL NUMBER OF STREAMS = 2
  CONFIJIENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
  CONFIUENCE VALUES USED FOR INDEFENDENT TIME OF CONCENTRATION(MIN.) = 13.04 RAINFALL INTENSITY(INCH/HR) = 4.40 TOTAL STREAM AREA(ACRES) = 52.15
                                                                                                                          ESTIMATED FIFE DIRECTION CONTROL OF THE PROPERTY OF THE PROPER
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                                                                      3049.00 FEET.
      *****************
                                                                                                                        ***************
  FLOW PROCESS FROM NODE 185.00 TO NODE 186.00 IS CODE = 21
                                                                                                                          FLOW PROCESS FROM NODE 188.00 TO NODE 188.00 IS CODE = 10
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
-----
                                                                                                                          >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<
                                                                                                                        _____
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
                                                                                                                         FLOW PROCESS FROM NODE 200.00 TO NODE 201.00 IS CODE = 21
  UPSTREAM ELEVATION(FEET) = 712.55
DOWNSTREAM ELEVATION(FEET) = 711.1
                                                  711.85
                                                                                                                           >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  ELEVATION DIFFERENCE (FEET) =
                                                                                                                                                  .....
```

```
*USER SPECIFIED(SUBAREA):
                                                                                                                      STREET PARKWAY CROSSFALL(DECIMAL) =
                                                                                                                                                                             0.020
  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
                                                                                                                      Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.02
                                                                                                                                                                                                                         0.0150
  INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 250.00

DOWNSTREAM ELEVATION(FEET) = 240.00

ELEVATION DIFFERENCE(FEET) = 10.00
SUBAREA OVERLAND INTME OF FLOW(MIN.) = 6.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TC CALCULATION!
100 YEAR RAINFALL INTERNSITY(INCH/HOUR) = 7.061
                                                                                                                           *TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                         STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                                                      STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH FEET) = 0.23
HALFSTREET FLOOD WIDTH(FEET) = 5.22
AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.11
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.18
STREET FLOW TRAVEL TIME(MIN.) = 3.68 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.627
  SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) =
                                      0.69
0.28 TOTAL RUNOFF(CFS) =
                                                                                                                       *USER SPECIFIED(SUBAREA):
                                                                                                                      *USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
SUBAREA AREA(ACRES) = 2.80 SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 3.0 PEAK FLOW PATE(CFS)
FLOW PROCESS FROM NODE 201.00 TO NODE 202.00 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                                                             3.0
                                                                                                                                                                             PEAK FLOW RATE(CFS) =
                                                                                                                      TOTAL AREA(ACRES) =
______
  ELEVATION DATA: UPSTREAM(FEET) = 740.00 DOWNSTRE, FLOW LENGTH(FEET) = 760.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000 DEPTH OF FLOW IN 18.0 INCH PIPE IS 1.9 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 6.84 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPE-FLOW(CFS) = 0.69 PIPE TRAVEL TIME(MIN.) = 1.85 TC(MIN.) = 8.1
                                                                                                                      END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                      END OF SUBARRA STREET FLOW HIDRAULICS.

DEPTH(FEET) = 0.27 HALFSTREET FLOOD WIDTH(FEET) = 7.04

FLOW VELOCITY(FEET/SEC.) = 5.68 DEPTH*VELOCITY(FT*FT/SEC.)

LONGEST FLOWPATH FROM NODE 205.00 TO NODE 207.00 = 1
                                                                                                                                                                                                               1198.00 FEET.
                                                                                                                   ******************
                                                                NUMBER OF PIPES = 1
                                                                                                                      FLOW PROCESS FROM NODE 207.00 TO NODE 203.00 IS CODE = 1
                                                  Tc(MIN.) =
  PIPE TRAVEL TIME(MIN.) = 1.85 Tc(MIN.) = 8.12
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 202.00 =
                                                                                                                      >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
                                                                                           860.00 FEET.
******************
                                                                                                                     TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  FLOW PROCESS FROM NODE 201.00 TO NODE 202.00 IS CODE = 81
                                                                                                                      TIME OF CONCENTRATION(MIN.) = 8.91
RAINFALL INTENSITY(INCH/HR) = 5.63
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
 *USER SPECIFIED(SUBAREA):

*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) = 3.18 SUBAREA RUNOFF(CFS) = 

TOTAL AREA(ACRES) = 3.5 TOTAL RUNOFF(CFS) =
                                                                                                                      TOTAL STREAM AREA(ACRES) =
                                                                                                                                                                    3.02
                                                                                                                      PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                      ** CONFLUENCE DATA **
                                                                                                                                      RUNOFF
(CFS)
                                                                                                                      STREAM
                                                                                                                                                                      INTENSITY
                                                                                                                                                                                            AREA
                                                                                                                      NUMBER
                                                                                                                                                       (MIN.)
                                                                                                                                                                    (INCH/HOUR)
                                                                                                                                                                                          (ACRE)
                                                                                                                                          7.24
                                                                                                                                                       8.27
                                                                                                                                                                        5.905
                                                                                                                                                                                               3.46
  TC(MIN.) = 8.12
                                                                                                                            2
                                                                                                                                         6.97
                                                                                                                                                       8.91
                                                                                                                                                                         5.627
                                                                                                                      RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  FLOW PROCESS FROM NODE 202.00 TO NODE 203.00 IS CODE = 31
                                                                                                                      CONFLUENCE FORMULA USED FOR
                                                                                                                       ** PEAK FLOW RATE TABLE **
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                                     RUNOFF
(CFS)
                                                                                                                                                                    INTENSITY
                                                                                                                                                      (MIN.)
ELEVATION DATA: UPSTREAM(FEET) = 680.00 DOWNSTREAM(FEET) = 665.00
                                                                                                                      NUMBER
                                                                                                                                                                  (INCH/HOUR)
                                                                                                                                        13 70
                                                                                                                                                      8.27
                                                                                                                                                                       5 905
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                                                        13.86
  DEPTH OF FLOW IN 18.0 INCH PIPE IS 5.6 INCHES PIPE-FLOW VELOCITY (FEET/SEC.) = 15.25 ESTIMATED PIPE DIAMETER (INCH) = 18.00 NUMBER PIPE-FLOW(CFS) = 7.24
                                                                                                                      COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 13.86 Tc(MIN.) =

TOTAL AREA(ACRES) = 6.5
                                                                                                                      TOTAL AREA(ACRES) = 6.5
LONGEST FLOWPATH FROM NODE 205.00 TO NODE 203.00 =
                                                                NUMBER OF PIPES = 1
  ESTIMATED PIPE DIAMETER(INCH) - 10.00 PIPE-FLOW(CFS) = 7.24

PIPE TRAVEL TIME(MIN.) = 0.15 TC(MIN.) = 8.27

LONGEST FLOWPATH FROM NODE 200.00 TO NODE 203.00 =
                                                                                                                         ***************
                                                                                          997.00 FEET.
                                                                                                                      FLOW PROCESS FROM NODE 203.00 TO NODE 208.00 IS CODE = 31
............
                                                                                                                      >>>>COMPILE PIPE-FLOW TRAVEL TIME THRU SUBAREA
  FLOW PROCESS FROM NODE 203.00 TO NODE 203.00 IS CODE = 1
                                                                                                                       >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<-
                                                                                                                      ______
                                                                                                                      ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                                                                                    = 660.00 DOWNSTREAM(FEET) = MANNING'S N = 0.013
                                                                                                                                                                                                                     651.50
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                                      FLOW LENGTH(FEET) = 517.00 MANNING'S N = 0.0 DEPTH OF FLOW IN 21.0 INCH PIPE IS 12.9 INCHES
  CONFIDENCE VALUES USED FOR INSTITUTE OF CONCENTRATION(MIN.) = 8.27
RAINFALL INTENSITY(INCH/HR) = 5.90
TOTAL STREAM AREA(ACRES) = 3.46
                                                                                                                      PIPE-FLOW VELOCITY(FEET/SEC.) = 8.91
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES =
                                                                                                                      PEAK FLOW RATE(CFS) AT CONFLUENCE =
  FLOW PROCESS FROM NODE 205.00 TO NODE 206.00 IS CODE = 21
                                                                                                                      FLOW PROCESS FROM NODE 208.00 TO NODE 208.00 IS CODE = 1
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  *USER SPECIFIED(SUBAREA):
                                                                                                                      >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                                                     TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 9.88
RAINFALL INTENSITY(INCH/HR) = 5.27
TOTAL STREAM AREA(ACRES) = 6.48
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
  UPSTREAM ELEVATION(FEET) = 769.00

DOWNSTREAM ELEVATION(FEET) = 763.50

ELEVATION DIFFERENCE(FEET) = 5.50
  ELEVATION DIFFERENCE(FEET) = 5.50
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.227
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.937
                                                                                                                      PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                                 13.86
                                                                                                                   ******************
                                                                                                                      FLOW PROCESS FROM NODE 210.00 TO NODE 211.00 IS CODE = 21
  SUBAREA RUNOFF(CFS) = 0.72
TOTAL AREA(ACRES) = 0.22 TOTAL RUNOFF(CFS) =
                                                                                                                      >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  FLOW PROCESS FROM NODE 206.00 TO NODE 207.00 IS CODE = 61
                                                                                                                      *USER SPECIFIED(SUBAREA):
                                                                                                                      RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENCTH(FEET) = 70.00 UPSTREAM ELEVATION(FEET) = 662.05 DOWNSTREAM ELEVATION(FEET) = 661.35 ELEVATION DIFFERENCE(FEET) = 0.70
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
>>>>(STANDARD CURB SECTION USED)<
  UPSTREAM ELEVATION(FEET) = 766.00 DOWNSTREAM ELEVATION(FEET) = 665.00 STREET LENGTH(FEET) = 1128.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                                      ELEVATION DIFFERENCE(FEET) = 0.70
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 7.691
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 65.00
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TC CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.187
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                                      SUBAREA RUNOFF(CFS) =
                                                                                                                                                             0.78
```

```
TOTAL AREA(ACRES) =
                                     0.22 TOTAL RUNOFF(CFS) =
                                                                                    0.78
                                                                                                                    >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                                    *USER SPECIFIED(SUBAREA):
  FLOW PROCESS FROM NODE 211.00 TO NODE 212.00 IS CODE = 61
                                                                                                                    RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  >>>>(STANDARD CURB SECTION USED) <>>>
 >>>>(STANDARD CURE SECTION USED)<<<<<

UPSTREAM ELEVATION(FEET) = 660.50 DOWNSTREAM ELEVATION(FEET) = 656.50
STREET LENGTH(FEET) = 362.00 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00
                                                                                                                    UPSTREAM ELEVATION(FEET) = 658.05
DOWNSTREAM ELEVATION(FEET) = 657.35
                                                                                                                     ELEVATION DIFFERENCE(FEET) =
                                                                                                                                                                     0.70
                                                                                                                    ELEVATION DIFFERENCE (FEET) = 0.70
SUBARRA OVERLAND TIME OF FLOW(MIN.) = 7.691
WARNING: INITIAL SUBARRA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 65.00
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 9 00
  UNSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                                     100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.187
SUBAREA RUNOFF(CFS) = 0.35
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) =
 SPECIFIED NUMBER OF HALFSTREETS 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 = 0.02
                                                                                                                    TOTAL AREA(ACRES) =
                                                                                                                                                                                                       0.35
                                                                                                    0.0150
                                                                                                                  FLOW PROCESS FROM NODE 216.00 TO NODE 217.00 IS CODE = 61
 **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = STREETFLOW MODEL RESULTS USING ESTIMATED FLOW: STREET FLOW DEPTH(FEET) = 0.30 HALFSTREET FLOOD WIDTH(FEET) = 8.79 AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.20 PRODUCT OF DEPTHAVELOCITY(FT*FT/SEC.) = 0.67 STREET FLOW TRAVEL TIME(MIN.) = 2.74 Tc(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.083
                                                                                                                     >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
                                                                                                                     >>>>(STANDARD CURB SECTION USED) <---
                                                                                                                    UPSTREAM ELEVATION(FEET) = 656.50 DOWNSTREAM ELEVATION(FEET) = 645.00 STREET LENGTH(FEET) = 597.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
  *USER SPECIFIED(SUBAREA):
RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
                                                                                                                    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 9.00
                                                                                                                    INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.570
SUBAREA AREA(ACRES) = 2.16
SUBAREA RED(ACRES) - 2 4
PEAK FLOW RATE(CFS)
                                                                                                                     SPECIFIED NUMBER OF HALFSTREETS 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
                                       2.4
                                                        PEAK FLOW RATE(CFS) =
  TOTAL AREA(ACRES) =
                                                                                                   6.90
                                                                                                                                                                                                                       0.0150
  END OF SUBAREA STREET FLOW HYDRAULICS:
  END OF SUBARBA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.35 HALFSTREET FLOOD WIDTH(FEET) = 11.21
FLOW VELOCITY(FEET/SEC.) = 2.51 DEPTH*VELOCITY(FT*FT/SEC.) =
LONGEST FLOWPATH FROM NODE 210.00 TO NODE 212.00 = 43
                                                                                                                        **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.29
HALFSTREET FLOW DIDTH(FEET) = 8.33
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.85
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.84
STREET FLOW TRAVEL TIME(MIN.) = 3.49 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.861
                                                                                           432.00 FEET.
******************************
 FLOW PROCESS FROM NODE 212.00 TO NODE 208.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
                                                                                                                     *USER SPECIFIED(SUBAREA):
RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                    S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.570
SUBAREA AREA(ACRES) = 3.06 SUBARE
TOTAL AREA(ACRES) = 3.2 PEA
  CONFIUENCE VALUES USED FOR INDEFENDENT TIME OF CONCENTRATION(MIN.) = 10.43 RAINFALL INTENSITY(INCH/HR) = 5.08 TOTAL STREAM AREA(ACRES) = 2.38
                                                                                                                                                                     SUBAREA RUNOFF(CFS) =
                                                                                                                                                                          PEAK FLOW RATE(CFS) =
                                                                                                                                                                                                                     8.76
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                     END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                    END OF SUBARBA STREET FLOW HIDRAULICS.

DEPTH(FEET) = 0.35 HALFSTREET FLOOD WIDTH(FEET) = 11.01

FLOW VELOCITY(FEET/SEC.) = 3.29 DEPTH*VELOCITY(FT*FT/SI

LONGEST FLOWPATH FROM NODE 215.00 TO NODE 217.00 =
  ** CONFLUENCE DATA **
  СТБЕЛМ
                  RUNOFF
(CFS)
                                                 TNTENSTTY
                                                                       AREA
                                                                                                                                                                       DEPTH*VELOCITY(FT*FT/SEC.) =
                                  (MIN.) (INCH/HOUR)
                                                                                                                                                                                                              667.00 FEET.
  NUMBER
                                                                      (ACRE)
                   13.86
                                  9.88
                                                    5.265
                                                                          6.48
                                                                                                                  ******************
                               10.43
                                                                                                                    FLOW PROCESS FROM NODE 217.00 TO NODE 213.00 IS CODE = 1
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                                     >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
  CONFLUENCE FORMULA USED FOR
                                                                                                                     >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES << < <
  ** PEAK FLOW RATE TABLE **
                                                                                                                    TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  STREAM
                  RUNOFF
                                (MIN.)
  NUMBER
                   (CFS)
                                             (INCH/HOUR)
                                                                                                                    TIME OF CONCENTRATION(MIN.) = 11.18
RAINFALL INTENSITY(INCH/HR) = 4.86
                   20.39
                               9.88
                                                  5.265
5.083
                                                                                                                     TOTAL STREAM AREA(ACRES) =
                                                                                                                                                                  3.16
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                    PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                                 8 76
  PEAK FLOW RATE(CFS) = 20.39 Tc(MIN.) = TOTAL AREA(ACRES) = 8.9
                                                                                                                     ** CONFLUENCE DATA **
  LONGEST FLOWPATH FROM NODE 205.00 TO NODE
                                                                      208.00 = 1715.00 FEET.
                                                                                                                     STREAM
                                                                                                                                    RUNOFF
(CFS)
                                                                                                                                                                    INTENSITY
                                                                                                                                                                                          AREA
                                                                                                                                                     (MIN.)
                                                                                                                    NUMBER
                                                                                                                                                                  (INCH/HOUR)
                                                                                                                                                                                        (ACRE)
********************
                                                                                                                                                 12.10
                                                                                                                                      20.39
                                                                                                                                                                      4.619
                                                                                                                                                                                             8.86
 FLOW PROCESS FROM NODE 208.00 TO NODE 213.00 IS CODE = 31
                                                                                                                                       8.76
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                     RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                                     CONFLUENCE FORMULA USED FOR 2 STREAMS.
-----
 ELEVATION DATA: UPSTREAM(FEET) = 651.50 DOWNSTREAM(FEET) = 650.00 FLOW LENGTH(FEET) = 629.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 33.0 INCH PIPE IS 22.5 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 4.72 ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1
                                                                                                                     ** PEAK FLOW RATE TABLE **
                                                                                                                     STREAM
                                                                                                                                    RUNOFF
(CFS)
                                                                                                                                                      Tc
                                                                                                                                                                  INTENSITY
                                                                                                                                                   (MIN.)
                                                                                                                    NUMBER
                                                                                                                                                                (INCH/HOUR)
                                                                                                                                                  11.18
                                                                                                                                      28.13
28.71
                                                                                                                                                                     4.861
4.619
  FIFE-FLOW(CFS) = 20.39
PIPE TRAVEL TIME(MIN.) = 2
LONGEST PROPERTY
                                                                                                                    COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 28.71 Tc(MIN.) =
TOTAL AREA(ACRES) = 12.0
LONGEST FLOWPATH FROM NODE 205.00 TO NODE
  PIPE TRAVEL TIME(MIN.) = 2.22 Tc(MIN.) = 12.10

LONGEST FLOWPATH FROM NODE 205.00 TO NODE 213.00 =
                                                  Tc(MIN.) =
  FLOW PROCESS FROM NODE 213.00 TO NODE 213.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                                                    FLOW PROCESS FROM NODE 213.00 TO NODE 188.00 IS CODE = 31
TOTAL NUMBER OF STREAMS = 2
                                                                                                                    >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                                     >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
  TIME OF CONCENTRATION(MIN.) = 12.10
RAINFALL INTENSITY(INCH/HR) = 4.62
TOTAL STREAM AREA(ACRES) = 8.86
                                                                                                                  ______
                                                                                                                                                                 = 645.00 DOWNSTREAM(FEET) = 644.00
MANNING'S N = 0.013
                                                                                                                    ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                                    ELEVATION DATA: UPSIREAM(FEE!) = 045.00 DOWNSIREAM(FEE!) = FLOW LENGTH(FEET) = 53.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 18.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.97
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES =
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                            20.39
****************
 FLOW PROCESS FROM NODE 215.00 TO NODE 216.00 IS CODE = 21
                                                                                                                    PIPE-FLOW(CFS) =
                                                                                                                                                   28.71
```

```
0.08 Tc(MIN.) = 12.18
205.00 TO NODE 188.00 = 2397.00 FEET.
 LONGEST FLOWPATH FROM NODE 20
                                                                                         *USER SPECIFIED(SUBAREA):
                                                                                         RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4700 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.4635
                                                                                                                      ... - U.4635
0.91 SUBAREA RUNOFF(CFS) =
1.0 TOTAL DINOT
.....
 FLOW PROCESS FROM NODE 188.00 TO NODE 188.00 IS CODE = 11
                                                                                         SUBAREA AREA(ACRES) = 0.91
                                                                                                                                                         2.12
                                                                                                                             TOTAL RUNOFF(CFS) =
                                                                                         TOTAL AREA(ACRES) =
                                                                                         TC(MIN.) = 10.81
 >>>>CONFIJIENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<
                                                                                       .....
                                                                                         FLOW PROCESS FROM NODE 222.00 TO NODE 218.00 IS CODE = 31
  ** MAIN STREAM CONFIDENCE DATA **
                        Tc (MIN.)
                                    TNTFNSTTV
  STREAM
             RUNOFF
                                                    APFA
               (CFS)
                                                                                         >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  NUMBER
                                  (INCH/HOUR) (ACRE)
               28 71
                         12 18
                                       4 600
                                                    12.02
                                                                                         >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
                                                                                                      LONGEST FLOWPATH FROM NODE
                                   205.00 TO NODE
                                                       188.00 =
                                                                     2397.00 FEET.
                                                                                         ELEVATION DATA: UPSTREAM(FEET) =
                                                                                         ELEVATION DATA: OPSTREAM (FEET) = 647.00 DOWNSTREAM FLOW ILLINGTH (FEET) = 83.00 MAINING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000 DEPTH OF FLOW IN 18.0 INCH PIPE IS 3.2 INCHES PIPE-FLOW VELOCITY (FEET/SEC.) = 10.97 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF
  ** MEMORY BANK # 1 CONFLUENCE DATA **
                                     INTENSITY
                        Tc (MIN.)
                                                    AREA
                                   (INCH/HOUR)
 NUMBER
               (CFS)
                                                  (ACRE)
             119 23
                         13.11
                                       4.386
                                                    55.64
  LONGEST FLOWPATH FROM NODE
                                   120.00 TO NODE
                                                       188.00 =
                                                                     3049.00 FEET.
                                                                                                                                        NUMBER OF PIPES = 1
                                                                                         PIPE TRAVEL TIME(MIN.) = 0
                                                                                         PIPE TRAVEL TIME(MIN.) = 0.13 Tc(MIN.) = LONGEST FLOWPATH FROM NODE 220.00 TO NODE
                                                                                                                                Tc(MTN.) = 10.94
  ** PEAK FLOW RATE TABLE **
            RUNOFF
(CFS)
                                                                                                                                             218.00 =
  STREAM
                                     INTENSITY
                                                                                                                                                             376.00 FEET.
                      (MIN.)
  NUMBER
                                   (INCH/HOUR)
                                                                                       .....
                        12.18
                                        4.600
             139 46
                                                                                         FLOW PROCESS FROM NODE 218.00 TO NODE 218.00 IS CODE = 1
             146.61
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 146.61 Tc(MIN.) =
                                                                                         >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
                                                      13.11
                                        Tc(MIN.) =
                           67.7
  TOTAL AREA(ACRES) =
                                                                                       ______
                                                                                         TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                         TIME OF CONCENTRATION(MIN.) = 10.94
RAINFALL INTENSITY(INCH/HR) = 4.93
 FLOW PROCESS FROM NODE 188.00 TO NODE 188.00 IS CODE = 12
  >>>>CLEAR MEMORY BANK # 1 <<<<
                                                                                         TOTAL STREAM AREA(ACRES) =
                                                                                                                            1.02
                                                                                         PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                       2 35
                                                                                         ** CONFLUENCE DATA **
                                                                                                     RUNOFF
(CFS)
 FLOW PROCESS FROM NODE 188.00 TO NODE 218.00 IS CODE = 31
                                                                                         STREAM
                                                                                                                             INTENSITY
                                                                                                                                              AREA
                                                                                         NUMBER
                                                                                                                 (MIN.)
                                                                                                                           (INCH/HOUR)
                                                                                                                                            (ACRE)
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                     146.61
                                                                                                                13.28
                                                                                                                               4.350
                                                                                                                                               67.66
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <--
                                                                                             2
                                                                                                      2.35
                                                                                                              10.94
                                                                                                                               4.929
______
 ELEVATION DATA: UPSTREAM(FEET) = 650.00 DOWNSTREAM(FEET) = FLOW LENGTH(FEET) = 240.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 39.0 INCH PIPE IS 26.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 24.18
ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER OF PIPES = 1
                                                                        638.00
                                                                                         RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                         CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                         ** PEAK FLOW RATE TABLE **
                                                                                                     RUNOFF
                                                                                                                            INTENSITY
                                                                                                                 (MIN.)
                                                                                                      (CFS)
  PIPE-FLOW(CFS) = 146.61
PIPE TRAVEL TIME(MIN.) = (
  NUMBER
                                                                                                                          (INCH/HOUR)
                                                                                                     123 15
                                                                                                                10.94
                                                                                                                              4.929
                                 120.00 TO NODE
                                                                                                     148.68
                                                                                                                13.28
*************************
                                                                                         COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 148.68 Tc(MIN.) =

TOTAL AREA(ACRES) = 68.7
 FLOW PROCESS FROM NODE 218.00 TO NODE 218.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<-
                                                                                         LONGEST FLOWPATH FROM NODE 120.00 TO NODE 218.00 =
-----
 TOTAL NUMBER OF STREAMS = 2
 TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 13.28
RAINFALL INTENSITY(INCH/HR) = 4.35
TOTAL STREAM AREA(ACRES) = 67.66
                                                                                         FLOW PROCESS FROM NODE 218.00 TO NODE 223.00 IS CODE = 31
                                                                                         >>>>COMPILE PIPE-FLOW TRAVEL TIME THRU SUBAREA
 TOTAL STREAM AREA(ACRES) = 67.66
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                         >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>
                                            146.61
                                                                                        ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                                           = 638.00 DOWNSTREAM(FEET) = MANNING'S N = 0.013
                                                                                                                                                                628.00
                                                                                         FLOW LENGTH(FEET) = 175.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 36.0 INCH PIPE IS 28.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 25.03
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER
FLOW PROCESS FROM NODE 220.00 TO NODE 221.00 IS CODE = 21
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                                                       NUMBER OF PIPES =
                                                                                         PIPE-FLOW(CFS) = 148.68
PIPE TRAVEL TIME(MIN.) = 0.12 Tc(MIN.) = 13.39
LONGEST FLOWPATH FROM NODE 120.00 TO NODE 223.00 =
______
  *USER SPECIFIED(SUBAREA):
 OSDA SPALIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
  INITIAL SUBAREA FLOW-LENGTH(FEET)
 UPSTREAM ELEVATION(FEET) = 653.00
DOWNSTREAM ELEVATION(FEET) = 652.00
                                                                                         FLOW PROCESS FROM NODE 223.00 TO NODE 223.00 IS CODE = 1
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                         >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                       TOTAL NUMBER OF STREAMS = 2
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.502
SUBAREA RUNOFF(CFS) = 0.25
TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF(CFS) =
                                                                                         TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 13.39
RAINFALL INTENSITY(INCH/HR) = 4.33
TOTAL STREAM AREA(ACRES) = 68.68
                                                                 0.25
*****************
 FLOW PROCESS FROM NODE 221.00 TO NODE 222.00 IS CODE = 31
                                                                                         PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                    148.68
                                                                                       ******************
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
                                                                                         FLOW PROCESS FROM NODE 225.00 TO NODE 226.00 IS CODE = 21
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<---
  ELEVATION DATA: UPSTREAM(FEET) =
                                         652.00 DOWNSTREAM(FEET) = 650.00
                                                                                         >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
 FLOW LENGTH(FEET) = 223.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                         _____
                                                                                         *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 URCTPERM BIPLATION(FEET) = 650.00
  DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.0 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 2.34
  ESTIMATED PIPE DIAMETER(INCH) = 18.00
                                                NUMBER OF PIPES = 1
                                                                                         UPSTREAM ELEVATION(FEET) = 650.00
DOWNSTREAM ELEVATION(FEET) = 640.00
ELEVATION DIFFERENCE(FEET) = 10.00
  PIPE-FLOW(CFS) = 0.25
PIPE TRAVEL TIME(MIN.) = 1
                                      Tc(MIN.) = 10.81
 PIPE TRAVEL TIME(MIN.) = 1.59 Tc(MIN.) = 10.81
LONGEST FLOWPATH FROM NODE 220.00 TO NODE 222.00 =
                                                                     293.00 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
 FLOW PROCESS FROM NODE 221.00 TO NODE 222.00 IS CODE = 81
                                                                                         SUBAREA RUNOFF(CFS) = 0.59
TOTAL AREA(ACRES) = 0.24 TOTAL RUNOFF(CFS) =
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                    .....
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.966
```

```
227.00 IS CODE = 31
  FLOW PROCESS FROM NODE
                                      226.00 TO NODE
                                                                                                                 *HISER SPECIFIED(SHEAREA):
                                                                                                                 RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700 S.C.S. CURVE NUMBER (AMC II) = 0
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
   ELEVATION DATA: UPSTREAM(FEET) = 640.00 DOWNSTREAM
                                                                                                                  INITIAL SUBAREA FLOW-LENGTH(FEET) =
                                                                                                                 INITIAL SUBAREA FLOW-LENGIH(FEEI) -
UPSTREAM ELEVATION(FEET) = 660.00
DOWNSTREAM ELEVATION(FEET) = 650.00
  ELEVATION DATA: UPSTREAM(FEET) =
                                                              DOWNSTREAM(FEET) = 630.00
 ELEVATION DATA: UPSTREAM(FEET) = 640.00 DOWNSTREAM(FEET) = 630.00 FLOW LENGTH(FEET) = 1078.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000 DEPTH OF FLOW IN 18.0 INCH PIPE IS 3.0 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 3.07 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1 PIPE-FLOW(CFS) = 0.59 PIPE TRAVEL TIME(MIN.) = 5.85 TC(MIN.) = 12.12 LONGEST FLOWPATH FROM NODE 225.00 TO NODE 227.00 = 1178.00 FEET.
                                                                                                                  ELEVATION DIFFERENCE(FEET) = 10.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                 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 TO = 5-MINUTE.
                                                                                                                 NULE: RAINFALL INTENSITY TO DESCRIPTION OF TOTAL AREA(ACRES) = 0.17 TOTAL RUNOFF(CFS) =
 FLOW PROCESS FROM NODE 226.00 TO NODE 227.00 IS CODE = 81
                                                                                                                 FLOW PROCESS FROM NODE 241.00 TO NODE 242.00 IS CODE = 61
                                                                                                                 >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
   100 YEAR RAINFALL INTENSITY (INCH/HOUR) = 4.615
                                                                                                                 UPSTREAM ELEVATION(FEET) = 650.00 DOWNSTREAM ELEVATION(FEET) = 633.00 STREET LENGTH(FEET) = 506.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
  *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) = 1.48
SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 1.7
TOTAL RUNOFF(CFS) =
                                                                                                                 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                      2.78
  TC(MIN.) =
******************
                                                                                                                  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                                 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb)
 FLOW PROCESS FROM NODE 227.00 TO NODE 223.00 IS CODE = 31
                                                                                                                                                                                                                 0.0150
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                                                                                                       0.0200
                                                                                                                  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =
______
                                                                                                                      *TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
  ELEVATION DATA: UPSTREAM(FEET) = 628.00 DOWNSTREAM(FEET) = 627.00 FLOW LENGTH(FEET) = 42.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                                    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.28
HALFSTREET FLOOD WIDTH(FEET) = 7.56
                                                                                                                 HALFSTREET FLOOD WIDTH(FEET) = 7.56
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.59
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.00
STREET FLOW TRAVEL TIME(MIN.) = 2.35 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.222
*USER SPECIFIED(SUBAREA):
  DEPTH OF FLOW IN 18.0 INCH PIPE IS 5.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.74
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                                                                                                                                                                6.05
  PIPE-FLOW(CFS) = 2.78
PIPE TRAVEL TIME(MIN.) =
                                      78

0.10 Tc(MIN.) = 12.22

E 225.00 TO NODE 223.00 = 1220.00 FEET.
                                                                                                                 "USER SPECIFIED(SUBAREA):
RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.570
SUBAREA AREA(ACRES) = 2.02
SUBAREA RAEA(ACRES) = 2.02
TOTAL AREA(ACRES) = 2.2
PEAK FLOW RATE(CFS):
  LONGEST FLOWPATH FROM NODE
FLOW PROCESS FROM NODE 223.00 TO NODE 223.00 IS CODE = 1
                                                                                                                                                                       PEAK FLOW RATE(CFS) =
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<<
                                                                                                                 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                                                                                                   DEPTH*VELOCITY(FT*FT/SEC.) =
  TOTAL NUMBER OF STREAMS =
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 12.22
RAINFALL INTENSITY(INCH/HR) = 4.59
                                                                                                                                                                                                         576.00 FEET.
  TOTAL STREAM AREA(ACRES) = 1.72
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                 FLOW PROCESS FROM NODE 242.00 TO NODE 229.00 IS CODE = 1
                                                            2.78
                                                                                                                 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
                                                                                                                 TOTAL NUMBER OF STREAMS = 2
  ** CONFIGUENCE DATA **
                                    Tc
                                                INTENSITY
  STREAM
                                                                     AREA
                RUNOFF
  NUMBER
                   (CES)
                                 (MIN.)
                                             (INCH/HOUR)
                                                                    (ACRE)
                                                                                                                  CONFIDENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                                 CONFLUENCE VALUES USED FOR INDEPENDENT
TIME OF CONCENTRATION(MIN.) = 6.05
RAINFALL INTENSITY(INCH/HR) = 7.22
TOTAL STREAM AREA(ACRES) = 2.19
                              13.39
12.22
                    2.78
                                                  4.589
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                 FLOW PROCESS FROM NODE 229.00 TO NODE 243.00 IS CODE = 31
  STREAM
                RUNOFF
                                  Tc
                                               INTENSITY
                             (MIN.)
                 (CFS)
142.92
                                                                                                                 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>
>>>SUSING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<>>>
  NIIMBER
                                            (INCH/HOUR)
                                12.22
       2
                 151.30
                              13.39
                                                 4.326
                                                                                                               ______
                                                                                                                 ELEVATION DATA: UPSTREAM(FEET) = 627.50 DOWNSTREAM(FEET) = 623.50 FLOW LENGTH(FEET) = 404.00 MANNING'S N = 0.013
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                 FLOW LENGTH(FEET) = 404.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 13.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.51
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
  PEAK FLOW RATE(CFS) = 151.30 Tc(MIN.) = TOTAL AREA(ACRES) = 70.4 LONGEST FLOWPATH FROM NODE 120.00 TO NODE
                                                                      13.39
                                                                      223.00 = 3464.00 FEET.
                                                                                                                 ESTIMATED FIFE DIAMETERS LANGE, 9.01
PIPE-FLOW(CFS) = 9.01
PIPE TRAVEL TIME(MIN.) = 1.03 Tc(MIN.) = LONGEST FLOWPATH FROM NODE 225.00 TO NODE
  FLOW PROCESS FROM NODE 223.00 TO NODE 228.00 IS CODE = 31
                                                                                                                                                                                    243.00 =
                                                                                                                                                                                                      1624.00 FEET.
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                 FLOW PROCESS FROM NODE 243.00 TO NODE 243.00 IS CODE = 1
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
        YATION DATA: UPSTREAM(FEET) = 630.00
  ELEVATION DATA: UPSTREAM(FEET) =
                                                              DOWNSTREAM(FEET) =
                                                                                                                  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
 ELEVATION DATA: UPSTREAM(FEET) = 630.00 DOWNSTREAM(FEET FLOW LENGTH(FEET) = 145.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 36.0 INCH PIPE IS 27.2 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 26.42

ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES

PIPE-FLOW(CFS) = 151.30

PIPE TRAVEL TIME(MIN.) = 0.09 Tc(MIN.) = 13.49

LONGEST FLOWPATH FROM NODE 120.00 TO NODE 228.00 =
                                                                                                                 TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                                 NUMBER OF PIPES = 1
                                                                                                                 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                     3609.00 FEET.
                                                                                                                                                                           9.01
                                                                                                                 .....
 FLOW PROCESS FROM NODE 228.00 TO NODE 228.00 IS CODE = 10
                                                                                                                 FLOW PROCESS FROM NODE 245.00 TO NODE 246.00 IS CODE = 21
  >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
                                                                                                                  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                                  *USER SPECIFIED(SUBAREA):
                                                                                                                 RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
                                                                                                                 S.C.S. CURVE NUMBER (AMC II) = (INITIAL SUBAREA FLOW-LENGTH(FEET)
  FLOW PROCESS FROM NODE 240.00 TO NODE 241.00 IS CODE = 21
                                                                                                                                                                        70.00
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                                 UPSTREAM ELEVATION(FEET) = 634.05
```

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DOWNSTREAM ELEVATION(FEET) = 633.35
ELEVATION DIFFERENCE(FEET) = 0.70
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 7.691
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 65.00
(Reference: Table 3-1B of Hydrology Manual)
                                                                                                                    TOTAL NUMBER OF STREAMS = 2
                                                                                                                    CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 8.09
RAINFALL INTENSITY(INCH/HR) = 5.99
                                                                                                                    TOTAL STREAM AREA(ACRES) =
                                                                                                                                                                 4 30
                                                                                                                    PEAK FLOW RATE(CFS) AT CONFLUENCE =
               THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!
                                                                                                                 .....
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.187
SUBAREA RUNOFF(CFS) = 0.35
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) =
                                                                                                                   FLOW PROCESS FROM NODE 250.00 TO NODE 251.00 IS CODE = 21
                                                                                                                    >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  FLOW PROCESS FROM NODE 246.00 TO NODE 247.00 IS CODE = 61
                                                                                                                    *HISER SPECIFIED(SHEAREA):
                                                                                                                    "SEES SPECIFIED(SUBAREA).
RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
  UPSTREAM ELEVATION(FEET) = 630.15
DOWNSTREAM ELEVATION(FEET) = 629.45
                                                                                                                   DOWNSTREAM ELEVATION(FEET) = 629.45

ELEVATION DIFFERENCE(FEET) = 0.70

SUBARBA OVERLAND TIME OF FLOW(MIN.) = 7.691

WARNING: INITIAL SUBARBA FLOW PATH LENGTH IS GREATER THAN

THE MAXIMUM OVERLAND FLOW LENGTH = 65.00

(Reference: Table 3-1B of Hydrology Manual)

THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TC CALCULATION!
  STREET LENGTH(FEET) = 388.00
STREET HALFWIDTH(FEET) = 18.00
                                                 CURB HEIGHT(INCHES) = 6.0
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                                   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.187
SUBAREA RUNOFF(CFS) = 0.35
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) =
  SPECIFIED NUMBER OF HALFSTREETS 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 = 0.02
                                                                                                                   FLOW PROCESS FROM NODE 251.00 TO NODE 252.00 IS CODE = 61
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                                                    >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH FEET) = 0.29
HALFSTREET FLOW DIDTH(FEET) = 8.15
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.05
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.59
STREET FLOW TRAVEL TIME(MIN.) = 3.15 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.958
                                                                                                                   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.958
*USER SPECIFIED(SUBAREA):
RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.570
SUBAREA AREA(ACRES) = 2.01 SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 2.1 PEAK FLOW RATE(CFS) =
                                                                                                                   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 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) = Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.02
                                                        PEAK FLOW RATE(CFS) =
                                                                                                                                                                                                           0.0200
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34 HALFSTREET FLOOD WIDTH(FEET) = 10.72
FLOW VELOCITY(FEET/SEC.) = 2.35 DEPTH*VELOCITY(FT*FT/SEC.) =
LONGEST FLOWPATH FROM NODE 245.00 TO NODE 247.00 = 45
                                                                                                                       **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                       STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                           458.00 FEET.
                                                                                                                    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.30

HALFSTREET FLOOD WIDTH(FEET) = 8.62

AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.13

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.64

STREET FLOW TRAVEL TIME(MIN.) = 3.32 TC(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.908
............
  FLOW PROCESS FROM NODE 247.00 TO NODE 243.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                                                                                    *USER SPECIFIED(SUBAREA):
                                                                                                                    RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
                                                                                                                   RESIDENTIAL (7.3 DUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.570
SUBAREA AREA(ACRES) = 2.35
SUBAREA
TOTAL AREA(ACRES) = 2.4
PEA
  CONFIDENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  TIME OF CONCENTRATION(MIN.) = 10.84
RAINFALL INTENSITY(INCH/HR) = 4.96
                                                                                                                                                                     SUBAREA RUNOFF(CFS) =
                                                                                                                                                                          PEAK FLOW RATE(CFS) =
  TOTAL STREAM AREA(ACRES) =
                                               2 11
  PEAK FLOW RATE(CFS) AT CONFLUENCE
                                                                                                                    END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                    DEPTH(FEET) = 0.35 HALFSTREET FLOOD WIDTH(FEET) = 11.29
FLOW VELOCITY(FEET/SEC.) = 2.46 DEPTH*VELOCITY(FT*FT/SEC.)
LONGEST FLOWPATH FROM NODE 250.00 TO NODE 252.00 =
  ** CONFIGUENCE DATA **
                  RUNOFF
(CFS)
                                                 INTENSITY
                                 (MIN.)
  NUMBER
                                              (INCH/HOUR)
                                                                      (ACRE)
                                                                                                                                                                                                             495.00 FEET.
                    9.01
                              7.09
                                                   6.523
                                                                          2.19
                                                    4.958
                                                                                                                 FLOW PROCESS FROM NODE 252.00 TO NODE 248.00 IS CODE = 1
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                    >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <--
                                                                                                                    >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                                                                                   TOTAL NUMBER OF STREAMS = 2
  ** PEAK FLOW RATE TABLE **
  STREAM
                  RUNOFF
                                   Tc
                                                INTENSITY
                                (MIN.)
                                                                                                                   TOTAL NOMBER OF STREAMS - 2 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 11.01
RAINFALL INTENSITY(INCH/HR) = 4.91
                   (CFS)
12.91
  NUMBER
                                             (INCH/HOUR)
                                7.09
                    12.82
                                                                                                                    TOTAL STREAM AREA(ACRES) =
                                                                                                                                                                 2 45
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                    PEAK FLOW RATE(CFS) AT CONFLUENCE =
  PEAK FLOW RATE(CFS) = 12.91 Tc(MIN.) = 7.09
TOTAL AREA(ACRES) = 4.3
LONGEST FLOWPATH FROM NODE 240.00 TO NODE 243.00 =
                                                                                                                    ** CONFLUENCE DATA **
                                                                                                                                                                   INTENSITY
                                                                                                                    STREAM
                                                                                                                                   RUNOFF
(CFS)
                                                                                                                                                                                         AREA
                                                                                                                    NUMBER
                                                                                                                                                    (MIN.)
                                                                                                                                                                 (INCH/HOUR)
                                                                                                                                                                                       (ACRE)
                                                                                                                                     12.91
                                                                                                                                                 8.09
11.01
                                                                                                                                                                     5.988
4.908
  FLOW PROCESS FROM NODE 243.00 TO NODE
                                                                 248.00 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR \ \ 2 STREAMS.
ELEVATION DATA: UPSTREAM(FEET) = 623.50 DOWNSTREAM(FEET) = 619.00
  ** PEAK FLOW RATE TABLE **
                                                                                                                                   RUNOFF
(CFS)
17.95
                                                                     0.013
                                                                                                                    STREAM
                                                                                                                                                     Tc
                                                                                                                                                                 INTENSITY
                                                                                                                                                  (MIN.)
                                                                                                                    NUMBER
                                                                                                                                                               (INCH/HOUR)
  PIPE-FLOW VELOCITY(FEET/SEC.) = 7.27
ESTIMATED PIPE DIAMETER(INCH) = 21.00
                                                                                                                                                    8.09
                                                               NUMBER OF PIPES = 1
                                                                                                                                                 11.01
                                                                                                                                     17.44
  PIPE-FLOW(CFS) = 12.91

PIPE TRAVEL TIME(MIN.) = 1.00 Tc(MIN.) = LONGEST FLOWPATH FROM NODE 240.00 TO NODE
                                                                                                                    COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                          240.00 TO NODE
                                                                       248.00 =
                                                                                                                    PEAK FLOW RATE(CFS) = 17.95 Tc(MIN.) = TOTAL AREA(ACRES) = 6.8
                                                                                        1014.00 FEET.
                                                                                                                                                                                           8.09
......
                                                                                                                    LONGEST FLOWPATH FROM NODE
  FLOW PROCESS FROM NODE 248.00 TO NODE 248.00 IS CODE = 1
                                                                                                                   FLOW PROCESS FROM NODE 248.00 TO NODE 228.00 IS CODE = 31
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<<
```

```
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                              DEPTH OF FLOW IN 18.0 INCH PIPE IS
                                                                                                                                           2.9 INCHES
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << < <
                                                                                              PIPE-FLOW VELOCITY(FEET/SEC.) = 3.11
ESTIMATED PIPE DIAMETER(INCH) = 18.00
  ELEVATION DATA: UPSTREAM(FEET) = 618.00 DOWNSTREAM(FEET) = 617.00
                                                                                              PIPE TRAVEL TIME(MIN.) = 4
  ELEVATION DATA: UPSTREAM(ITEL),
FLOW LENGTH(FEET) = 57.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 21.0 INCH PIPE IS 15.3 INCHES
                                                                                                                                        Tc(MIN.) = 12.23
                                      MANNING'S N = 0.013
                                                                                                                             4.95
                                                                                              LONGEST FLOWPATH FROM NODE 255.00 TO NODE 257.00 =
  DEFIN OF FLOW IN 21.0 INCH FIFE IS 13.
PIPEF-FLOW VELOCITY (PEET/SEC.) = 9.59
ESTIMATED PIPE DIAMETER (INCH) = 21.00
PIPEF-FLOW (CFS) = 17.95
PIPE TRAVEL TIME (MIN.) = 0.10 TC (MI
                                                                                            .....
                                                   NUMBER OF PIPES = 1
                                                                                              FLOW PROCESS FROM NODE 256.00 TO NODE 257.00 IS CODE = 81
                                        Tc(MIN.) =
                                                            8 19
  LONGEST FLOWPATH FROM NODE 240.00 TO NODE
                                                                                              >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                         228.00 = 1071.00 FEET.
                                                                                                 .....
                                                                                               100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.588
                                                                                              TOO ISAN RAINFAILD INTENSITY (NORTH FORCE) = 7.300
**USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  FLOW PROCESS FROM NODE 228.00 TO NODE 228.00 IS CODE = 11
                                                                                              RESIDENTIAL (1. DU/AC OR LESS) RUNGER COLLISION
S.C.S. CURVE NUMBER (AMC II) = 0
ARRA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) = 10.46 SUBAREA RUNOFF(CFS) = 16.80
TOTAL AREA(ACRES) = 10.7 TOTAL RUNOFF(CFS) = 17.2
  >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<
  ** MAIN STREAM CONFLUENCE DATA **
              RUNOFF
                                       INTENSITY
                                                                                              TC(MIN.) =
                          (MIN.)
                                     (INCH/HOUR)
  NUMBER
                (CFS)
                                                     (ACRE)
                17 95
                                         5 942
  LONGEST FLOWPATH FROM NODE
                                     240.00 TO NODE
                                                           228.00 =
                                                                         1071.00 FEET.
                                                                                              FLOW PROCESS FROM NODE 257.00 TO NODE 253.00 IS CODE = 31
  ** MEMORY BANK # 1 CONFLUENCE DATA **
                                                                                              >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                              >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
  STREAM
              RUNOFF
                                       INTENSITY
                             Tc
                          (MTN.)
                                                                                              ELEVATION DATA: UPSTREAM(FEET) = 605.00 DOWNSTREAM(FEET) = 604.00 FLOW LENGTH(FEET) = 80.00 MANNING'S N = 0.013
  NUMBER
                (CFS)
                                     (INCH/HOUR)
                                                     (ACRE)
                                                       70.40
  LONGEST FLOWPATH FROM NODE
                                     120.00 TO NODE
                                                          228.00 =
                                                                         3609.00 FEET.
                                                                                              FLOW LENGTH(FEET) = 80.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 21.0 INCH PIPE IS 17.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.18
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER
  ** PEAK FLOW RATE TABLE **
                                                                                                                                                NUMBER OF PIPES = 1
                                       INTENSITY
  STREAM
             RUNOFF
                                                                                              ESTIMATED FIFE DIAMETERS ATOM,
PIPE-FLOW(CFS) = 17.21
PIPE TRAVEL TIME(MIN.) = 0.16 Tc(MIN.) = 12.39
LONGEST FLOWPATH FROM NODE 255.00 TO NODE 253.00 =
  MIIMBED
              (CFS)
                          (MIN.)
                                     (INCH/HOUR)
                         13.49
      2
             164.31
                                           4.307
                                                                                                                                                                   1103.00 FEET.
                                                                                            COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                              FLOW PROCESS FROM NODE 253.00 TO NODE 253.00 IS CODE = 1
  PEAK FLOW RATE(CFS) = 164.31
TOTAL AREA(ACRES) = 77.2
                                           Tc(MIN.) =
                                                          13.49
                                                                                               >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <--
                                                                                              >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                                                              TOTAL NUMBER OF STREAMS = 2
 FLOW PROCESS FROM NODE 228.00 TO NODE 228.00 IS CODE = 12
  >>>>CLEAR MEMORY BANK # 1 <<<<<
                                                                                              CONFIJIENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                              CONFLUENCE VALUES USED FOR INDEX ENTER TIME OF CONCENTRATION(MIN.) = 12.39 RAINFALL INTENSITY(INCH/HR) = 4.55
                                                                                              PEAK FLOW RATE(CFS) AT CONFLUENCE =
  FLOW PROCESS FROM NODE 228.00 TO NODE 253.00 IS CODE = 31
                                                                                               ** CONFLUENCE DATA **
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
                                                                                                         RUNOFF
(CFS)
                                                                                                                                    INTENSITY
______
                                                                                              NUMBER
                                                                                                                        (MIN.)
                                                                                                                                   (INCH/HOUR)
                                                                                                                                                    (ACRE)
                                                                                                                                      4.254
  ELEVATION DATA: UPSTREAM(FEET) = 625.70 DOWNSTREAM(FEET) = 608.00 FLOW LENGTH(FEET) = 377.00 MANNING'S N = 0.013
                                                                                                           164.31
17.21
                                                                                                                      13.75
                                                                                                                                                       77.15
 ELEVATION DATA: UPSTREAM (FEET) = 625.70 DOWNS:
FLOW LENGTH(FEET) = 377.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 39.0 INCH PIPE IS 30.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 23.90
ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER
                                                                                                                                                       10.72
                                                                                              RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                              CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                  NUMBER OF PIPES = 1
  ESTIMATED FIRE DIAMETER (INCH) - 5.000 | PIPE-FLOW(CFS) = 164.31 | PIPE TRAVEL TIME(MIN.) = 0.26 | Tc(MIN.) = LONGEST FLOWPATH FROM NODE 120.00 TO NODE
                                                                                              ** PEAK FLOW RATE TABLE **
                                                          253.00 = 3986.00 FEET.
                                                                                                                                   INTENSITY
                                                                                              STREAM
                                                                                                          RUNOFF
                                                                                                                         Tc
                                                                                                                       (MIN.)
                                                                                              NUMBER
                                                                                                            (CES)
                                                                                                                                 (INCH/HOUR)
                                                                                                                     12.39
13.75
  FLOW PROCESS FROM NODE 253.00 TO NODE 253.00 IS CODE = 1
                                                                                                           180.41
                                                                                                                                     4.254
                                                                                              COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 180.41 Tc(MIN.) = 13.75
TOTAL AREA(ACRES) = 87.9
LONGEST FLOWPATH FROM NODE 120.00 TO NODE 253.00 =
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
  TIME OF CONCENTRATION(MIN.) = 13.75
RAINFALL INTENSITY(INCH/HR) = 4.25
TOTAL STREAM AREA(ACRES) = 77.15
                                                                                            FLOW PROCESS FROM NODE 253.00 TO NODE 258.00 IS CODE = 31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                               164.31
                                                                                              >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
************
 FLOW PROCESS FROM NODE 255.00 TO NODE 256.00 IS CODE = 21
                                                                                              ELEVATION DATA: UPSTREAM(FEET) = 605.00 DOWNSTREAM(FEET) = 585.00 FLOW LENGTH(FEET) = 251.00 MANNING'S N = 0.013
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                              FIOW LENGTH(FEET) = 251.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 36.0 INCH PIPE IS 29.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 29.59
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER
  *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
                                                                                                                                              NUMBER OF PIPES =
                                                                                              ESTIMATED FAFE DIRECTION (TOOL)
PIPE-FLOW(CFS) = 180.41
PIPE TRAVEL TIME(MIN.) = 0.14  Tc(MIN.) = 13.89
LONGEST FLOWPATH FROM NODE 120.00 TO NODE 258.00 = 4237.00 FEET.
  UPSTREAM ELEVATION(FEET) = 625.00

DOWNSTREAM ELEVATION(FEET) = 619.00

ELEVATION DIFFERENCE(FEET) = 6.00
                                         6.00
                                                                                            SUBARRA OVERLAND TIME OF FLOW(MIN.) = 7.280
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 96.00
                                                                                              FLOW PROCESS FROM NODE 258.00 TO NODE 258.00 IS CODE = 1
                                                                                              >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
            (Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN
                                                                                              TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                      USED IN To CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.410
  CONFIDENCE VALUES SEEF FOR THE CONCENTRATION (MIN.) = 13.89
RAINFALL INTENSITY (INCH/HR) = 4.23
TOTAL STREAM AREA(ACRES) = 87.87
                                                                                              PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                            180.41
  FLOW PROCESS FROM NODE 256.00 TO NODE 257.00 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                              FLOW PROCESS FROM NODE 260.00 TO NODE 261.00 IS CODE = 21
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                              >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
-----
                                      = 619.00 DOWNSTREAM(FEET) = 610.00 MANNING'S N = 0.013
  ELEVATION DATA: UPSTREAM(FEET) =
  FLOW LENGTH(FEET) =
                                                                                               *USER SPECIFIED(SUBAREA):
                           923.00
  ESTIMATED PIPE DIAMETER (INCH) INCREASED TO 18.000
                                                                                              RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
```

```
S.C.S. CURVE NUMBER (AMC II)
                                                                                                                                                                       SUBAREA RUNOFF(CFS) =
                                                                                                                                                                                                                      1.41
0.57 TOTAL RUNOFF(CFS) =
   UNITIAL SUBAREA FLOW-LENGTH(FEET) =
UPSTREAM ELEVATION(FEET) = 656.00
DOWNSTREAM ELEVATION(FEET) = 651.00
                                                                                  70.00
                                                                                                                                                                       TOTAL AREA(ACRES) =
                                                                                                                                                                   .....
   ELEVATION DIFFERENCE(FEET) = 5
SUBAREA OVERLAND TIME OF FLOW(MIN.)
                                                                        5.00
                                                                                                                                                                      FLOW PROCESS FROM NODE 271.00 TO NODE 272.00 IS CODE = 31
     100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.776
                                                                                                                                                                       >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
    SUBAREA RUNOFF(CFS) = 0.80
TOTAL AREA(ACRES) = 0.25 TOTAL RUNOFF(CFS) =
                                                                                                                                                                      ELEVATION DATA: UPSTREAM(FEET) = 650.00 DOWNSTF FLOW LENGTH(FEET) = 850.00 MANNING'S N = 0.00 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                                                                                                                                                                650.00 DOWNSTREAM(FEET) = 630.00
************************
   FLOW PROCESS FROM NODE 261.00 TO NODE 262.00 IS CODE = 61
                                                                                                                                                                      DEPTH OF FLOW IN 18.0 INCH PIPE IS 3.6 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 5.51 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
    >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<>>>>>(STANDARD CURB SECTION USED)
                                                                                                                                                                                                                                                               NUMBER OF PIPES = 1
                                                                                                                                                                      ESTIMATED FIFE DIAGRETICAL TOTAL PIPE-FLOW(CFS) = 1.41
PIPE TRAVEL TIME(MIN.) = 2.57 Tc(MIN.) = 8.84
LONGEST FLOWPATH FROM NODE 270.00 TO NODE 272.00 =
    UPSTREAM ELEVATION(FEET) = 651.00 DOWNSTREAM ELEVATION(FEET) = 593.00 STREET LENGTH(FEET) = 1124.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                                                                                                                                                                                                                     950.00 FEET.
                                                                                                                                                                   .....
   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
                                                                                                                                                                      FLOW PROCESS FROM NODE 271.00 TO NODE 272.00 IS CODE = 81
   UNSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                                                                                       >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                                                                                   ______
    SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                                                                                        100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.656
   SPECIFIED NUMBER OF HARFSIREEIS CARRILUG RUNOFF - 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
                                                                                                                                                                        *USER SPECIFIED(SUBAREA):
                                                                                                                                                                       URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                                                                                0.0150
                                                                                                                                                                       S.C.S. CURVE NUMBER (AMC II) = (
AREA-AVERAGE RUNOFF COEFFICIENT =
    Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
                                                                                                                                                                                                                                            0
                                                                                                                                                                       AKEA-AVERAGE RUNOFF COEFFICIENT - 0.3300
SUBARRA AREA(ACRES) = 1.81 SUBARRA RUNOFF(CFS) = 3.58
TOTAL AREA(ACRES) = 2.4 TOTAL RUNOFF(CFS) = 4.
         **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CES) =
   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.24
HALFSTREET FLOW VELOCITY(FEET) = 5.57
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.98
PRODUCT OF DEPTHAVELOCITY(FT*FT/SEC.) = 0.94
STREET FLOW TRAVEL TIME(MIN.) = 4.71 Tc(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.187
**USED SCHOOLTERS(URDRA)."
                                                                                                                                                                                                8.84
                                                                                                                                                                       TC(MIN.) =
                                                                                                                                                                      FLOW PROCESS FROM NODE 272.00 TO NODE 273.00 IS CODE = 31
                                                                                                                  10 11
                                                                                                                                                                       >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<>>>>
    *USER SPECIFIED(SUBAREA):
   *USER SPECIFIED(SUBAREA):

RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100

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

AREA-AVERAGE RUNOFF COEFFICIENT = 0.410

SUBAREA AREA(ACRES) = 2.42

SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 2.7

PEAK FLOW RATE(CFS)
                                                                                                                                                                     ELEVATION DATA: UPSTREAM(FEET) = 630.00 DOWNSTREAM(FEET) = 608.00 FLOW LENGTH(FEET) = 663.00 MANNING'S N = 0.013
                                                                                                                                                                      ELEVATION DATA: UPSIRAM(FEBI) = 63.00 DOWNSII
FLOW LENGTH(FEET) = 663.00 MANNING'S N = 0.00
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 6.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.80
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER (
                                                                      SUBAREA RUNOFF(CFS) = 5.15
PEAK FLOW RATE(CFS) =
   NUMBER OF PIPES = 1
                                                                                                                                                                       | DIESTINATED | CONTINUE | CONTIN
*******************
   FLOW PROCESS FROM NODE 262.00 TO NODE 258.00 IS CODE = 1
                                                                                                                                                                       FLOW PROCESS FROM NODE 272.00 TO NODE 273.00 IS CODE = 81
   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
                                                                                                                                                                       >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.191
   TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                                                                       *USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                                                                                                      ORDAN NEBEL GRADES RANGE CONTINUED TO THE TENT OF T
   TIME OF CONCENTRATION(MIN.) = 10.11
RAINFALL INTENSITY(INCH/HR) = 5.19
TOTAL STREAM AREA(ACRES) = 2.67
   PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                       TC(MIN.) =
    ** CONFLUENCE DATA **
                                                                                                                                                                   *****************
    STREAM
                       RUNOFF
(CFS)
                                                                      INTENSITY
                                                                                                      AREA
                                                                                                                                                                      FLOW PROCESS FROM NODE 273.00 TO NODE 274.00 IS CODE = 31
                                                 (MIN.)
                                                                   (INCH/HOUR)
                                                                                                    (ACRE)
    NUMBER
                          180.41
                                               13.89
                                                                          4.226
                                                                                                                                                                       >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                              10.11
                             5.68
                                                                          5.187
    RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                                                                                   ______
                                                                                                                                                                       ELEVATION DATA: UPSTREAM(FEET) = 607.50 DOWNSTREAM(FEET) = 594.00 FLOW LENGTH(FEET) = 70.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                              2 STREAMS
    CONFLUENCE FORMULA USED FOR
    ** PEAK FLOW RATE TABLE **
                                                                                                                                                                       DEPTH OF FLOW IN 18.0 INCH PIPE IS 5.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 20.41
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
    STREAM
                          RUNOFF
                                                                     INTENSITY
                                               (MIN.)
   NUMBER
                            (CFS)
                                                                 (INCH/HOUR)
                                           10.11
                                                                        5.187
                          152.65
                                                                                                                                                                       ESTIMATED FIFE DIRECTION AND 9.88

PIPE FIGN(CFS) = 9.88

PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 10.15

LONGEST FLOWPATH FROM NODE 270.00 TO NODE 274.00 =
                          185.03
   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 185.03 Tc(MIN.) = TOTAL AREA(ACRES) = 90.5
                                                                                                                                                                                                                                                                                                 1683.00 FEET.
                                                                                                                                                                      FLOW PROCESS FROM NODE 274.00 TO NODE 258.00 IS CODE = 31
    LONGEST FLOWPATH FROM NODE 120.00 TO NODE
                                                                                                       258.00 = 4237.00 FEET.
                                                                                                                                                                       >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                                                                      >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <---
   FLOW PROCESS FROM NODE 258.00 TO NODE 258.00 IS CODE = 10
                                                                                                                                                                       ELEVATION DATA: UPSTREAM(FEET) = 5594.00 DOWNSTREAM(FEET) = 593.00 FLOW LENGTH(FEET) = 29.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
   >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<
                                                                                                                                                                       DEPTH OF FLOW IN 18.0 INCH PIPE IS 1.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 222.54
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
   FLOW PROCESS FROM NODE 270.00 TO NODE 271.00 IS CODE = 21
                                                                                                                                                                       PIPE TRAVEL TIME (MIN.) = (LONGEST FILOMOREST FILOMORES
                                                                                                                                                                      FIFE-FLOW(CFS) = 9.88

PIPE TRAVEL TIME(MIN.) = 0.00 Tc(MIN.) = 10.15

LONGEST FLOWPATH FROM NODE 270.00 TO NODE 258.00 = 1712.00 FEET.
   >>>>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
                                                                                                                                                                   FLOW PROCESS FROM NODE 258.00 TO NODE 258.00 IS CODE = 11
   UPSTREAM ELEVATION(FEET) = 670.00

DOWNSTREAM ELEVATION(FEET) = 660.00

ELEVATION DIFFERENCE(FEET) = 10.00
                                                                                                                                                                       >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY
   DOMNSTREAM ELEVATION (DEL) - 000.00
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
                                                                                                                                                                   ______
                                                                                                                                                                       ** MAIN STREAM CONFLUENCE DATA **
                                                                                                                                                                      STREAM
                                                                                                                                                                                            RUNOFF
                                                                                                                                                                                                              Tc
                                                                                                                                                                                                                                       INTENSITY
                                                                                                                                                                                                                                                                      AREA
```

```
(MIN.) (INCH/HOUR) (ACRE)
  NUMBER
                     (CFS)
                                                   5.172 5.44
270.00 TO NODE 258
                        9 88
                                     10.15
                                                                                                                                   END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                                  END OF SUBARBA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 0.27 HALFSTREET FLOOD WIDTH(FEET) = 7.27
FLOW VELOCITY(FEET/SEC.) = 2.40 DEPTH*VELOCITY(FT*FT/SEC.) =
LONGEST FLOWPATH FROM NODE 278.00 TO NODE 280.00 = 589.0
   LONGEST FLOWPATH FROM NODE
                                                                                 258.00 =
                                                                                                     1712.00 FEET.
    * MEMORY BANK #
                               1 CONFILIENCE DATA **
                                                                                                                                                                                                                                       589.00 FEET.
                    RUNOFF
                                                      INTENSITY
                                     (MTN.)
  NUMBER
                      (CFS)
                                                    (INCH/HOUR)
                                                                         (ACRE)
                                                    4.226 90.54
120.00 TO NODE 258.00 =
                                                                                                                                  FLOW PROCESS FROM NODE 280.00 TO NODE 275.00 IS CODE = 31
  1 185.03 13.89
LONGEST FLOWPATH FROM NODE
                                                                                                     4237.00 FEET.
                                                                                                                                  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                               >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
   ** PEAK FLOW RATE TABLE **
                  RUNOFF
(CFS)
                                                      INTENSITY
   STREAM
                                    (MIN )
  NUMBER
                                                   (INCH/HOUR)
                                                                                                                                  ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                                                                                                           595.70 DOWNSTREAM(FEET) = 595.00
                  145.16
193.11
                                                                                                                                   FLOW LENGTH(FEET) = 40.00 MANNING'S N = 0.0
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                    10.15
                                                                                                                                  DEPTH OF FLOW IN 18.0 INCH PIPE IS 5
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.22
ESTIMATED PIPE DIAMETER(INCH) = 18.00
                                                                                                                                                                                                5.9 INCHES
   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                13 89
                                                                                                                                                                                                     NUMBER OF PIPES = 1
   PEAK FLOW RATE(CFS) = 193.11
TOTAL AREA(ACRES) = 96.0
                                                           Tc(MIN.) =
                                                                                                                                  ESTIMATED PIPE DIAMBLER(INCH) - 10.00 ....
PIPE-FLOW(CFS) = 3.10
PIPE TRAVEL TIME(MIN.) = 0.11 Tc(MIN.) = 11.42
LONGEST FLOWPATH FROM NODE 278.00 TO NODE 275.00 =
   629.00 FEET.
  FLOW PROCESS FROM NODE 258.00 TO NODE 258.00 IS CODE = 12
                                                                                                                                 .....
  >>>> CLEAR MEMORY BANK # 1 <<<<<
                                                                                                                                  FLOW PROCESS FROM NODE 275.00 TO NODE 275.00 IS CODE =
                                                                                                                                   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <--
                                                                                                                                   >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                                                                                                  TOTAL NUMBER OF STREAMS = 2
  FLOW PROCESS FROM NODE 258.00 TO NODE 275.00 IS CODE = 31
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                                   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                                  CONFLUENCE VALUES USED FOR INDEFENDENT TIME OF CONCENTRATION(MIN.) = 11.42 RAINFALL INTENSITY(INCH/HR) = 4.79
   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>>
 ELEVATION DATA: UPSTREAM(FEET) = 294.00 DOWNSTREAM(FEET) = 293.00 FLOW LENGTH(FEET) = 159.00 MANNING'S N = 0.013
                                                                                                                                  TOTAL STREAM AREA(ACRES) = 1.5'
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                                     1 57
  ELEVATION DATA: UPSTREAM(FEET) = 294.00 DOWNST
FLOW LENGTH(FEET) = 159.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 60.0 INCH PIPE IS 47.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 11.67
ESTIMATED PIPE DIAMETER(INCH) = 60.00 NUMBER
                                                                                                                                   ** CONFILIENCE DATA **
                                                                                                                                                RUNOFF
(CFS)
                                                                                                                                                                      (MIN.)
   PIPE-FLOW(CFS) =
                                   193.11
                                                                                                                                  NUMBER
                                                                                                                                                                                     (INCH/HOUR)
                                                                                                                                                                                                               (ACRE)
                                                        Tc(MIN.) = 14.12
  PIPE TRAVEL TIME(MIN.) = 0.23 Tc(MIN.) = LONGEST FLOWPATH FROM NODE 120.00 TO NODE
                                                                                                                                                     193.11
                                                                                                                                                                    14 12
                                                                                                                                                                                          4 182
                                                                                                                                                                                                                 95.98
                                                                               275.00 = 4396.00 FEET.
                                                                                                                                                                   11.42
                                                                                                                                                      3.10
                                                                                                                                                                                          4.793
                                                                                                                                                                                                                   1.57
......
                                                                                                                                  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR \ \ 2 STREAMS.
  FLOW PROCESS FROM NODE 275.00 TO NODE 275.00 IS CODE = 1
   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                                                                   ** PEAK FLOW RATE TABLE **
TOTAL NUMBER OF STREAMS = 2
                                                                                                                                   STREAM
                                                                                                                                                    RUNOFF
                                                                                                                                                                        Tc
                                                                                                                                                                                      TNTENSITY
                                                                                                                                                                    (MIN.)
                                                                                                                                   NUMBER
                                                                                                                                                      (CFS)
                                                                                                                                                                                   (INCH/HOUR)
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                                                                                14.12
  TIME OF CONCENTRATION(MIN.) = 14.12
RAINFALL INTENSITY(INCH/HR) = 4.18
TOTAL STREAM AREA(ACRES) = 95.98
                                                                                                                                         2
                                                                                                                                                    195.82
                                                                                                                                                                                         4.182
                                                                                                                                   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  TOTAL STREAM AREA(ACRES) = 95.98
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                  PEAK FLOW RATE(CFS) = 195.82 Tc(MIN.) = 14.12
TOTAL AREA(ACRES) = 97.6
LONGEST FLOWPATH FROM NODE 120.00 TO NODE 275.00 = 4396.00 FEET.
                                                                 193.11
..................
  FLOW PROCESS FROM NODE 278.00 TO NODE 279.00 IS CODE = 21
   >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                                                  FLOW PROCESS FROM NODE 275.00 TO NODE 281.00 IS CODE = 31
*USER SPECIFIED(SUBAREA):
                                                                                                                                   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
  ELEVATION DATA: UPSTREAM(FEET) = 596.00 DOWNSTREAM(FEET) = 5
FLOW LENGTH(FEET) = 45.00 MANNING'S N = 0.013
                                                                                                                                  FLOW LENGTH(FEET) = 45.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 48.0 INCH PIPE IS 36.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 18.88
ESTIMATED PIPE DIAMETER(INCH) = 48.00 NUMBER
   ELEVATION DIFFERENCE(FEET) =
                                                          2.00
   SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                                                                                                      NUMBER OF PIPES = 1
                                                                                                                                  ESTIMATED FIFE DIRECTION TO THE PROPERTY OF TH
  JOD YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.386
SUBAREA RUNOFF(CFS) = 0.65
TOTAL AREA(ACRES) = 0.25 TOTAL RUNOFF(CFS) =
                                                                                               0.65
                                                                                                                                                                                                                                   4441.00 FEET.
.....
                                                                                                                                 ......
  FLOW PROCESS FROM NODE 279.00 TO NODE 280.00 IS CODE = 61
                                                                                                                                  FLOW PROCESS FROM NODE 281.00 TO NODE 281.00 IS CODE = 10
   >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                                   >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
  FLOW PROCESS FROM NODE 300.00 TO NODE 301.00 IS CODE = 21
                                                                                                                                  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                                                   *USER SPECIFIED(SUBAREA):
                                                                                                                                  LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
                                                                                                                                   S.C.S. CURVE NUMBER (AMC II) =
INITIAL SUBAREA FLOW-LENGTH(FEET)
   SPECIFIED NUMBER OF HALFSTREETS 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
                                                                                                                                  UPSTREAM ELEVATION(FEET) = 698.00
DOWNSTREAM ELEVATION(FEET) = 696.00
ELEVATION DIFFERENCE(FEET) = 2.00
                                                                                                                0.0150
                                                                                                                                   SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                                                                                                     0.081
                                                                                                                                  SUBARRA OVERLAND TIME OF FLOW(MIN.) = 0.081
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 TO = 5-MINUTE.
SUBARRA RUNOFF(CFS) = 1.04
TOTAL AREA(ACRES) = 0.15 TOTAL RUNOFF(CFS) = 1.04
      **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = STREETFLOW MODEL RESULTS USING ESTIMATED FLOW: STREET FLOWD DEPTH(FEET) = 0.24

HALFSTREET FLOOD WIDTH(FEET) = 5.81
  STREET FLOW DEPTH(FEET) = 0.24
HALPSTREET FLOOD WIDTH(FEET) = 5.81
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.17
PRODUCT OF DEPTHAVELOCITY(FT*FT/SEC.) = 0.52
STREET FLOW TRAVEL TIME(MIN.) = 3.99 Tc(MIN.) = 11.32
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.822
                                                                                                                               *******************
                                                                                                                                  FLOW PROCESS FROM NODE 301.00 TO NODE 302.00 IS CODE = 61
  TOU YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.822
**USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
SUBAREA AREA(ACRES) = 1.32
SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 1.6
PEAK FLOW RATE(CFS)
                                                                                                                                   >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
                                                                                                                                   >>>>(STANDARD CURB SECTION USED) <<<<
                                                                                                                                  UPSTREAM ELEVATION(FEET) = 696.00 DOWNSTREAM ELEVATION(FEET) = 654.00
                                              1.6
                                                                PEAK FLOW RATE(CFS) =
                                                                                                                                  STREET LENGTH(FEET) = 1090.00 CURB HEIGHT(INCHES) = 6.0
   TOTAL AREA(ACRES) =
                                                                                                               3.10
```

```
PIPE-FLOW(CFS) = 2.34
PIPE TRAVEL TIME(MIN.) = 0.31 Tc(MIN.) = 9.02
LONGEST FLOWPATH FROM NODE 305.00 TO NODE 302.00 =
  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 302.00 TO NODE 302.00 IS CODE =
   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
  SPECIFIED NUMBER OF HARFSIREDIS CARRILING ROBOTE - 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
                                                                                                                                        >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
                                                                                                                                       ______
                                                                                                                                        TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
       **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
      STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.33
HALFSTREET FLOOD WIDTH(FEET) = 9.95
                                                                                                                                        TIME OF CONCENTRATION(MIN.) = 9.02
RAINFALL INTENSITY(INCH/HR) = 5.58
TOTAL STREAM AREA(ACRES) = 1.13
  HALFSTREET FLOOD WIDTH(FEET) = 9.95
AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.42
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.44
STREET FLOW TRAVEL TIME(MIN.) = 4.11 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
NOTE: RAINFALL INTENSITY IS BASED ON TC = 5-MINUTE.
*USER SPECIFIED(SUBAREA):
                                                                                                                                        PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                                                              2.34
                                                                                                                                        ** CONFLUENCE DATA **
                                                                                                 4 19
                                                                                                                                                          RUNOFF
                                                                                                                                        STREAM
                                                                                                                                                                                               INTENSITY
                                                                                                                                                                                                                         AREA
                                                                                                                                                                             (MIN.) (INCH/HOUR)
                                                                                                                                                                                                                       (ACRE)
                                                                                                                                                            18.54
                                                                                                                                                                              4.19
                                                                                                                                                                                                  8.168
                                                                                                                                                                                                                           2.67
  "USER SPECIFIED(SUBAREA):
LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.850
SUBAREA AREA(ACRES) = 2.52
SUBAREA RAEA(ACRES) = 2.52
TOTAL AREA(ACRES) = 2.7
PEAK FLOW RATE(CFS) = 17.50
                                                                                                                                                                             9.02
                                                                                                                                                             2.34
                                                                                                                                                                                                  5.582
                                                                                                                                                                                                                            1.13
                                                                                                                                        RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                                         ** PEAK FLOW RATE TABLE **
  STREAM
NUMBER
                                                                                                                                                      RUNOFF
(CFS)
                                                                                                                                                                          Tc (MIN.)
                                                                                                                                                                                              INTENSITY
                                                                                                                                                                                          (INCH/HOUR)
                                                                                                                                                                                            8.168
                                                                                                                                                                        4.19
9.02
                                                                                                                                                            19.62
**********************
                                                                                                                                        COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 19.62 Tc(MIN.) = TOTAL AREA(ACRES) = 3.8
  FLOW PROCESS FROM NODE 302.00 TO NODE 302.00 IS CODE = 1
                                                                                                                                        TOTAL AREA(ACRES) = 3.8
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 302.00 =
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                                                                                                                                                                            1090 15 FFFT
                ......
                                                                                                                                     *****
   TOTAL NUMBER OF STREAMS = 2
  TOTAL NUMBER OF SIREAMS = 2 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 4.19
RAINFALL INTENSITY(INCH/HR) = 8.17
TOTAL STREAM AREA(ACRES) = 2.67
                                                                                                                                        FLOW PROCESS FROM NODE 302.00 TO NODE 309.00 IS CODE = 31
                                                                                                                                        >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
   TOTAL STREAM AREA(ACRES) =
   PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                        ._____
                                                                                                                                        ELEVATION DATA: UPSTREAM(FEET) = 654.00 DOWNSTREAM(FEET) = FLOW LENGTH(FEET) = 45.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 14.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.75
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
                                                                                                                                                                                                    654.00 DOWNSTREAM(FEET) = 653.00
*****
  FLOW PROCESS FROM NODE 305.00 TO NODE 306.00 IS CODE = 21
   >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                                                        PIPE TRAVEL TIME(MIN.) = 0
                                                                                                                                        FIFE-FLOW(CFS) = 19.62

PIPE TRAVEL TIME(MIN.) = 0.07 Tc(MIN.) = 4.26

LONGEST FLOWPATH FROM NODE 300.00 TO NODE 309.00 = 1135.15 FEET.
-----
   *USER SPECIFIED(SUBAREA):
  *USER SPECIFIED(SUBAREA):

RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 85.00

UPSTREAM ELEVATION(FEET) = 662.00

DOWNSTREAM ELEVATION(FEET) = 669.00

ELEVATION DIFFERENCE(FEET) = 3.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 7.521
                                                                                                                                     ******************
                                                                                                                                        FLOW PROCESS FROM NODE 309.00 TO NODE 309.00 IS CODE = 10
                                                                                                                                        >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<
  JOS YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.277
SUBAREA RUNOFF(CFS) = 0.59
TOTAL AREA(ACRES) = 0.23 TOTAL RUNOFF(CFS) =
                                                                                                                                        FLOW PROCESS FROM NODE 311.00 TO NODE 312.00 IS CODE = 21
******************
                                                                                                                                        >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  FLOW PROCESS FROM NODE 306.00 TO NODE 307.00 IS CODE = 31
                                                                                                                                        *USER SPECIFIED(SUBAREA):
                                                                                                                                        "USEN SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>
>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                                       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) = 690.00
DONNSTREAM ELEVATION(FEET) = 680.00
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 BINDOFF(GES) = 0.47
  SUBAREA RUNOFF(CFS) = 0.47
TOTAL AREA(ACRES) = 0.19 TOTAL RUNOFF(CFS) =
   PIPE-FLOW(CFS) = 0.59
PIPE TRAVEL TIME(MIN.) = 1
   0.47
                                                                                                                                     ************************
                                                                                                                                        FLOW PROCESS FROM NODE 312.00 TO NODE 313.00 IS CODE = 31
  FLOW PROCESS FROM NODE 306.00 TO NODE 307.00 IS CODE =
                                                                                                                                        >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>
>>>SUSING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
   >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                -----
                                                                                                                                        ______
  100 YEAR RAINFALL INTENSITY(INCH, DOC),
*USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3622
SUBAREA AREA(ACRES) = 0.90 SUBAREA RUNOFF(CFS) = 1
TOTAL AREA(ACRES) = 1.1 TOTAL RUNOFF(CFS) =
                                                                                                                                        ELEVATION DATA: UPSTREAM(FEET) = 680.00 DOWNSTIFLOW LENGTH(FEET) = 722.00 MANNING'S N = 0.00 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                                                                                                                   680.00 DOWNSTREAM(FEET) = 660.00
                                                                                                                                        DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.19
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                                                                                                        ESTIMATED FIFE DISCRETE TRANSPORT OF THE PROPERTY OF THE PROPE
                                                                                                       2 34
                                                                                                                                                                                                                                               822.00 FEET.
       *************
  FLOW PROCESS FROM NODE 307.00 TO NODE 302.00 IS CODE = 31
                                                                                                                                    ************************
                                                                                                                                       FLOW PROCESS FROM NODE 312.00 TO NODE 313.00 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) = 655.00 DOWNSTRE, FLOW LENGTH(FEET) = 90.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                              655.00 DOWNSTREAM(FEET) = 654.00
                                                                                                                                         100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.537
                                                                                                                                        *USER SPECIFIED(SUBAREA):
                                                                                                                                        RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  DEPTH OF FLOW IN 18.0 INCH PIPE IS 5.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.88
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                                                                                                        S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) = 2.74 SUBAREA F
                                                                                                                                                                                             SUBAREA RUNOFF(CFS) = 5.31
```

```
(MIN.) (INCH/HOUR)
   TOTAL AREA(ACRES)
                                           2.9 TOTAL RUNOFF(CFS) =
                                                                                                5.68
                                                                                                                               NUMBER
                                                                                                                                                 (CFS)
                                                                                                                                                                                                        (ACRE)
   TC(MIN.) = 9.14
                                                                                                                                                    5.68
                                                                                                                                                                  9.43
                                                                                                                                                                                     5.424
                                                                                                                                                 19.25
                                                                                                                                                                                      5.858
************
  FLOW PROCESS FROM NODE 313.00 TO NODE 314.00 IS CODE = 31
                                                                                                                                RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                                               CONFLUENCE FORMULA USED FOR 2 STREAMS.
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
   >>>>SING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                                ** DEAK FLOW RATE TABLE **
                                                                                                                                                RUNOFF
                                                                                                                                                                                 INTENSITY
   ELEVATION DATA: UPSTREAM(FEET) =
                                                          660.00 DOWNSTREAM(FEET) = 650.00
                                                                                                                               NUMBER
                                                                                                                                                 (CFS)
                                                                                                                                                                 (MTN.)
                                                                                                                                                                               (INCH/HOUR)
   FLOW LENGTH(FEET) = 193.00 MANNING'S N = 0.0
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                                                                                  8.37
9.43
                                                                                                                                                                                    5.858
                                                                                                                                                  23.50
   DEPTH OF FLOW IN 18.0 INCH PIPE IS (PIPE-FLOW VELOCITY(FEET/SEC.) = 10.88 ESTIMATED PIPE DIAMETER(INCH) = 18.00
                                                              6.1 INCHES
                                                                                                                               COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 24.29 Tc(MIN.) =

TOTAL AREA(ACRES) = 9.2
                                                                      NUMBER OF PIPES = 1
                                                                                                                                                                                                              8.37
   ESTIMATED PAPE DIRECTION. 2007.

PIPE-FLOW(CFS) = 5.68

PIPE TRAVEL TIME(MIN.) = 0.30 Tc(MIN.) = 9.43

LONGEST FLOWPATH FROM NODE 311.00 TO NODE 314.00 = 1015.00 FEET.
                                                                                                                                TOTAL AREA (ACRES) = 9.2
LONGEST FLOWPATH FROM NODE 316.00 TO NODE 314.00 =
                                                                                                                               *********************
.....
                                                                                                                               FLOW PROCESS FROM NODE 314.00 TO NODE 319.00 IS CODE = 31
   FLOW PROCESS FROM NODE 314.00 TO NODE 314.00 IS CODE = 1
                                                                                                                               >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
______
                                                                                                                               TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                                               ELEVATION DATA: UPSTREAM(FEET) = 650.50 DOWNSTREAM(FEET) = 649.00 FLOW LENGTH(FEET) = 164.00 MANNING'S N = 0.013
                                                                                                                               ELEVATION DATA: OPSTREAM(FEET) = 650.50 DOWNST
FLOW LENGTH(FEET) = 164.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 27.0 INCH PIPE IS 19.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.14
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER
   TIME OF CONCENTRATION(MIN.) = 9.43
RAINFALL INTENSITY(INCH/HR) = 5.42
TOTAL STREAM AREA(ACRES) = 2.93
                                                                                                                                                                                                 NUMBER OF PIPES =
                                                                                                                               ESTIMALED FIFE DISCRETE TAXABLE TO THE PROPERTY OF THE PROPERT
   PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                   5.68
-----
                                                                                                                                                                                                                          1288.00 FEET.
  FLOW PROCESS FROM NODE 316.00 TO NODE 317.00 IS CODE = 21
                                                                                                                            .....
   >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                                               FLOW PROCESS FROM NODE 319.00 TO NODE 319.00 IS CODE = 1
                                                                                                                                >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
   *USER SPECIFIED(SUBAREA):
   RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00
                                                                                                                                                         _____
                                                       0 ) = 70.00
                                                                                                                               TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                                               COMPLUENCE VALUES USED FOR THE TIME OF CONCENTRATION(MIN.) = 8.71
RAINFALL INTENSITY(INCH/HR) = 5.71
TOTAL STREAM AREA(ACRES) = 9.25
   UPSTREAM ELEVATION(FEET) = 709.00

DOWNSTREAM ELEVATION(FEET) = 705.00

ELEVATION DIFFERENCE(FEET) = 4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.886

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168

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

SUBAREA RUNOFF(CFS) = 0.89

TOTAL AREA(ACRES) = 0.21 TOTAL RUNOFF(CFS) =
                                                                                                                                                                                               24.29
                                                                                                                                PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                            ************************************
                                                                                                                               FLOW PROCESS FROM NODE 321.00 TO NODE 322.00 IS CODE = 21
                                                                                                                                >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
**********************
   FLOW PROCESS FROM NODE 317.00 TO NODE 318.00 IS CODE = 61
                                                                                                                                *USER SPECIFIED(SUBAREA):
                                                                                                                               NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900 S.C.S. CURVE NUMBER (AMC II) = 0 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
   >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<>>>>>(STANDARD CURB SECTION USED)<
UPSTREAM ELEVATION(FEET) = 690.00

DOWNSTREAM ELEVATION(FEET) = 680.00

ELEVATION DIFFERENCE(FEET) = 10.00
  UPSTREAM ELEVATION(FEET) = 705.00 DOWNSTREAM ELEVATION(FEET) = 650.00 STREET LENGTH(FEET) = 1054.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                                               ELEVATION DIFFERENCE(FEET) = 10.00
SUBARRA 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 TO = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 1.03
TOTAL AREA(ACRES) = 0.16 TOTAL RUNOFF(CFS) = 1.03
   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
   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)
                                                                                                                            FLOW PROCESS FROM NODE 322.00 TO NODE 323.00 IS CODE = 31
                                                                                                             0.0150
                                                                                               0.0200
   Manning's FRICTION FACTOR for Back-of-Walk Flow Section =
                                                                                                                               >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
        *TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                               10.34
      STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.32
HALFSTREET FLOOD WIDTH(FEET) = 9.53
                                                                                                                                ELEVATION DATA: UPSTREAM(FEET) =
                                                                                                                                                                                       680.00 DOWNSTREAM(FEET) = 651.00
                                                                                                                               FLOW LENGTH(FEET) = 1080.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  HALFSTREET FLOOD WIDTH(FEET) = 9.53
AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.04
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.60
STREET FLOW TRAVEL TIME(MIN.) = 3.49 Tc(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.858
*USER SPECIFIED(SUBAREA):
                                                                                                                                                                                     10 18.000
IS 3.0 INCHES
5.27
                                                                                                                               DEPTH OF FLOW IN 18.0 INCH PIPE IS
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.
                                                                                           8.37
                                                                                                                                ESTIMATED PIPE DIAMETER(INCH) = 18.00
                                                                                                                                                                                                  NUMBER OF PIPES = 1
                                                                                                                               _ LBOW(CFS) = 1.03
PIPE TRAVEL TIME(MIN.) = 3
LONGEST PLOYER
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.520 SUBAREA AREA(ACRES) = 6.11 SUBAREA RUNOFF(CFS) = 18.61 TOTAL AREA(ACRES) = 6.3 PEAK FLOW RATE(CFS) =
                                                                                                                                PIPE TRAVEL TIME(MIN.) = 3.42 Tc(MIN.) = 6.01
LONGEST FLOWPATH FROM NODE 321.00 TO NODE 323.00 =
                                                                                                                            .....
                                                                                                                               FLOW PROCESS FROM NODE 322.00 TO NODE 323.00 IS CODE = 81
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                                            ···
                                                          DEPTH*VELOCITY(FT*FT/SEC.) = 2.17
00 TO NODE 318.00 = 1124.00 FEET.
                                                                                                                                 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.257
                                                                                                                               *USER SPECIFIED(SUBAREA):
NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
                                                                                                                               S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.7900
SUBAREA AREA(ACRES) = 7.97
SUBAREA RUNOFF(CFS) = 45.69
TOTAL AREA(ACRES) = 8.1
TOTAL RUNOFF(CFS) = 46.
  FLOW PROCESS FROM NODE 318.00 TO NODE 314.00 IS CODE = 1
   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
                                                                                                                                                                                                                             46.61
   >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                                                                TC(MIN.) = 6.01
TOTAL NUMBER OF STREAMS = 2 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                               FLOW PROCESS FROM NODE 323.00 TO NODE 319.00 IS CODE = 31
   TIME OF CONCENTRATION(MIN.) = 8.3 RAINFALL INTENSITY(INCH/HR) = 5.86 TOTAL STREAM AREA(ACRES) = 6.32
                                                       8.37
                                                                                                                               >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                                >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
   PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                  19.25
                                                                                                                            ______
                                                                                                                               ELEVATION DATA: UPSTREAM(FEET) = 653.00 DOWNSTREAM(FEET) = 649.50 FLOW LENGTH(FEET) = 75.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 24.0 INCH PIPE IS 19.2 INCHES
   ** CONFLUENCE DATA **
   STREAM
                   RUNOFF
                                       Tc
                                                      INTENSITY
                                                                              AREA
```

```
**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
  PIPE-FLOW VELOCITY(FEET/SEC.) = 17.28
                                                                                                                                                                                                    1.53
                                                                                                                   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.22
HALFSTREET FLOOD WIDTH(FEET) = 4.87
  ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
  PIPE-FLOW(CFS) = 46.61
PIPE TRAVEL TIME(MIN.) = 0.07 Tc(MIN.) =
                                                                        6.08
                                                                                                                HALFSTREET FLOOD WIDTH(FEET) = 4.87
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.15
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.48
STREET FLOW TRAVEL TIME(MIN.) = 0.94 TC(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
NOTE: RAINFALL INTENSITY IS BASED ON TC = 5-MINUTE.
  LONGEST FLOWPATH FROM NODE
                                          321.00 TO NODE
                                                                      319.00 =
                                                                                     1255 00 FFFT
                                                                                                                                                                                              3.88
  FLOW PROCESS FROM NODE 319.00 TO NODE 319.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE<>>>
                                                                                                                 *USER SPECIFIED(SUBAREA):
                                                                                                                S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.850
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
  TOTAL NUMBER OF STREAMS = 2
  TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.08

RAINFALL INTENSITY(INCH/HR) = 7.20

TOTAL STREAM AREA(ACRES) = 8.13
                                                                                                                SUBAREA AREA(ACRES) = 0.20
TOTAL AREA(ACRES) = 0.3
                                                                                                                                                                SUBAREA RUNOFF(CFS) = 1.39
PEAK FLOW RATE(CFS) =
                                                                                                                PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                          46.61
  ** CONFIGUENCE DATA **
                                    Tc
                                               INTENSITY
  STREAM
                RUNOFF
                                                                     AREA
                                           (INCH/HOUR)
5.711
7.201
                   (CFS)
24.29
  NUMBER
                                (MIN.)
                                                                    (ACRE)
                                 8.71
                                                                                                                FLOW PROCESS FROM NODE 328.00 TO NODE 324.00 IS CODE = 1
                               6.08
                   46.61
                                                                        8.13
                                                                                                                 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIDENCE<
                                                                                                                 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                               _____
                                                                                                                TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  ** PEAK FLOW RATE TABLE **
                                                                                                                TIME OF CONCENTRATION(MIN.) = 3.88
RAINFALL INTENSITY(INC.) = 8.17
  STREAM
                 RUNOFF
                                  TC
                                              INTENSITY
                            (MIN.)
                   (CFS)
                                           (INCH/HOUR)
                                            7.201
       1
                   65.87
                                 6.08
                                                                                                                 TOTAL STREAM AREA(ACRES) =
                              8.71
                   61.26
       2
                                                                                                                 PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                          2.22
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 65.87 TC(MIN.) =
TOTAL AREA(ACRES) = 17.4
                                                                                                                 ** CONFLUENCE DATA **
                                                                      6.08
                                        65.87 Tc(MIN.) =
                                                                                                                 STREAM
                                                                                                                                RUNOFF
                                                                                                                                                  TC
                                                                                                                                                              THTENSTTV
                                                                                                                                                                                   APFA
                                                                                                                                 (CFS)
                                                                                                                 NUMBER
                                                                                                                                                (MIN.)
                                                                                                                                                            (INCH/HOUR)
                                                                                                                                                                                  (ACRE)
  LONGEST FLOWPATH FROM NODE 316.00 TO NODE 319.00 = 1288.00 FEET.
                                                                                                                                 65.87
                                                                                                                                                6.12
                                                                                                                                                                7.172
                                                                                                                                                                                    17.38
                                                                                                                                               3.88
                                                                                                                                  2.22
                                                                                                                                                                8.168
                                                                                                                                                                                      0.32
                                                                                                                RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  FLOW PROCESS FROM NODE 319.00 TO NODE 324.00 IS CODE = 31
                                                                                                                CONFLUENCE FORMULA USED FOR 2 STREAMS.
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>SING COMPUTER-ESTIMATED PIESIZE (NON-PRESSURE FLOW)<>>>>SING COMPUTER-ESTIMATED PIESIZE (NON-PRESSURE FLOW)<>>>>ELEVATION DATA: UPSTREAM(FEET) = 649.50 DOWNSTREAM(FEET) = 649.00 FLOW LENGTH(FEET) = 30.00 MANNING'S N = 0.013
                                                                                                                 ** DEAK FLOW RATE TABLE **
                                                                                                                 STREAM
                                                                                                                            RUNOFF
(CFS)
                                                                                                                                                            INTENSITY
                                                                                                                                             (MIN.)
                                                                                                                NUMBER
                                                                                                                                                          (INCH/HOUR)
  ELEVATION DATA: UPSTREAM(FEET) = 649.50 DOWNSTREAM(FEET) = 649.00 FLOW LENGTH(FEET) = 30.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 33.0 INCH PIPE IS 26.8 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 12.77 ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1 PIPE-FLOW(CFS) = 65.87 PIPE TRAVEL TIME(MIN.) = 0.04 TC(MIN.) = 6.12 LONGEST FLOWPATH FROM NODE 316.00 TO NODE 324.00 = 1318.00 FEET.
                                                                                                                                 60.06
                                                                                                                                               3.88
                                                                                                                                                              8.168
7.172
                                                                                                                COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 67.83 Tc(MIN.) = TOTAL AREA(ACRES) = 17.7
                                                                                                                                                      67.83 Tc(MIN.) =
                                                                                                                LONGEST FLOWPATH FROM NODE
                                                                                                                                                       316.00 TO NODE 324.00 =
                                                                                                                 ********************
  FLOW PROCESS FROM NODE 324.00 TO NODE 324.00 IS CODE = 1
                                                                                                                FLOW PROCESS FROM NODE 324.00 TO NODE 309.00 IS CODE = 31
                                                                                                                >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE <---
  TOTAL NUMBER OF STREAMS = 2
                                                                                                                 ______
                                                                                                                ELEVATION DATA: UPSTREAM(FEET) = 651.00 DOWNST
FLOW LENGTH(FEET) = 102.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 39.0 INCH PIPE IS 27.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.78
ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER
  CONFIDENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                                                                                  651.00 DOWNSTREAM(FEET) = 650.00
  CONFLUENCE VALUES USED FOR INDEPENDENT
TIME OF CONCENTRATION(MIN.) = 6.12
RAINFALL INTENSITY(INCH/HR) = 7.17
TOTAL STREAM AREA(ACRES) = 17.38
  TOTAL STREAM AREA(ACRES) = 17.38
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                            NUMBER OF PIPES = 1
                                                                                                                ESTIMATED PIPE DIAMETER (LANGE) - 5...

PIPE-FLOW(CFS) = 67.83

PIPE TRAVEL TIME(MIN.) = 0.16 Tc(MIN.) = 6.27

LONGEST FLOWPATH FROM NODE 316.00 TO NODE 309.00 = 1420.00 FEET.
**********************
  FLOW PROCESS FROM NODE 326.00 TO NODE 327.00 IS CODE = 21
                                                                                                              **************************
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                                FLOW PROCESS FROM NODE 309.00 TO NODE 309.00 IS CODE = 10
       .----
  *USER SPECIFIED(SUBAREA):
  *USER SPECIFIED(SUBAREA):
LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 60.00
UPSTREAM ELEVATION(FEET) = 651.00
DOWNSTREAM ELEVATION(FEET) = 650.00
FLEVATION DIFFERENCE(FEET) = 1.00
                                                                                                                >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
                                                                                                                FLOW PROCESS FROM NODE 330.00 TO NODE 331.00 IS CODE = 21
  DUNISTREAM ELEVATION (FEI) = 550.00

ELEVATION DIFFERENCE (FEET) = 1.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 2.940

100 YEAR RAINFALL INTENSITY (INCH/HOUR) = 8.168

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

SUBAREA RUNOFF (CFS) = 0.83

TOTAL AREA(ACRES) = 0.12 TOTAL RUNOFF (CFS) =
                                                                                                                 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                              -----
                                                                                                                 *USER SPECIFIED(SUBAREA):
                                                                                                                *USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                                UNDAMA NEWLI GRADEL RAFAS RONOFF COEFICIENT -
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 980.00
DOWNSTREAM ELEVATION(FEET) = 970.00
ELEVATION DIFFERENCE(FEET) = 10.00
SUBAREA OVERLAND TIME OF FLOW (MIN.) = 6.26
  FLOW PROCESS FROM NODE 327.00 TO NODE 328.00 IS CODE = 61
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
                                                                                                                                                                         6.267
  >>>>(STANDARD CURB SECTION USED) <<<</td>
    UPSTREAM ELEVATION(FEET) = 651.00 DOWNSTREAM ELEVATION(FEET) = 649.00 STREET LENGTH(FEET) = 121.00 CURB HEIGHT(INCHES) = 6.0

                                                                                                                WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TC CALCULATION! 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.061
                                                                                                                SUBAREA RUNOFF(CFS) = 0.91
TOTAL AREA(ACRES) = 0.37 TOTAL RUNOFF(CFS) =
                                                                                                                                                                                                0.91
  STREET HALFWIDTH(FEET) = 18.00
                                                                                                              ******************
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
                                                                                                                FLOW PROCESS FROM NODE 331.00 TO NODE 332.00 IS CODE = 31
  UNSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.0
                                                                                                                >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                      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) =
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.020
                                                                                                                ELEVATION DATA: UPSTREAM(FEET) = 880.00 DOWNSTF FLOW LENGTH(FEET) = 1000.00 MANNING'S N = 0.01 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                                                                                  880.00 DOWNSTREAM(FEET) = 850.00
                                                                                                                DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.8 INCHES
```

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PIPE-FLOW VELOCITY(FEET/SEC.) = 5.28
ESTIMATED PIPE DIAMETER(INCH) = 18.00
                                                                     NUMBER OF PIPES = 1
  PIPE-FLOW(CFS) = 0.91
PIPE TRAVEL TIME(MIN.) = 3
                                                                                                                                  FLOW PROCESS FROM NODE 309.00 TO NODE 309.00 IS CODE = 11
                                             3.15 Tc(MIN.) =
  LONGEST FLOWPATH FROM NODE
                                                  330.00 TO NODE
                                                                                 332.00 =
                                                                                                    1100 00 FFFT
                                                                                                                                  >>>> CONFILIENCE MEMORY BANK # 2 WITH THE MAIN_STREAM MEMORY
  FLOW PROCESS FROM NODE 331.00 TO NODE 332.00 IS CODE = 81
                                                                                                                                   ** MAIN STREAM CONFLUENCE DATA **
                                                                                                                                                                                      INTENSITY
                                                                                                                                                     (CFS)
                                                                                                                                                                     (MTN.)
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                                                  NUMBER
                                                                                                                                                                                   (INCH/HOUR)
                                                                                                                                                                                                           (ACRE)
                                                                                                                                                                                    4.100
330.00 TO NODE
                                                                                                                                                                                                             19.55
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.428
                                                                                                                                  LONGEST FLOWPATH FROM NODE
                                                                                                                                                                                                                 309.00 =
                                                                                                                                                                                                                                      3296.00 FEET.
   *HISER SPECIFIED(SHBAREA):
  *USER SPECIFIED(SUBAREA):

RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100

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

AREA-AVERAGE RUNOFF COEFFICIENT = 0.4046

SUBAREA AREA(ACRES) = 3.77

SUBAREA RUNOFF(CFS) = 8
                                                                                                                                  ** MEMORY BANK # 2 CONFLUENCE DATA **
STREAM RUNOFF TC INTENSI
                                                                                                                                                                                      INTENSITY
                                                                                                                                                                                                             AREA
                                                                                                                                                                                                           (ACRE)
                                                                                                                                                                     (MTN.)
                                                                                                                                                                                   (INCH/HOUR)
                                                                                                                                  NUMBER
                                                                                                                                                      (CFS)
                                              .77 SUBAREA RUNOFF(CFS) = 4.1 TOTAL RUNOFF(CFS) =
                                                                                                                                                                                                              3.80
                                                                                                                                                                                    300.00 TO NODE
                                                                                                                                                                                                                 309.00 =
                                                                                                    9 09
                                                                                                                                  LONGEST FLOWPATH FROM NODE
                                                                                                                                                                                                                                      1135.15 FEET.
  TOTAL AREA(ACRES) =
  TC(MIN.) =
                        9.42
                                                                                                                                   ** PEAK FLOW RATE TABLE **
*******************
                                                                                                                                                                                      INTENSITY
                                                                                                                                   STREAM
                                                                                                                                                  RUNOFF
                                                                                                                                                                        Tc
                                                                                                                                                    (CFS)
28.62
  FLOW PROCESS FROM NODE 332.00 TO NODE 333.00 IS CODE = 31
                                                                                                                                   NUMBER
                                                                                                                                                                      (MIN.)
                                                                                                                                                                                    (INCH/HOUR)
                                                                                                                                                                                            8.168
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<>>>>
                                                                                                                                                                      14.56
                                                                                                                                                     40.57
                                                                                                                                                                                            4.100
                                                                                                                                   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                                  PEAK FLOW RATE(CFS) =
TOTAL AREA(ACRES) =
  ELEVATION DATA: UPSTREAM(FEET) =
                                                           850.00 DOWNSTREAM(FEET) = 760.00
                                                                                                                                                                              40.57
                                                                                                                                                                                           Tc(MIN.) =
  FLOW LENGTH(FEET) = 150.00 MANNING'S N = 0.0
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                                                                                             23.3
  DEPTH OF FLOW IN 18.0 INCH PIPE IS 4
PIPE-FLOW VELOCITY(FEET/SEC.) = 29.85
ESTIMATED PIPE DIAMETER(INCH) = 18.00
                                                               4.1 INCHES
                                                                                                                                  FLOW PROCESS FROM NODE 309.00 TO NODE 309.00 IS CODE = 11
                                                                       NUMBER OF PIPES = 1
  PIPE-FLOW(CFS) = 9.09
PIPE TRAVEL TIME(MIN.) = 0.08
                                                                                                                                  >>>>CONFIJIENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<
                                                         Tc(MIN.) =
  LONGEST FLOWPATH FROM NODE 330.00 TO NODE 333.00 =
                                                                                                   1250.00 FEET.
                                                                                                                                   ** MAIN STREAM CONFILIENCE DATA **
RUNOFF
(CFS)
                                                                                                                                                                                      INTENSITY
  FLOW PROCESS FROM NODE 332.00 TO NODE 333.00 IS CODE = 81
                                                                                                                                                                      (MIN.)
                                                                                                                                  NUMBER
                                                                                                                                                                                    (INCH/HOUR)
                                                                                                                                                                                                          (ACRE)
                                                                                                                                                       40 57
                                                                                                                                                                      14 56
                                                                                                                                                                                        4 100
                                                                                                                                                                                                             23.35
                                                                                                                                                                                                                 309.00 =
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                                                  LONGEST FLOWPATH FROM NODE
                                                                                                                                                                                    330.00 TO NODE
                                                                                                                                                                                                                                      3296.00 FEET.
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.397
                                                                                                                                   ** MEMORY BANK # 3 CONFLUENCE DATA **
   USER SPECIFIED(SUBAREA):
                                                                                                                                                    RUNOFF
                                                                                                                                                                                      INTENSITY
                                                                                                                                                                                                             AREA
                                                                                                                                   STREAM
                                                                                                                                                                        Tc
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.4072 SUBAREA AREA(ACRES) = 3.77 SUBAREA RUNOFF(CFS) = 8 TOTAL AREA(ACRES) = 7.70 SUBAREA RUNOFF(CFS) = 8 TOTAL RUNO
                                                                                                                                                                                                           (ACRE)
                                                                                                                                  NUMBER
                                                                                                                                                      (CFS)
                                                                                                                                                                     (MIN.)
                                                                                                                                                                                    (INCH/HOUR)
                                                                                                                                                                                         7.055
                                              ... - U.4072
.77 SUBAREA RUNOFF(CFS) = 7.9 TOTAL PINORE
                                                                                                                                                                                    316.00 TO NODE
                                                                                                                                  LONGEST FLOWPATH FROM NODE
                                                                                                                                                                                                                 309.00 =
                                                                                                                                                                                                                                      1420.00 FEET.
                                                                                                8.34
  TOTAL AREA(ACRES)
                                                                                                                                   ** PEAK FLOW RATE TABLE **
  TC(MIN.) =
                        9.50
                                                                                                                                   STREAM
                                                                                                                                                   RUNOFF
                                                                                                                                                                        Tc
                                                                                                                                                                                      INTENSITY
                                                                                                                                                                                   (INCH/HOUR)
                                                                                                                                   NIIMBER
                                                                                                                                                     (CFS)
                                                                                                                                                                     (MIN.)
                                                                                                                                                                                            7.055
                                                                                                                                                                     14.56
  FLOW PROCESS FROM NODE 333.00 TO NODE 334.00 IS CODE = 61
                                                                                                                                         2
                                                                                                                                                     79.98
                                                                                                                                                                                            4.100
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
                                                                                                                                   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                                   PEAK FLOW RATE(CFS) =
  >>>>(STANDARD CURB SECTION USED) < < < <
                                                                                                                                                                               85.31
                                                                                                                                                                                            Tc(MIN.) =
                                                                                                                                                                                                                   6.27
                                                                                                                                                                       41.0
  UPSTREAM ELEVATION(FEET) = 755.00 DOWNSTREAM ELEVATION(FEET) = 648.00 STREET LENGTH(FEET) = 1769.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                                                   TOTAL AREA(ACRES) =
                                                                                                                                  FLOW PROCESS FROM NODE 309.00 TO NODE 309.00 IS CODE = 12
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
                                                                                                                                  >>>>CLEAR MEMORY BANK # 3 <<<<<
  UNSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                                                  FLOW PROCESS FROM NODE 309.00 TO NODE 309.00 IS CODE = 12
  SPECIFIED NUMBER OF HALFSTREETS 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 = 0.02
                                                                                                                                  >>>>CLEAR MEMORY BANK # 2 <<<<
                                                                                                                 0.0150
                                                                                                     0.0200
      **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                  26 02
      STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                                                                  FLOW PROCESS FROM NODE 309.00 TO NODE 335.00 IS CODE = 31
     STREET FLOW DEPTH(FEET) = 0.40
   STREET FLOW DEPTH(FEET) = 0.40
HALFSTREET FLOOD WIDTH(FEET) = 13.61
AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.61
PRODUCT OF DEPTHEVELOCITY(FT*FT/SEC.) = 2.63
STREET FLOW TRAVEL TIME(MIN.) = 4.46 Tc(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.211
                                                                                                                                  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                                  -----
                                                                                                                                   ELEVATION DATA: UPSTREAM(FEET) = 645.00 DOWNSTREAM(FEET) = 638.00 FLOW LENGTH(FEET) = 552.00 MANNING'S N = 0.013
                                                                                                                                  FIOW LENGTH(FEET) = 552.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 39.0 INCH PIPE IS 30.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 12.42
ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER
  *USER SPECIFIED(SUBAREA):
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
  UNDAIN NEBEL GRADED ARRAS ROBOUT CONFILIR
S.C.S. CURVE NUMBER (AMC II) = 0
ARRA-AVERAGE RUNOFF COEFFICIENT = 0.373
SUBARRA ARRA(ACRES) = 11.64
SUBARR
TOTAL ARRA(ACRES) = 19.5
PEF
                                                                                                                                                                                                      NUMBER OF PIPES =
                                                                                                                                  PIPE-FLOW(CFS) = 85.31
PIPE TRAVEL TIME(MIN.) = 0.74 Tc(MIN.) = LONGEST FLOWPATH FROM NODE 330.00 TO NODE
                                                           SUBAREA RUNOFF(CFS) = 1
PEAK FLOW RATE(CFS) =
                                                                                                                                                                                                                 335.00 =
                                                                                                                                                                                                                                   3848.00 FEET.
                                                                                                                               END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42 HALFSTREET FLOOD WIDTH(FEET) = 14.59 FLOW VELOCITY(FEET/SEC.) = 6.84 DEPTH*VELOCITY(FT*FT/SEC.) = LONGEST FLOWPATH FROM NODE 330.00 TO NODE 334.00 = 3019
                                                                                                                                  FLOW PROCESS FROM NODE 335.00 TO NODE
                                                                                                                                                                                                         335.00 TS CODE =
                                                                                                   3019.00 FEET.
                                                                                                                                   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
                                                                                                                                  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                                                  CONFLUENCE VALUES USED FOR THE OF CONCENTRATION(MIN.) = 7.02
RAINFALL INTENSITY(INCH/HR) = 6.57
CONDEAN ARRA(ACRES) = 41.05
  FLOW PROCESS FROM NODE 334.00 TO NODE 309.00 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
  ELEVATION DATA: UPSTREAM(FEET) = 643.00 DOWNSTREAM(FEET) = 641.00
                                                                                                                                   PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                                                    85.31
  FLOW LENGTH(FEET) = 277.00 MANNING'S N = 0.0 DEPTH OF FLOW IN 30.0 INCH PIPE IS 22.3 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 7.84 ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER
                                                     MANNING'S N =
                                                                              0.013
                                                                                                                                  FLOW PROCESS FROM NODE 337.00 TO NODE 338.00 IS CODE = 21
                                                                                                                                  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                      NUMBER OF PIPES = 1
  PIPE-FLOW(CFS) = 30.72
PIPE TRAVEL TIME(MIN.) = 0.59
                                                        Tc(MIN.) =
                                                                                14.56
                                                                                                                                    *USER SPECIFIED(SUBAREA):
  LONGEST FLOWPATH FROM NODE
                                                  330.00 TO NODE
                                                                              309.00 =
                                                                                                    3296.00 FEET.
                                                                                                                                  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
```

```
S.C.S. CURVE NUMBER (AMC II)
  UNITIAL SUBAREA FLOW-LENGTH(FEET) =
UPSTREAM ELEVATION(FEET) = 653.00
DOWNSTREAM ELEVATION(FEET) = 651.00
                                                                                                                 ********************
                                                         70.00
                                                                                                                   FLOW PROCESS FROM NODE 340.00 TO NODE 340.00 IS CODE = 1
  ELEVATION DIFFERENCE(FEET) = 2.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                    >>>>DESIGNATE INDEDENDENT STREAM FOR CONFLIENCE
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.386
                                                                                                                    TOTAL NUMBER OF STREAMS = 2
                                                                                                                   TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 8.93
RAINFALL INTENSITY(INCH/HR) = 5.62
TOTAL STREAM AREA (ACRES) = 42.41
PEAK FLOW RATE(CFS) AT CONFLUENCE = 87.39
  SUBAREA RUNOFF(CFS) = 0.39
TOTAL AREA(ACRES) = 0.15 TOTAL RUNOFF(CFS) =
*********************
  FLOW PROCESS FROM NODE 338.00 TO NODE 339.00 IS CODE = 31
                                                                                                                 ********************
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                   FLOW PROCESS FROM NODE 342.00 TO NODE 343.00 IS CODE = 21
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<
                                                                                                                    >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                                    *USER SPECIFIED(SUBAREA):
                                                                                                                    LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
                                                                                                                    S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                                   INITIAL SUBARBA FLOW-LENGTH(FEET) =
UPSTREAM ELEVATION(FEET) = 650.00
DOWNSTREAM ELEVATION(FEET) = 648.00
                                                                                                                    ELEVATION DIFFERENCE(FEET) = 2.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                         566.00 FEET.
                                                                                                                     100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
                                                                                                                    NOTE: RAINFALL INTENSITY IS BASED ON TC = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 0.69
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) =
  FLOW PROCESS FROM NODE 338.00 TO NODE 339.00 IS CODE = 81
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.289
                                                                                                                 *****************
  100 YEAR RAINFALL INTENSITY(INCH/HOCK),
*USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4100
SUBAREA AREA(ACRES) = 1.21 SUBAREA RUNOFF(CFS) = 2
TOTAL AREA(ACRES) = 1.4 TOTAL RUNOFF(CFS) =
                                                                                                                   FLOW PROCESS FROM NODE 343.00 TO NODE 344.00 IS CODE = 61
                                                                                                                   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                   STREET LENGTH(FEET) = 2193.00 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 339.00 TO NODE 335.00 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
                                                                                                                    SPECIFIED NUMBER OF HALFSTREETS 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 = 0.0
  ELEVATION DATA: UPSTREAM(FEET) =
                                                    638.00 DOWNSTREAM(FEET) = 637.00
  FLOW LENGTH(FEET) = 50.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                                                                                                                          0.0200
  DEPTH OF FLOW IN 18.0 INCH PIPE IS 5.
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.42
ESTIMATED PIPE DIAMETER(INCH) = 18.00
                                                         5.5 INCHES
                                                                                                                       **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                              NUMBER OF PIPES = 1
                                                                                                                       STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                                                   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.39
HALFSTREET FLOOD WIDTH(FEET) = 13.04
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.56
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.99
STREET FLOW TRAVEL TIME(MIN.) = 14.30 Tc(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.716
  PIPE-FLOW(CFS) = 2.95
PIPE TRAVEL TIME(MIN.) =
  PIPE-FLOW(CFS) = 2.95

PIPE TRAVEL TIME(MIN.) = 0.13 Tc(MIN.) = 9.94

LONGEST FLOWPATH FROM NODE 337.00 TO NODE 335.00 =
                                                                                        616.00 FEET.
                                                                                                                                                                                                  16.95
  FLOW PROCESS FROM NODE 335.00 TO NODE 335.00 IS CODE = 1
                                                                                                                    *USER SPECIFIED(SUBAREA):
LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
                                                                                                                   S.C.S. CUTVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.850
SUBAREA AREA(ACRES) = 5.01 SUBARE
TOTAL AREA(ACRES) = 5.1 PEA
  >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
  TOTAL NUMBER OF STREAMS = 2
                                                                                                                                                                     SUBAREA RUNOFF(CFS) =
  TOTAL NUMBER OF SIRE-WAYS - 2 ORE:
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 9.94
RAINFALL INTENSITY(INCH/HR) = 5.24
TOTAL STREAM AREA(ACRES) = 1.36
                                                                                                                                                                          PEAK FLOW RATE(CFS) =
                                                                                                                    END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                   END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FERT) = 0.45 HALFSTREET FLOOD WIDTH(FEET) = 16.28
FLOW VELOCITY(FEET/SEC.) = 2.92 DEPTH*VELOCITY(FT*FT/SEC.) = 1.32
*NOTE: INITIAL SUBARBA NOMOGRAPH WITH SUBARBA PARAMETERS,
AND L = 2193.0 FT WITH ELEVATION-DROP = 21.0 FT, IS 34.8 CFS,
WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 3444.00
  TOTAL STREAM AREA(ACRES) = 1.36
PEAK FLOW RATE(CFS) AT CONFLUENCE =
  ** CONFLUENCE DATA **
  STREAM
                RUNOFF
                                                                                                                                                                                                        2263.00 FEET.
  NUMBER
                   (CFS)
                                 (MIN.)
                                               (INCH/HOUR)
                                                                     (ACRE)
                                                                                                                   LONGEST FLOWPATH FROM NODE 342.00 TO NODE 344.00 =
                                    .02
                    2.95
                                 9.94
                                                    5.244
                                                                          1 36
                                                                                                                   FLOW PROCESS FROM NODE 344.00 TO NODE 340.00 IS CODE = 31
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                    >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
                                                                                                                    >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<>>>
ELEVATION DATA: UPSTREAM(FEET) = 622.50 DOWNSTREAM(FEET) = 622.00
  ** PEAK FLOW RATE TABLE **
                                                                                                                    ELEVATION DATA: UPSTREAM(FEET) =
  STREAM
                  RUNOFF
                                   Tc
                                                INTENSITY
                                                                                                                   ELEVATION DATA: UPSTREAM(FEET) = 622.50 DOWNSTREAM(FEET) = FLOW LENGTH(FEET) = 26.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 13.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 9.78
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 16.14
PIPE TRAVEL TIME(MIN.) = 0.04 Tc(MIN.) = 17.00
LONGEST FLOWPATH FROM NODE 342.00 TO NODE 340.00 = 2289
                                (MIN.)
                    (CFS)
  NUMBER
                                             (INCH/HOUR)
                                7.02
9.94
                                                  6.565
       2
                   71.09
                                                  5.244
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  COMPUTED CONFLUENCE __

PEAK FLOW RATE(CFS) = 87.
                                         87.39 Tc(MIN.) =
                                                                         7.02
  TOTAL AREA(ACRES) = 42.4

LONGEST FLOWPATH FROM NODE 330.00 TO NODE
                                                                                                                                                                                                         2289.00 FEET.
                                                                     335.00 = 3848.00 FEET.
                                                                                                                   FLOW PROCESS FROM NODE 340.00 TO NODE 340.00 IS CODE =
  FLOW PROCESS FROM NODE 335.00 TO NODE 340.00 IS CODE = 31
                                                                                                                    >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                    >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                                                   ELEVATION DATA: UPSTREAM(FEET) = 638.00 DOWNSTREAM(FEET) = 622.00 FLOW LENGTH(FEET) = 1400.00 MANNING'S N = 0.013
                                                                                                                   TOTAL NUMBER OF STREAMS = 2
                                                                                                                    CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  FLOW LENGTH(FEET) = 1400.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 42.0 INCH PIPE IS 29.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 12.19
ESTIMATED PIPE DIAMETER(INCH) = 42.00 NUMBER
                                                                                                                    TIME OF CONCENTRATION(MIN.) = 17.00
RAINFALL INTENSITY(INCH/HR) = 3.71
TOTAL STREAM AREA(ACRES) = 5.11
                                                               NUMBER OF PIPES = 1
                                                                                                                    PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                                                              16.14
  PIPE-FLOW(CFS) = 87.39
PIPE TRAVEL TIME(MIN.) = 1.91
LONGEST FLOWPATH FROM NODE 33
                                                  Tc(MIN.) =
                                                                                                                    ** CONFLUENCE DATA **
                                           330.00 TO NODE 340.00 = 5248.00 FEET.
                                                                                                                   STREAM
                                                                                                                                  RUNOFF
                                                                                                                                                     TC
                                                                                                                                                                  INTENSITY
                                                                                                                                                                                        AREA
```

```
FLOW VELOCITY(FEET/SEC.) = 3.54 DEPTH*VELOCITY(FT*FT/SEC.) : LONGEST FLOWPATH FROM NODE 351.00 TO NODE 353.00 = 8
                                            (MIN.) (INCH/HOUR)
   NUMBER
                          (CFS)
                                                                                          (ACRE)
                        87.39
16.14
                                         8.93
                                                                  5.619
3.710
                                                                                              42.41
                                                                                                                                                                                                                                                                          855 OO FEET
                                                                                                                                                   .....
   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                                                                      FLOW PROCESS FROM NODE 353.00 TO NODE 345.00 IS CODE = 31
   CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                                                       >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
   ** DEAK FLOW PATE TABLE **
                        RUNOFF
                                                              INTENSITY
                                                                                                                                                      ELEVATION DATA: UPSTREAM(FEET) = 607.00 DOWNST
FLOW LENGTH(FEET) = 35.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.39
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
   NUMBER
                         (CFS)
                                          (MTN.)
                                                           (TNCH/HOUR)
                                                                                                                                                                                                                         607.00 DOWNSTREAM(FEET) = 606.50
                         95.87
73.84
                                         8.93
17.00
                                                                 5.619
3.710
                                                                                                                                                                                                                                             0.013
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 95.87 Tc(MIN.) =
TOTAL AREA(ACRES) = 47.5
LONGEST FLOWPATH FROM NODE 330.00 TO NODE
                                                                                                                                                                                                                                      NUMBER OF PIPES = 1
                                                                                                                                                       PIPE TRAVEL TIME(MIN.) = 0
                                                                                              8.93
                                                                                                                                                       LIED-ILOW(CES) = 8.05

PIPE TRAVEL TIME(MIN.) = 0.08 Tc(MIN.) = 7.91

LONGEST FLOWPATH FROM NODE 351.00 TO NODE 345.00 =
                                                                                           340.00 = 5248.00 FEET.
**************************************
                                                                                                                                                 *******************
                                                                                                                                                      FLOW PROCESS FROM NODE 345.00 TO NODE 345.00 IS CODE = 1
   FLOW PROCESS FROM NODE 340.00 TO NODE 345.00 IS CODE = 31
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>SUSING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                                                       >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE
                                                                                                                                                   _____
______
                                                                                                                                                      TOTAL NUMBER OF STREAMS = 3
  ELEVATION DATA: UPSTREAM(FEET) = 622.50 DOWNSTREAM(FEET) = 602.00 FLOW LENGTH(FEET) = 1115.00 MANNING'S N = 0.013
                                                                                                                                                       TOTAL NORDER OF STREAMS - STREAM 2 ARE:
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 7.91
RAINFALL INTENSITY(INCH/HR) = 6.07
  ELEVATION DATA: UPSTREAM (FEET) = 622.50 DOWNS:
FLOW LENGTH(FEET) = 1115.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 39.0 INCH PIPE IS 28.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 14.84
ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER
                                                                                                                                                      TOTAL STREAM AREA(ACRES) = 1.55
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                 NUMBER OF PIPES =
   PIPE-FLOW(CFS) = 95.87
PIPE TRAVEL TIME(MIN.) = 1.25 Tc(MIN.) = 10.18
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 345.00 =
                                                                                                                                                   ********************
                                                                                                               6363.00 FEET.
                                                                                                                                                      FLOW PROCESS FROM NODE 347.00 TO NODE 348.00 IS CODE = 21
**********************
                                                                                                                                                       >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
  FLOW PROCESS FROM NODE 345.00 TO NODE 345.00 IS CODE = 1
                                                                                                                                                       *USER SPECIFIED(SUBAREA):
                                                                                                                                                      *USER SPECIFIED(SUBAREA):

RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 70.00

UPSTREAM ELEVATION(FEET) = 670.00

DOWNSTREAM ELEVATION(FEET) = 666.00

DUNNSTREAM ELEVATION(FEET) = 4 0.0
   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
                                ______
  TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
   TIME OF CONCENTRATION(MIN.) = 10.18
RAINFALL INTENSITY(INCH/HR) = 5.16
TOTAL STREAM AREA(ACRES) = 47.52
                                                                                                                                                      ELEVATION DIFFERENCE(FEET) = 4.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                                                                      100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.412
SUBAREA RUNOFF(CFS) = 0.94
TOTAL AREA(ACRES) = 0.31 TOTAL RUNOFF(CFS) =
                                                                              95.87
   PEAK FLOW RATE(CFS) AT CONFLUENCE =
0 94
  FLOW PROCESS FROM NODE 351.00 TO NODE 352.00 IS CODE = 21
                                                                                                                                                   FLOW PROCESS FROM NODE 348.00 TO NODE 349.00 IS CODE = 31
   >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
   *USER SPECIFIED(SUBAREA):
                                                                                                                                                       >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
   LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
                                                                                                                                                       >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
  LIMITED INDUSTRIAL RUNOFF COEFFICIENT :
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) =
UPSTREAM ELEVATION(FEET) = 627.00
DOWNSTREAM ELEVATION(FEET) = 626.50
ELEVATION DIFFERENCE(FEET) = 0.50
                                                                                                                                                      ELEVATION DATA: UPSTREAM(FEET) = 666.00 DOWNSTREF
FLOW LENGTH(FEET) = 1120.00 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
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.36
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF
PIPE-FLOW(CFS) = 0.94
PIPE TRAVEL TIME(MIN.) = 2.94 TC(MIN.) = 8.7
                                                                                                                                                                                                                         666.00 DOWNSTREAM(FEET) = 610.00
  ELEVATION DIFFERENCE (FEET) = 0.50
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 3.709
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 54.29
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TC CALCULATION!
100 YEAR RAINFALL INTENSITY (INCH/HOUR) = 8.168
NOTE: RAINFALL INTENSITY IS BASED ON TC = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 1.11
TOTAL AREA(ACRES) = 0.16 TOTAL RUNOFF(CFS) = 1.11
                                                                   0.50
                                                                                                                                                                                                                                      NUMBER OF PIPES = 1
                                                                                                                                                       FIFE-FLOW(CFS) = 0.94
PIPE TRAVEL TIME(MIN.) = 2.94 Tc(MIN.) = 8.75
LONGEST FLOWPATH FROM NODE 347.00 TO NODE 349.00 =
                                                                                                                                                                                                                                                                     1190.00 FEET.
                                                                                                                                                   *****************
                                                                                                                                                      FLOW PROCESS FROM NODE 348.00 TO NODE 349.00 IS CODE = 81
                                                                                                                                                       >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                                                                      100 YEAR RAINFALL INTENSITY(INCH, HOCK,
*USER SPECIFIED(SUBAREA):
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4100
SUBAREA AREA(ACRES) = 8.70 SUBAREA RUNOFF(CFS) = 20.31
TOTAL AREA(ACRES) = 9.0 TOTAL RUNOFF(CFS) = 21.0
   FLOW PROCESS FROM NODE 352.00 TO NODE 353.00 IS CODE = 61
   >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
  >>>>(STANDARD CURB SECTION USED) <<<</td>
    UPSTREAM ELEVATION(FEET) = 626.50 DOWNSTREAM ELEVATION(FEET) = 607.00 STREET LENGTH(FEET) = 785.00 CURB HEIGHT(INCHES) = 6.0

   STREET LENGTH(FEET) = 785.00
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 349.00 TO NODE 345.00 IS CODE =
                                                                                                                                                       >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<
   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                                                                      ELEVATION DATA: UPSTREAM(FEET) = 605.00 DOWNSTREAM(FEET) = 598.00 FLOW LENGTH(FEET) = 130.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 18.0 INCH PIPE IS 13.2 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 15.18 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
   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 = 0.02
                                                                                                                     0.0200
       **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                   4 78
      STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
                                                                                                                                                      ESTIMALED FIFE PLANTAGE AND STREET PROPERTY OF STRE
      STREET FLOW DEPTH(FEET) = 0.29
  STREET FLOW DEPTH(FEET) = 0.29
HALPSTREET FLOOD WIDTH(FEET) = 7.97
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.17
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.91
STREET FLOW TRAVEL TIME(MIN.) = 4.13 TC(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.113
                                                                                                                                                                                                                                                                       1320.00 FEET.
                                                                                                                                                   ******************
                                                                                                                                                      FLOW PROCESS FROM NODE 349.00 TO NODE 345.00 IS CODE = 1
   *USER SPECIFIED(SUBAREA):
LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
                                                                                                                                                        >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
   S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT =
SUBAREA AREA(ACRES) = 1.39
TOTAL AREA(ACRES) = 1.5
                                                                 Ω
                                                                                                                                                       >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                                   0.850
                                                                     SUBAREA RUNOFF(CFS) =
                                                                                                                                                       TOTAL NUMBER OF STREAMS = 3
                                                                                                                                                       CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
                                                                         PEAK FLOW RATE(CFS) =
                                                                                                                                8.05
                                                                                                                                                      TIME OF CONCENTRATION(MIN.) = 8.89
RAINFALL INTENSITY(INCH/HR) = 5.63
   END OF SUBAREA STREET FLOW HYDRAULICS:
   DEPTH(FEET) = 0.33 HALFSTREET FLOOD WIDTH(FEET) = 10.09
                                                                                                                                                       TOTAL STREAM AREA(ACRES) =
                                                                                                                                                                                                                9.01
```

```
DEPTH OF FLOW IN 18.0 INCH PIPE IS 11.7 INCHES
  PEAK FLOW RATE(CFS) AT CONFLUENCE = 21.03
                                                                                                     PIPE-FLOW VELOCITY(FEET/SEC.) = 11.62
ESTIMATED PIPE DIAMETER(INCH) = 18.00
  ** CONFLUENCE DATA **
                                Тс
                                           INTENSITY
                                                             AREA
  STREAM
               RUNOFF
                                                                                                     PIPE-FLOW(CFS) = 14.09
PIPE TRAVEL TIME(MIN.) = 0
                                                                                                     PIPE TRAVEL TIME(MIN.) = 0.04 Tc(MIN.) = 4.57
LONGEST FLOWPATH FROM NODE 357.00 TO NODE 355.00 =
  MIIMBED
                 (CES)
                              (MIN.)
                                         (INCH/HOUR)
                                                            (ACRE)
                            10.18
                                             5.163
                  8.05
                              7.91
                                             6.074
                                                                1.55
                                                                                                  *****************
                21.03
                             8.89
                                             5.634
                                                                                                    FLOW PROCESS FROM NODE 355.00 TO NODE 354.00 IS CODE = 31
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                     >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
  CONFLUENCE FORMULA USED FOR
                                      3 STREAMS.
  ** PEAK FLOW RATE TABLE **
                                                                                                  _____
                                                                                                     ELEVATION DATA: UPSTREAM(FEET) = 558.00 DOWNSTREAM(FEET) = 557.00 FLOW LENGTH(FEET) = 60.00 MANNING'S N = 0.013
                            Tc (MIN.)
                                          INTENSITY
                                                                                                     ELEVATION DATA: UPSIREARICEDI; - SSUBSECTION DATA: UPSIREARICEDI; - SSUBSECTION DEPTH OF FLOW IN 21.0 INCH PIPE IS 13.0 INCHES
  NUMBER
                 (CFS)
                                       (INCH/HOUR)
                                           6.074
                             7.91
               108.27
                                                                                                     PIPE-FLOW VELOCITY(FEET/SEC.) = 8.99
ESTIMATED PIPE DIAMETER(INCH) = 21.00
                           10.18
                                                                                                                                                        NUMBER OF PIPES =
       3
               121.99
                                           5.163
                                                                                                    ESTIMATED FIFE DIAGRADERAL TANGER, 2----
PIPE-FLOW(CFS) = 14.09
PIPE TRAVEL TIME(MIN.) = 0.11 Tc(MIN.) = 4.68
LONGEST FLOWPATH FROM NODE 357.00 TO NODE 354.00 =
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) = 121.99 Tc(MIN.) = TOTAL AREA(ACRES) = 58.1
                                                              10.18
                                                                                                                                                                               995.00 FEET.
  LONGEST FLOWPATH FROM NODE 330.00 TO NODE
                                                                                                  ............
                                                             345.00 = 6363.00 FEET.
                                                                                                    FLOW PROCESS FROM NODE 354.00 TO NODE 354.00 IS CODE =
......
  FLOW PROCESS FROM NODE 354.00 TO NODE 354.00 IS CODE = 1
                                                                                                     >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <--
                                                                                                     >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                                                                    TOTAL NUMBER OF STREAMS = 2
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
TOTAL NUMBER OF STREAMS = 2
                                                                                                     CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                     CONFLUENCE VALUES USED FOR INDEFENDENT TIME OF CONCENTRATION(MIN.) = 4.68 RAINFALL INTENSITY(INCH/HR) = 8.17
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
  CONFLORME VALUES SEEF FOR TRANSPORTER TO TIME OF CONCENTRATION (MIN.) = 10.18
RAINFALL INTENSITY(INCH/HR) = 5.16
TOTAL STREAM AREA(ACRES) = 58.08
                                                                                                                                            2.03
                                                                                                     TOTAL STREAM AREA(ACRES) = 2.03
PEAK FLOW RATE(CFS) AT CONFLUENCE =
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                 121.99
                                                                                                     ** CONFIGUENCE DATA **
......
                                                                                                               RUNOFF
(CFS)
                                                                                                     STREAM
 FLOW PROCESS FROM NODE 357.00 TO NODE 358.00 IS CODE = 21
                                                                                                                                (MIN.)
                                                                                                     NUMBER
                                                                                                                                            (INCH/HOUR)
                                                                                                                                                               (ACRE)
                                                                                                                              10.18
                                                                                                                  121 99
                                                                                                                                               5 163
                                                                                                                                                                 58.08
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                                               4.68
                                                                                                                   14.09
                                                                                                                                               8.168
                                                                                                                                                                   2.03
______
  *USER SPECIFIED(SUBAREA):
                                                                                                    RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR \ \ 2 STREAMS.
  LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
                                           0 70.00
  S.C.S. CURVE NUMBER (AMC II) = INITIAL SUBAREA FLOW-LENGTH(FEET)
                                                                                                     ** PEAK FLOW RATE TABLE **
  UPSTREAM ELEVATION(FEET) = 665.00
DOWNSTREAM ELEVATION(FEET) = 656.00
ELEVATION DIFFERENCE(FEET) = 9.00
SUBARBA OVERLAND TIME OF FLOW(MIN.) =
                                                                                                     STREAM
                                                                                                                  RUNOFF
                                                                                                                                  Tc
                                                                                                                                            TNTENSITY
                                                                                                                    (CFS)
                                                                                                                              (MIN.)
                                                                                                     NUMBER
                                                                                                                                          (INCH/HOUR)
                                                                                                                           4.68
                                                     1.748
                                                                                                         2
                                                                                                                  130.90
                                                                                                                                              5.163
  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 TO = 5-MINUTE.
                                                                                                     COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  NOTE: RAINFALL INITERS.

SUBAREA RUNOFF(CFS) =
                                                                                                    PEAK FLOW RATE(CFS) = 130.90 Tc(MIN.) = 10.18

TOTAL AREA(ACRES) = 60.1

LONGEST FLOWPATH FROM NODE 330.00 TO NODE 354.00 = 6363.00 FEET.
                                    1.60
                                0.23 TOTAL RUNOFF(CFS) =
  TOTAL AREA(ACRES) =
**************
  FLOW PROCESS FROM NODE 358.00 TO NODE 359.00 IS CODE = 61
                                                                                                    FLOW PROCESS FROM NODE 354.00 TO NODE 361.00 IS CODE = 31
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<>>>>>(STANDARD CURB SECTION USED)<>>>>
                                                                                                     >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
UPSTREAM ELEVATION(FEET) = 656.00 DOWNSTREAM ELEVATION(FEET) = 604.50
                                                                                                    ELEVATION DATA: UPSTREAM(FEET) = 600.00 DOWNSTREAM(FEET) = 5
FLOW LENGTH(FEET) = 158.00 MANNING'S N = 0.013
  STREET LENGTH(FEET) = 835.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 18.00
                                                                                                     FLOW LENGTH(FEET) = 158.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 33.0 INCH PIPE IS 22.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 29.86
ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 9.00
                                                                                                                                                        NUMBER OF PIPES = 1
                                                                                                    ESTIMATED FIFE DIAGRETIAN AND PIPE-FIGN (FS) = 130.90
PIPE TRAVEL TIME(MIN.) = 0.09 Tc(MIN.) = 10.27
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 361.00 =
  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.0
                                                                                                                                                                               6521.00 FEET.
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
                                                                                                  STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =
                                                                                                    FLOW PROCESS FROM NODE 361.00 TO NODE 281.00 IS CODE = 31
                                                                                      0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
                                                                                                     >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                            7.85
                                                                                                     >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                                     >>>>USING COMPUTER-ESITMALED FILELY,

ELEVATION DATA: UPSTREAM(FEET) = 580.00 DOWNSTREAM(FEET) = 579.00

FLOW LENGTH(FEET) = 817.00 MANNING'S N = 0.013
    STREET FLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.29
                                                                                                    ELEVATION DATA: DESIREAR(FEET) = 581.70 MANNING'S NO DEPTH OF FLOW IN 72.0 INCH PIPE IS 53.7 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.79 ESTIMATED PIPE DIAMETER(INCH) = 72.00 PIPE-FLOW(CFS) = 130.90 PIPE TRAVEL TIME(MIN.) = 2.35 TC(MIN.)
    HALFSTREET FLOOD WIDTH(FEET) = 8.15
AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.01
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =
                                                                                                                                                    53.7 INCHES
                                                           1.45
  STREET FLOW TRAVEL TIME (MIN.) = 2.78 Tc(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168 NOTE: RAINFALL INTENSITY IS BASED ON TC = 5-MINUTE.
                                                                                                                                                         NUMBER OF PIPES = 1
                                                                                                                                             Tc(MIN.) = 12.62
                                                                                                     LONGEST FLOWPATH FROM NODE 330.00 TO NODE
  *USER SPECIFIED(SUBAREA):
LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
                                                                                                                                                                281.00 =
  S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.850
SUBAREA AREA(ACRES) = 1.80 SUBARE.
TOTAL APEA(ACRES) = 2.0 PEA
                                                                                                    FLOW PROCESS FROM NODE 361.00 TO NODE 281.00 IS CODE = 81
                                          SUBAREA RUNOFF(CFS) = 12.50
                                                PEAK FLOW RATE(CFS) =
  TOTAL AREA(ACRES) =
                                  2.0
                                                                                   14 09
                                                                                                     >>>>ADDITION OF SUBARRA TO MAINLINE PEAK FLOW.
                                                                                                      100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.494
  END OF SUBAREA STREET FLOW HYDRAULICS:
  END OF SUBAREA STREET FLOW HIDRAULICS.

DEPTH(FEET) = 0.34 HALFSTREET FLOOD WIDTH(FEET) = 10.51

FLOW VELOCITY(FEET/SEC.) = 5.76 DEPTH*VELOCITY(FT*FT/SEC

LONGEST FLOWPATH FROM NODE 357.00 TO NODE 359.00 =
                                                                                                     *USER SPECIFIED(SUBAREA):
                                             DEPTH*VELOCITY(FT*FT/SEC.) =
                                                                                                     URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3500
                                                                                                     S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.5315
SUBAREA AREA(ACRES) = 3.68 SUBAREA RUNOFF(CFS) =
TOTAL AREA(ACRES) = 63.8 TOTAL RUNOFF(CFS) =
                                                                               905.00 FEET.
                                                                                                                                                                             152.39
  FLOW PROCESS FROM NODE 359.00 TO NODE 355.00 IS CODE = 31
                                                                                                     TC(MIN.) =
                                                                                                                  12.62
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
 ELEVATION DATA: UPSTREAM(FEET) = 599.00 DOWNSTREAM(FEET) = 598.00 FLOW LENGTH(FEET) = 30.00 MANNING'S N = 0.013
                                                                                                    FLOW PROCESS FROM NODE 281.00 TO NODE 281.00 IS CODE = 11
                                                                                                    >>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY
```

** MAIN STREAM CONFLUENCE DATA **
STREAM RUNOFF TC INTENSITY Tc (MIN.) 12.62 AREA INTENSITY AREA (INCH/HOUR) (ACRE) 4.494 63.79 330.00 TO NODE 281.00 = NUMBER (CFS) 152.39 LONGEST FLOWPATH FROM NODE 7338.00 FEET. ** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM RUNOFF TC INTENSITY AREA
NUMBER (CFS) (MIN.) (INCH/HOUR) (ACRE)
1 195.82 14.16 4.174 97.55

LONGEST FLOWPATH FROM NODE 120.00 TO NODE 28 281.00 = LONGEST FLOWPATH FROM NODE 4441.00 FEET. ** PEAK FLOW RATE TABLE ** RUNOFF (CFS) 327.00 337.35 TC (MIN.) 12.62 14.16 STREAM INTENSITY (INCH/HOUR) 4.494 4.174 NUMBER 1 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 337.35 Tc(MIN.) = TOTAL AREA(ACRES) = 161.3 ****************** FLOW PROCESS FROM NODE 281.00 TO NODE 281.00 IS CODE = 12 >>>>CLEAR MEMORY BANK # 1 <<<< ______ END OF STUDY SUMMARY:

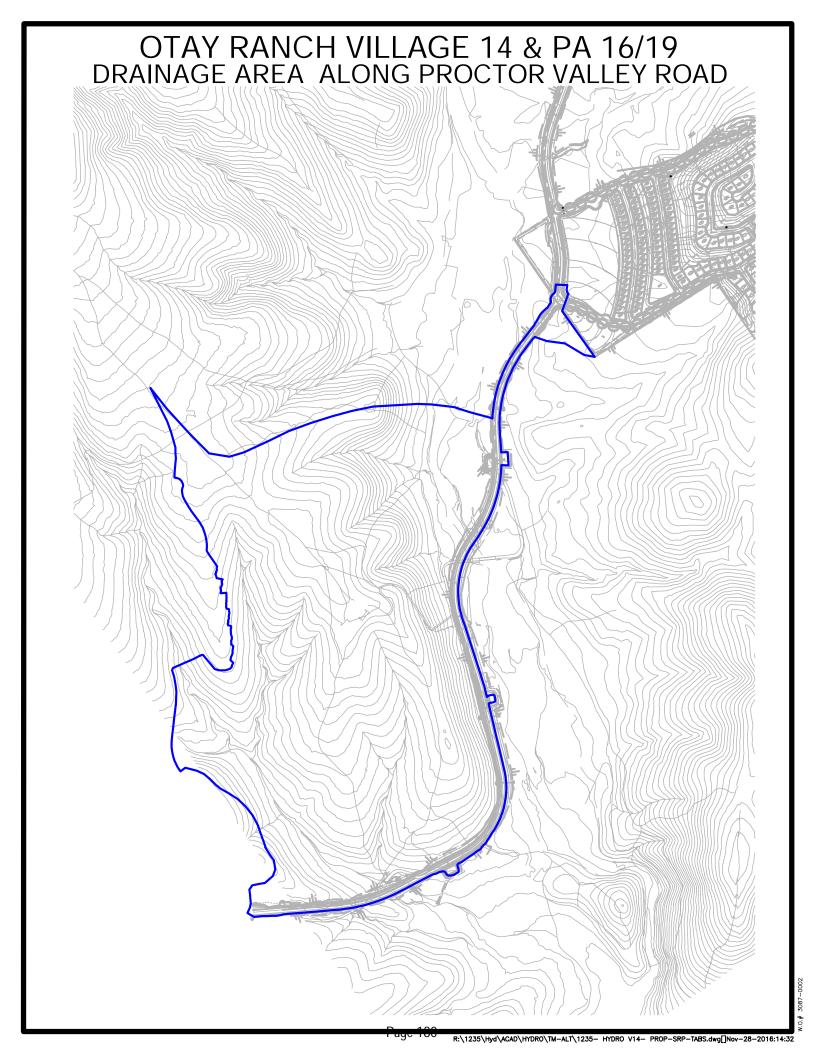
TOTAL AREA(ACRES) = 161.3 TC(MIN.) = 14.16

PEAK FLOW RATE(CFS) = 337.35 ______ END OF RATIONAL METHOD ANALYSIS

CHAPTER 5

5.1.4 – Rational Method Hydrologic Analysis (AES 2015)

Drainage Areas Along Proctor Valley Road (V14 South)



```
PEAK FLOW RATE(CFS) = 6.26
                   RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
                                                                                                                                   END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                                   DEPTH(FEET) = 0.36 HALFSTREET FLOOD WIDTH(FEET) = 11.64
FLOW VELOCITY(FEET/SEC.) = 2.37 DEPTH*VELOCITY(FT*FT/SEC.) = LONGEST FLOWPATH FROM NODE 950.00 TO NODE 952.00 = 801.0
                  Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT 2003,1985,1981 HYDROLOGY MANUAL
              (c) Copyright 1982-2015 Advanced Engineering Software (aes)
                                                                                                                                                                                                                                      801.00 FEET.
                     Ver. 22.0 Release Date: 07/01/2015 License ID 1239
                                                                                                                                 Analysis prepared by:
                                                                                                                                   FLOW PROCESS FROM NODE 953.00 TO NODE 957.00 IS CODE = 31
                                                                                                                                   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                                   ELEVATION DATA: UPSTREAM(FEET) = 582.00 DOWNSTREAM(FEET) FLOW LENGTH(FEET) = 504.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.9 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 6.22 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES PIPE-FLOW(CFS) = 6.99 PIPE TRAVEL TIME(MIN.) = 1.35 TC(MIN.) = 10.16 LONGEST FLOWPATH FROM NODE 950.00 TO NODE 957.00 =
 100- year hydrology model
                                                                                                                                                                                                     NUMBER OF PIPES = 1
                                                                                                                                                                                                                                 1305.00 FEET.
   FILE NAME: R:\1235\HYD\CALCS\AES\SRP\PVR-S.DAT
                                                                                                                                      *********************
   TIME/DATE OF STUDY: 13:28 11/14/2016
                                                                                                                                   FLOW PROCESS FROM NODE 957.00 TO NODE 957.00 IS CODE = 1
   USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
                                                                                                                                   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<
   2003 SAN DIEGO MANUAL CRITERIA
                                                                                                                                   TOTAL NUMBER OF STREAMS = 2
   HISER SPECIFIED STORM EVENT(YEAR) = 100 00
                                                                                                                                   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                                                   CONFLUENCE VALUES USED FOR INDEFENDENT
TIME OF CONCENTRATION(MIN.) = 10.16
RAINFALL INTENSITY(INCH/HR) = 5.17
   SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00
   SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95 SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
                                                                                                                                   TOTAL STREAM AREA(ACRES) = 1.45
PEAK FLOW RATE(CFS) AT CONFLUENCE =
   *******************
                                                                                                                                   FLOW PROCESS FROM NODE 955.00 TO NODE 956.00 IS CODE = 21
                                                                                                                                   >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                                                                          -----
                                 0.020/0.020/0.020 0.50
0.020/0.020/0.020 0.50
                                                                                                                                   *USER SPECIFIED(SUBAREA):
        12.0
                                                                                1.50 0.0312 0.125 0.0130
                                                                                                                                   NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8500
S.C.S. CURVE NUMBER (AMC II) = 0
                                                                                                                                  S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 586.75

DOWNSTREAM ELEVATION(FEET) = 585.75

ELEVATION DIFFERENCE(FEET) = 1.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 3.486
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 60.00
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TC CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
NOTE: RAINFALL INTENSITY IS BASED ON TC = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 1.11
   GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
      1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) -
                                                                               (Top-of-Curb)
   as (maximum Allowable Street Flow Depth) - (10
2. (Depth)*(Vellocity) Constraint = 6.0 (FT*FT/S)
*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
    OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
............
  FLOW PROCESS FROM NODE 950.00 TO NODE 951.00 IS CODE = 21
   >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
  *USER SPECIFIED(SUBAREA):

*USER SPECIFIED(SUBAREA):

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00

UPSTREAM ELEVATION(FEET) = 595.00

DOWNSTREAM ELEVATION(FEET) = 593.50

ELEVATION DIFFERENCE(FEET) = 1.50

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 3.230

WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

THE MAXIMUM OVERLAND FLOW LENGTH = 67.50

(Reference: Table 3-1B of Hydrology Manual)

THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TC CA
                                                                                                                                   SUBAREA RUNOFF(CFS) = 1.11
TOTAL AREA(ACRES) = 0.16 TOTAL RUNOFF(CFS) =
                                                                                                                                   FLOW PROCESS FROM NODE 956.00 TO NODE 957.00 IS CODE = 61
                                                                                                                                   >>>>COMPLITE STREET FLOW TRAVEL TIME THRU SUBAREA
                                                                                                                                   >>>>(STANDARD CURB SECTION USED)<
                                                                                                                                   UPSTREAM ELEVATION(FEET) = 585.75 DOWNSTREAM ELEVATION(FEET) = 581.75 STREET LENGTH(FEET) = 394.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 22.00
  (Reference: Table 3-1B of Hydrology Manual)
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.

SUBARBA RUNOFF(CFS) = 1.04

TOTAL AREA(ACRES) = 0.15 TOTAL RUNOFF(CFS) = 1.04
                                                                                                                                   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 11.00
                                                                                                                                   INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.0
                                                                                                                                   SPECIFIED NUMBER OF HALFSTREETS 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 = 0.03
  FLOW PROCESS FROM NODE 951.00 TO NODE 952.00 IS CODE = 61
                                                                                                                                                                                                                                               0.0150
                                                                                                                                                                                                                                 0.0200
   >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<>>>>>(STANDARD CURB SECTION USED)
                                                                                                                                       **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                                                                                                                                   2.92
>>>>(STANDARD CURB SECTION USED)<
                                                                                                                                      STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.28
HALFSTREET FLOOD WIDTH(FEET) = 7.85
                                                                                                                                   HALFSTREET FLOOD WIDTH(FEET) = 7.85
AVERAGE FLOW VELOCITY(FEET/SEC.) = 1.99
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.56
STREET FLOW TRAVEL TIME(MIN.) = 3.30 TC(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.709
*USER SPECIFIED(SUBAREA):
   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 11.00
                                                                                                                                                                                                                            6.78
   INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.0
                                                                                                                                   *USER SPECIFIED(SUBAREA):
NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.850
SUBAREA AREA(ACRES) = 0.63
SUBAREA REA(ACRES) = 0.63
TOTAL AREA(ACRES) = 0.8
PEAK FLOW RAT
   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 = 0.02
                                                                                                                                                                                          SUBAREA RUNOFF(CFS) = 3.59
PEAK FLOW RATE(CFS) =
                                                                                                               0.0150
                                                                                                    0.0200
                                                                                                                                   END OF SUBAREA STREET FLOW HYDRAULICS:
      **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                  4.26
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS)
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.32
HALFSTREET FLOW VELOCITY(FEET) = 9.48
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.09
PRODUCT OF DEPTHAVELOCITY(FT*FT/SEC.) = 0.66
STREET FLOW TRAVEL TIME(MIN.) = 5.58
TC(MIN.)
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.669
**USEPS_SEPCITETE(SIRAPPA):
                                                                                                                                   END OF SUBAREA STREET FLOW HIDRAULICS.
DEPTH(FEET) = 0.32 HALFSTREET FLOOD WIDTH(FEET) = 9.48
FLOW VELOCITY(FEET/SEC.) = 2.22 DEPTH*VELOCITY(FT*FT/SEC.) =
LONGEST FLOWPATH FROM NODE 955.00 TO NODE 957.00 = 49
                                                                                                                                                                                                                                      494.00 FEET.
                                                                                                                                   FLOW PROCESS FROM NODE 957.00 TO NODE 957.00 IS CODE = 1
                                                                                                                                   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<<
    *USER SPECIFIED(SUBAREA):
   NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8500
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.850
                                                                                                                                   >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                                                                ______
                                                                                                                                   TOTAL NUMBER OF STREAMS = 2
```

SUBAREA AREA(ACRES) = 1.30

TOTAL AREA(ACRES) =

SUBAREA RUNOFF(CFS) =

6 99

```
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
                                                                                                                             NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8500
  CONFIGURACE VALUES USED FOR INDEFENDENT
TIME OF CONCENTRATION(MIN.) = 6.78
RAINFALL INTENSITY(INCH/HR) = 6.71
TOTAL STREAM AREA(ACRES) = 0.79
                                                                                                                             S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.850

SUBAREA AREA(ACRES) = 2.19

SUBAREA TORRALAGERES) = 2.19

SUBAREA CORRES = 2.19

SUBAREA CORRES = 2.19
                                                                                                                                                                                  SUBAREA RUNOFF(CFS) = 10.53
                                                                                                                                                                     2.4
   PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                             TOTAL AREA(ACRES) =
                                                                                                                                                                                      PEAK FLOW RATE(CFS) =
   ** CONFLUENCE DATA **
                                                                                                                             END OF SUBAREA STREET FLOW HYDRAULICS:
                   RUNOFF
(CFS)
                                                                                                                             DEPTH(FEET) = 0.41 HALFSTREET FLOOD WIDTH(FEET) = 13.96
FLOW VELOCITY(FEET/SEC.) = 2.73 DEPTH*VELOCITY(FT*FT/SEC.) = 1.11
LONGEST FLOWPATH FROM NODE 960.00 TO NODE 962.00 = 841.00 FE
   CTDEAM
                                   Tc INTENSITY (MIN.) (INCH/HOUR)
                                                    5.171
                                                                                                                                                                                                                         841.00 FEET.
                      6.99
                                  10.16
                                                                              1.45
                                                                                                                          ******************
   RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
                                                                                                                             FLOW PROCESS FROM NODE 962.00 TO NODE 962.00 IS CODE = 1
   CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                             >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
   ** PEAK FLOW RATE TABLE **
                                                                                                                            >>>>SAND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
                                                   INTENSITY
                                  (MIN.)
                    (CFS)
  NUMBER
                                               (INCH/HOUR)
                                                                                                                             CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 8.83
RAINFALL INTENSITY(INCH/HR) = 5.66
                               6.78
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS: PEAK FLOW RATE(CFS) = 10.46 Tc(MIN.) = TOTAL AREA(ACRES) = 2.2
                                                                                                                             TOTAL STREAM AREA(ACRES) = 2.35
PEAK FLOW RATE(CFS) AT CONFLUENCE =
   LONGEST FLOWPATH FROM NODE 950.00 TO NODE 957.00 = 1305.00 FEET.
                                                                                                                             ** CONFILIENCE DATA **
                                                                                                                                            RUNOFF
                                                                                                                                              (CFS)
                                                                                                                                                              (MIN.)
                                                                                                                             NUMBER
                                                                                                                                                                           (INCH/HOUR)
                                                                                                                                                                                                    (ACRE)
                                                                                                                                               10.46
  FLOW PROCESS FROM NODE 957.00 TO NODE 962.00 IS CODE = 31
                                                                                                                                                            11.31
                                                                                                                                                                            4.825
5.659
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                            RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR 2 STREAMS.
  ELEVATION DATA: UPSTREAM(FEET) = 577.00 DOWNSTREAM(FEET) = 572.00 FLOW LENGTH(FEET) = 470.00 MANNING'S N = 0.013
  ELEVATION DATA: UPSTREAM(FEET) = 577.00 DOWNST
FLOW LENGTH(FEET) = 470.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 18.0 INCH PIPE IS 14.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.81
ESSTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
                                                                                                                             ** PEAK FLOW RATE TABLE **
                                                                                                                             STREAM RUNOFF TC
NUMBER (CFS) (MIN.)
1 20.22 8.83
                                                                                                                                                                             INTENSITY
                                                                                                                                                                           (INCH/HOUR)
  11.31
                                                                                                                                               20.10
                                                                                                                             COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

      PEAK FLOW RATE(CFS) =
      20.22
      Tc(MIN.) =
      8.83

      TOTAL AREA(ACRES) =
      4.6

      LONGEST FLOWPATH FROM NODE
      950.00 TO NODE
      962.00 =
      1775.00 FEET.

......
  FLOW PROCESS FROM NODE 962.00 TO NODE 962.00 IS CODE = 1
   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
TOTAL NUMBER OF STREAMS = 2
                                                                                                                             FLOW PROCESS FROM NODE 962.00 TO NODE 963.00 IS CODE = 31
   CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                                             >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
  TIME OF CONCENTRATION(MIN.) = 11.31
RAINFALL INTENSITY(INCH/HR) = 4.83
TOTAL STREAM AREA(ACRES) = 2.24
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                          ELEVATION DATA: UPSTREAM(FEET) = 572.00 DOWNSTREAM
                                                                                                                                                                                              DOWNSTREAM(FEET) =
                                                                                                                            ELEVATION DATA: UPSTREAM(FEET) = 572.00 DOWNSTREAM(FEET) = 570.00 FLOW LENGTH(FEET) = 120.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 24.0 INCH PIPE IS 14.9 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 9.83

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

PIPE-FLOW(CFS) = 20.22

PIPE TRAVEL TIME(MIN.) = 0.20 TC(MIN.) = 9.04

LONGEST FLOWPATH FROM NODE 950.00 TO NODE 963.00 = 1895.00 FEET.
                                                               10.46
.....
  FLOW PROCESS FROM NODE 960.00 TO NODE 961.00 IS CODE = 21
   >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
_____
  *USER SPECIFIED(SUBAREA):
NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8500
                                                                                                                          .....
  NEIGHBORHOOD COMMERCIAL ROMOOFF COEFFICIENT = S.C.S. CURVE NUMBER (AMC II) = 0

INITIAL SUBARRA FLOW-LENGTH(FEET) = 90.00

UPSTREAM ELEVATION(FEET) = 585.40

DOWNSTREAM ELEVATION(FEET) = 584.60

ELEVATION DIFFERENCE(FEET) = 0.80
                                                                                                                             FLOW PROCESS FROM NODE 965.00 TO NODE 966.00 IS CODE = 21
                                                                                                                             >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
  DOWNSTREAM ELEVATION(FEET) = 584.60

ELEVATION DIFFERENCE(FEET) = 0.80

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 3.557

WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

THE MAXIMUM OVERLAND FLOW LENGTH = 57.78

(Reference: Table 3-1B of Hydrology Manual)

THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TC CALCULATION!

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168

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

SUBAREA RUNOFF(CFS) = 1.11
                                                                                                                             *USER SPECIFIED(SUBAREA):
                                                                                                                             NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8500
                                                                                                                             S.C.S. CURVE NUMBER (AMC II) =
INITIAL SUBAREA FLOW-LENGTH(FEET)
                                                                                                                             UPSTREAM ELEVATION(FEET) = 585.40
DOWNSTREAM ELEVATION(FEET) = 584.36
ELEVATION DIFFERENCE(FEET) = 1.04
                                                                                                                            ELEVATION DIFFERENCE (FEET) = 1.04
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 3.311
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 64.50
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TC CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
NOTE: RAINFALL INTENSITY IS BASED ON TC = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 1.11
TOTAL AREA(ACRES) = 0.16 TOTAL RUNOFF(CFS) = 1.11
  1 11
.....
  FLOW PROCESS FROM NODE 961.00 TO NODE 962.00 IS CODE = 61
   >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
   >>>>(STANDARD CURB SECTION USED) <---
  UPSTREAM ELEVATION(FEET) = 584.60 DOWNSTREAM ELEVATION(FEET) = 577.10 STREET LENGTH(FEET) = 751.00 CURB HEIGHT(INCHES) = 6.0
                                                                                                                          *************
                                                                                                                            FLOW PROCESS FROM NODE 966.00 TO NODE 967.00 IS CODE = 61
   STREET HALFWIDTH(FEET) = 22.00
                                                                                                                             >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 11.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                                             UPSTREAM ELEVATION(FEET) = 584.35 DOWNSTREAM ELEVATION(FEET) = 579.00
                                                                                                                             STREET LENGTH(FEET) = 558.00
STREET HALFWIDTH(FEET) = 22.00
                                                                                                                                                                             CURB HEIGHT(INCHES) = 6.0
  SPECIFIED NUMBER OF HALFSTREETS 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
                                                                                                         0.0150
                                                                                                                             DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 11.00
                                                                                                                            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:
                                                                                                                             SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
  STREET FLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH (FEET) = 0.35
HALFSTREET FLOOD WIDTH(FEET) = 11.21
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.37
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.83
STREET FLOW TRAVEL TIME(MIN.) = 5.27 Tc(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.659
                                                                                                                             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) = STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   *USER SPECIFIED(SUBAREA):
                                                                                                                                STREET FLOW DEPTH(FEET) = 0.30
```

```
FLOW VELOCITY(FEET/SEC.) = 2.70 DEPTH*VELOCITY(FT*FT/SEC.) :
LONGEST FLOWPATH FROM NODE 970.00 TO NODE 972.00 = 88
     HALFSTREET FLOOD WIDTH(FEET) =
                                                        8.74
  HALFSTREET FLOOD WIDTH(FEET) = 8.74
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.04
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.61
STREET FLOW TRAVEL TIME(MIN.) = 4.56 Tc(MIN.) =
                                                                                                                                                                                                                           882 OO FEET
                                                                                                                          ......
                                                                                       7.87
 FLOW PROCESS FROM NODE 972.00 TO NODE 972.00 IS CODE = 1
                                                                                                                             >>>>DESIGNATE INDEPENDENT STREAM FOR CONFIJIENCE<
                                                                                                                             >>>> AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
                                                                                              4.87
                                                                                                                             TOTAL NUMBER OF STREAMS = 2
                                                                                                                             TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 8.92
RAINFALL INTENSITY(INCH/HR) = 5.62
                                                            PEAK FLOW RATE(CFS) =
  END OF SUBAREA STREET FLOW HYDRAULICS:
  END OF SUBAREA STREET FLOW HIDRAULICS.

DEPTH(FEET) = 0.34 HALFSTREET FLOOD WIDTH(FEET) = 10.67

FLOW VELOCITY(FEET/SEC.) = 2.27 DEPTH*VELOCITY(FT*FT/SEC.) = 
LONGEST FLOWPATH FROM NODE 965.00 TO NODE 967.00 = 638.
                                                                                                                             TOTAL STREAM AREA(ACRES) = 2.31
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                638.00 FEET.
                                                                                                                             ** CONFLUENCE DATA **
**********************
                                                                                                                                          RUNOFF
                                                                                                                                                                              INTENSITY
                                                                                                                                                                                                      AREA
                                                                                                                             STREAM
                                                                                                                                               (CFS)
5.70
                                                                                                                                                            (MIN.)
10.29
                                                                                                                                                                           (INCH/HOUR)
5.126
  FLOW PROCESS FROM NODE 967.00 TO NODE 972.00 IS CODE = 31
                                                                                                                             NIMBER
                                                                                                                                                                                                    (ACRE)
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
                                                                                                                                               11.04
                                                                                                                                                              8.92
                                                                                                                                                                                 5.622
                                                                                                                                                                                                         2.31
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                             RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  ELEVATION DATA: UPSTREAM(FEET) = 575.00 DOWNSTREAM(FEET) = 565.00 FLOW LENGTH(FEET) = 900.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                                                             CONFLUENCE FORMULA USED FOR 2 STREAMS.
                                                                                                                             ** PEAK FLOW RATE TABLE **
  DEPTH OF FLOW IN 18.0 INCH PIPE IS 9.3 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 6.19
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
                                                                                                                             STREAM
                                                                                                                                            RUNOFF
                                                                                                                                                                Tc
                                                                                                                                                                             INTENSITY
                                                                                                                                               (CFS)
15.98
                                                                                                                                                             (MIN.)
                                                                 NUMBER OF PIPES =
                                                                                                                                                               8.92
                                                                                                                                                                               5.622
  PIPE-FLOW(CFS) = 5.70

PIPE TRAVEL TIME(MIN.) = 2.42 Tc(MIN.) = 10.29

LONGEST FLOWPATH FROM NODE 965.00 TO NODE 972.00 =
                                                                                                                                  2
                                                                                                                                              15.76 10.29
                                                                                                                                                                               5.126
                                                                                          1538.00 FEET.
                                                                                                                             COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                             PEAK FLOW RATE(CFS) = 15.98 Tc(MIN.) = TOTAL AREA(ACRES) = 3.4
******************
  FLOW PROCESS FROM NODE 972.00 TO NODE 972.00 IS CODE = 1
                                                                                                                             LONGEST FLOWPATH FROM NODE 965.00 TO NODE 972.00 =
                                                                                                                                                                                                                       1538.00 FEET.
                                                                                                                           ......
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <>>>
                                                                                                                            FLOW PROCESS FROM NODE 972.00 TO NODE 973.00 IS CODE = 31
                                  .....
  TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                                             >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
  TIME OF CONCENTRATION(MIN.) = 10.29
RAINFALL INTENSITY(INCH/HR) = 5.13
TOTAL STREAM AREA(ACRES) = 1.10
                                                                                                                             >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                                                             ELEVATION DATA: UPSTREAM(FEET) = 565.00 DOWNSTREAM(FEET) =
                                                                                                                                                                                                                               560.00
                                                                                                                            ELEVATION DATA: UPSTREAM(FEET) = 565.00 DOWNSTREAM(FEET) = FLOW LENGTH(FEET) = 195.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 18.0 INCH PIPE IS 14.4 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 10.57

ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 15.98

PIPE TRAVEL TIME(MIN.) = 0.31 Tc(MIN.) = 9.23
                                                                 5.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
**********************
  FLOW PROCESS FROM NODE 970.00 TO NODE 971.00 IS CODE = 21
                                                                                                                             PIPE TRAVEL TIME(MIN.) = 0.31 Tc(MIN.) = 9.23
LONGEST FLOWPATH FROM NODE 965.00 TO NODE 973.00 = 1733.00 FEET.
  >>>>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) = 100.00
                                                                                                                             FLOW PROCESS FROM NODE 975.00 TO NODE 976.00 IS CODE = 21
  UPSTREAM ELEVATION(FEET) = 578.90

DOWNSTREAM ELEVATION(FEET) = 577.90

ELEVATION DIFFERENCE(FEET) = 1.00
                                                                                                                             >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                                              *USER SPECIFIED(SUBAREA):
  ELEVATION DIFFERENCE (FEET) = 1.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 3.486
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 60.00
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TC CALCULATION!
100 YEAR RAINFALL INTENSITY (INCH/HOUR) = 8.168
NOTE: RAINFALL INTENSITY IS BASED ON TC = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 1.32
TOTAL AREA(ACRES) = 0.19 TOTAL RUNOFF(CFS) = 1.32
                                                       1.00
                                                                                                                             NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
                                                                                                                             UPSTREAM ELEVATION(FEET) = 574.80

DOWNSTREAM ELEVATION(FEET) = 573.90

ELEVATION DIFFERENCE(FEET) = 0.90
                                                                                                                                                                                0.90
                                                                                                                            ELEVATION DIFFERENCE(FEET) = 0.90
SUBARRA OVERLAND TIME OF FLOW(MIN.) = 3.550
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 58.00
(Reference: Table 3-1B of Hydrology Manual)
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) = 1.11
TOTAL AREA(ACRES) = 0.16 TOTAL RUNOFF(CFS) = 1.11
  FLOW PROCESS FROM NODE 971.00 TO NODE 972.00 IS CODE = 61
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
  >>>>(STANDARD CURB SECTION USED) <<<</td>
    UPSTREAM ELEVATION(FEET) = 577.90 DOWNSTREAM ELEVATION(FEET) = 570.00 STREET LENGTH(FEET) = 782.00 CURB HEIGHT(INCHES) = 6.0
    570.00 STREET LENGTH(FEET) = 782.00 CURB HEIGHT(INCHES) = 6.0

                                                                                                                          ******************
  STREET LENGTH(FEET) = 782.00
STREET HALFWIDTH(FEET) = 22.00
                                                                                                                             FLOW PROCESS FROM NODE 976.00 TO NODE 977.00 IS CODE = 61
                                                                                                                             >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
                                                                                                                            DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 11.00 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) =
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.02
                                                                                                                            DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 11.00 INSIDE STREET CROSSFALL(DECIMAL) = 0.020 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                               0.0200
     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW: STREETFLOW MODEL RESULTS USING ESTIMATED FLOW: STREET FLOW DEPTH(FEET) = 0.35
HALFSTREET FLOW DIDTH(FEET) = 11.13
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.40
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.84
STREET FLOW TRAVEL TIME(MIN.) = 5.44 TC(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.622
                                                                                                                             SPECIFIED NUMBER OF HALFSTREETS 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
                                                                                                                                **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                                                             STREETFLOW MODEL RESULTS USING ESTIMATED FLOW(CFS):
STREET FLOW DEPTH(FEET) = 0.41
HALFSTREET FLOOD WIDTH(FEET) = 14.05
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.67
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.09
STREET FLOW TRAVEL TIME(MIN.) = 6.79 TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.112
  *USER SPECIFIED(SUBAREA):
NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8500
  S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.850
SUBAREA AREA(ACRES) = 2.12
SUBARE
TOTAL AREA(ACRES) = 2.3
PEA
                                                        SUBAREA RUNOFF(CFS) = 10.13
                                                            PEAK FLOW RATE(CFS) =
                                                                                                                             *USER SPECIFIED(SUBAREA):
NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8500
  END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                             S.C.S. CURVE NUMBER (AMC II) =
  DEPTH(FEET) = 0.40 HALFSTREET FLOOD WIDTH(FEET) = 13.88
```

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AREA-AVERAGE RUNOFF COEFFICIENT = 0.850
                                                                                                                   >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <--
                                                                                                                   >>>> AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<
  SUBAREA AREA(ACRES) = 4.46
TOTAL AREA(ACRES) = 4.6
                                                SUBAREA RUNOFF(CFS) = 1
PEAK FLOW RATE(CFS) =
  END OF SUBAREA STREET FLOW HYDRAULICS:
                                                                                                                   CONFIDENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
  END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.48 HALFSTREET FLOOD WIDTH(FEET) = 17.75
FLOW VELOCITY(FEET/SEC.) = 3.07 DEPTH*VELOCITY(FT*FT/SEC.) = 1.48
*NOTE: INITIAL SUBARBA NOMOGRAPH WITH SUBARBA PARAMETERS,
AND L = 1089.0 FT WITH ELEVATION-DROP = 10.5 FT, IS 31.0 CFS,
WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 977.00
                                                                                                                   CONFLUENCE VALUES USED FOR INDEPENDENT
TIME OF CONCENTRATION(MIN.) = 8.61
RAINFALL INTENSITY(INCH/HR) = 5.75
                                                                                                                   TOTAL STREAM AREA(ACRES) = 1.99
PEAK FLOW RATE(CFS) AT CONFLUENCE =
  LONGEST FLOWPATH FROM NODE 975.00 TO NODE 977.00 = 1189.00 FEET.
                                                                                                                   ** CONFIGUENCE DATA **
                                                                                                                                                                INTENSITY
                                                                                                                                                                                      AREA
                                                                                                                                  RUNOFF
***********************
                                                                                                                                                  (MIN.) (INCH/HOUR)
                                                                                                                   NUMBER
                                                                                                                                    (CES)
                                                                                                                                                                                    (ACRE)
  FLOW PROCESS FROM NODE 977.00 TO NODE 977.00 IS CODE = 1
                                                                                                                                   11.08
                                                                                                                                                8.61
                                                                                                                                                                   5.751
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
  TOTAL NUMBER OF STREAMS =
                                                                                                                  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR \ 2\  STREAMS.
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 10.34
RAINFALL INTENSITY(INCH/HR) = 5.11
                                                                                                                   ** PEAK FLOW RATE TABLE **
                                                                                                                                                               INTENSITY
                                                                                                                   STREAM
                                                                                                                                 RUNOFF
                                                                                                                                                   TC
  TOTAL STREAM AREA(ACRES) = 4.62
PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                                                                                                   (CFS)
27.80
                                                                                                                   NUMBER
                                                                                                                                                 (MIN.)
                                                                                                                                                              (INCH/HOUR)
                                                                                                                                                              5.112
                                                                                                                                   29.92
                                                                                                                                               10.34
.....
  FLOW PROCESS FROM NODE 980.00 TO NODE 981.00 IS CODE = 21
                                                                                                                   COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
                                                                                                                   PEAK FLOW RATE(CFS) = 29.92 Tc(MIN.) = TOTAL AREA(ACRES) = 6.6 LONGEST FLOWPATH FROM NODE 980.00 TO NODE
                                                                                                                                                                                       10.34
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
                                                                                                                                                                                       977.00 =
                                                                                                                                                                                                       1956.00 FEET.
 *USER SPECIFIED (SUBAREA):

NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8500

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 98.00

UPSTREAM ELEVATION(FEET) = 626.00

DOWNSTREAM ELEVATION(FEET) = 624.00

ELEVATION DIFFERENCE(FEET) = 2.00

SUBAREA OVERLAND TIME OF FLOW (MIN.) = 3.081

WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

THE MAXIMUM OVERLAND FLOW LENGTH = 75.41

(Reference: Table 3-1B of Hydrology Manual)

THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION:

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
  *HISER SPECIFIED (SHEAREA):
                                                                                                                *************************
                                                                                                                  FLOW PROCESS FROM NODE 977.00 TO NODE 984.00 IS CODE = 31
                                                                                                                   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
                                                                                                                   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                                                   ELEVATION DATA: UPSTREAM(FEET) = 560.00 DOWNSTREAM(FEET) = 550.00 FLOW LENGTH(FEET) = 295.00 MANNING'S N = 0.013
                                                                                                                   FLOW LENGTH(FEET) = 295.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 15.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 14.13
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES =
                                                                                                                   ESTIMATED FARE DIAMETER LACEN, - 2.002
PIPE-FLOW(CFS) = 29.92
PIPE TRAVEL TIME(MIN.) = 0.35 Tc(MIN.) = 10.69
LONGEST FLOWPATH FROM NODE 980.00 TO NODE 984.00 =
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.168
NOTE: RAINFALL INTENSITY IS BASED ON TC = 5-MINUTE.
  SUBAREA RUNOFF(CFS) = 1.25
TOTAL AREA(ACRES) = 0.18 TOTAL RUNOFF(CFS) =
                                                                                                                 **********************
********************
                                                                                                                   FLOW PROCESS FROM NODE 985.00 TO NODE 986.00 IS CODE = 21
  FLOW PROCESS FROM NODE 981.00 TO NODE 982.00 IS CODE = 61
                                                                                                                   >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS <
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
  >>>>(STANDARD CURB SECTION USED)<
                                                                                                                   *USER SPECIFIED(SUBAREA):
··· · · · ·
                                                                                                                   NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
                                                                                                                  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIEN'S.C.S. CUTVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 715.00
ELEVATION DIFFERENCE(FEET) = 705.00
ELEVATION DIFFERENCE(FEET) = 10.00
  UPSTREAM ELEVATION(FEET) = 624.00 DOWNSTREAM ELEVATION(FEET) = 592.00 STREET LENGTH(FEET) = 910.00 CURB HEIGHT(INCHES) = 6.0 STREET HALFWIDTH(FEET) = 22.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 11.00
                                                                                                                   SUBARRA 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
  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
                                                                                                                   SUBAREA RUNOFF(CFS) = 0.47
TOTAL AREA(ACRES) = 0.19 TOTAL RUNOFF(CFS) =
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
  SPECIFIED NUMBER OF HADFSIREDIS 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 = 0.0
                                                                                                 0.0150
                                                                                                                ********************
                                                                                       0.0200
                                                                                                                  FLOW PROCESS FROM NODE 986.00 TO NODE 987.00 IS CODE = 31
       *TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                                                      6 36
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.30
HALFSTREET FLOOD WIDTH(FEET) = 8.44
                                                                                                                   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
                                                                                                                   ______
  HALFSTREET FLOOD WIDTH(FEET) = 8.44
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.83
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.13
STREET FLOW TRAVEL TIME(MIN.) = 3.96
TC(MIN.) =
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.548
                                                                                                                   ELEVATION DATA: UPSTREAM(FEET) = 700.00 DOWNSTREAM(FEET) = 560.00 FLOW LENGTH(FEET) = 1154.00 MANNING'S N = 0.013 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
                                                                                7.04
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 1.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.04
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
                                                                                                                   PIPE-FLOW(CFS) = 0.47
PIPE TRAVEL TIME(MIN.) = 2.73 Tc(MIN.) =
                                                                                                                                                                                       9.00
                                                                                                                   LONGEST FLOWPATH FROM NODE 985.00 TO NODE
                                                                                                                                                                                       987.00 = 1254.00 FEET.
                                                                                                                 *******************
  FLOW PROCESS FROM NODE 986.00 TO NODE 987.00 IS CODE = 81
                                                                                                                   >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                       1008.00 FEET.
                                                                                                                    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.591
                                                                                                                   *USER SPECIFIED(SUBAREA):
                                                                                                                  *USER SPECIFIED(SUBARRA):
NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .3500

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

ARRA-AVERAGE RUNOFF COEFFICIENT = 0.3500

SUBARRA ARRA(ACRES) = 14.04 SUBARRA RUNOFF(CFS) = 27.47

TOTAL ARRA(ACRES) = 14.2 TOTAL RUNOFF(CFS) = 27.47
  FLOW PROCESS FROM NODE 982.00 TO NODE 977.00 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <>>
  ELEVATION DATA: UPSTREAM(FEET) = 585.00 DOWNSTREAM
- 948.00 MANNING'S N = 0.013
______
                                                   585.00 DOWNSTREAM(FEET) =
                                                                                            560.00
                                                                                                                   TC(MIN.) =
                                                                                                                                      9.00
  ELEVATION DATA: OPPIREAM(FEET) = 585.00 DOWNS:
FLOW LENGTH(FEET) = 948.00 MANNING'S N = 0.0
DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.07
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER
                                                                                                                ******************
                                                                                                                  FLOW PROCESS FROM NODE 987.00 TO NODE 988.00 IS CODE = 31
                                                            NUMBER OF PIPES = 1
                                                                                                                   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<>>>
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
  PIPE-FLOW(CFS) = 11.08
PIPE TRAVEL TIME(MIN.) = 1
  PIPE-FLOW(CFS) = 11.08

PIPE TRAVEL TIME(MIN.) = 1.57 Tc(MIN.) = 8.61

LONGEST FLOWPATH FROM NODE 980.00 TO NODE 977.00 = 1956.00 FEET.
                                                                                                                  ELEVATION DATA: UPSTREAM(FEET) = 560.00 DOWNSTRE;
FLOW LENGTH(FEET) = 177.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 13.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 16.79
                                                                                                                                                                    560.00 DOWNSTREAM(FEET) = 550.00
  FLOW PROCESS FROM NODE 977.00 TO NODE 977.00 IS CODE = 1
```

```
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 27.85
PIPE TRAVEL TIME(MIN.) = (
                                                                                                      ****************
                                       .18 Tc(MIN.) = 9.17
985.00 TO NODE 988.00 = 1431.00 FEET.
 LONGEST FLOWPATH FROM NODE 98
                                                                                                        FLOW PROCESS FROM NODE 995.00 TO NODE 996.00 IS CODE = 31
                                                                                                        >>>>COMDITTE DIDE-FLOW TRAVEL TIME THREE SHEAPEACCES
                                                                                                         >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)
 FLOW PROCESS FROM NODE 990.00 TO NODE 991.00 IS CODE = 21
                                                                                                                       _____
                                                                                                        ELEVATION DATA: UPSTREAM(FEET) = 600.00 DOWNSTREAM(FEET) = 575.00 FLOW LENGTH(FEET) = 771.00 MANNING'S N = 0.013
                                                                                                        ELEVATION DATA: UPSTREAM(FEET) = 600.00 DOWNS)
FLOW LENGTH (FEET) = 771.00 MANNING'S N = 0.
DEPTH OF FLOW IN 63.0 INCH PIPE IS 46.9 INCHES
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS
                                                                                                        PIPE-FLOW VELOCITY(FEET/SEC.) = 27.23
ESTIMATED PIPE DIAMETER(INCH) = 63.00
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
                                                                                                                                                              NUMBER OF PIPES =
 NATURAL DESERT LANDSCAPING KUNUFF COLERS
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 677.00
DOWNSTREAM ELEVATION(FEET) = 670.00
DOWNSTREAM ELEVATION(FEET) = 670.00
                                                                                                         PIPE-FLOW(CFS) =
                                                                                                                                   470.50
                                                                                                        PIPE-FLOW(CFS) = 470.50

PIPE TRAVEL TIME(MIN.) = 0.47 Tc(MIN.) = 22.93

LONGEST FLOWPATH FROM NODE 990.00 TO NODE 996.00 = 1777.00 FEET.
  ELEVATION DIFFERENCE (FEET)
                                                                                                      *****
  SUBAREA OVERLAND TIME OF FLOW(MIN.)
                                                      7.058
                                                                                                        FLOW PROCESS FROM NODE 997.00 TO NODE 997.00 IS CODE =
 SUBARRA GVERAR ALINFALL INTENSITY(INCH/HOUR) = 6.540

SUBARRA RUNOFF(CFS) = 0.16

TOTAL AREA(ACRES) = 0.07 TOTAL RUNOFF(CFS) = 0.16
                                                                                                         >>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE << < <
                                                                                                                      -----
                                                                                                        USER-SPECIFIED VALUES ARE AS FOLLOWS:
                                                                                                        USBR-SPECIFIED VALUES ARE AS FOLLOWS.

TC(MIN) = 20.04 RAIN INTENSITY(INCH/HOUR) = 3.34

TOTAL AREA(ACRES) = 718.66 TOTAL RUNOFF(CFS) = 1373.90
FLOW PROCESS FROM NODE 991.00 TO NODE 992.00 IS CODE = 53
                                                                                                      .....
  >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<
                                                                                                        FLOW PROCESS FROM NODE 997.00 TO NODE 998.00 IS CODE = 52
  >>>>TRAVELTIME THRU SUBAREA
                                                                                  570.00
 ELEVATION DATA: UPSTREAM(FEET) =
 CHANNEL LENGTH THRU SUBAREA(FEET) = 670.00

NOTE: CHANNEY TYPE 513.0
                                                          DOWNSTREAM(FEET) = 570.0

0 CHANNEL SLOPE = 0.1949
                                                                                                         >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
         EL LENGTH THRU SUBAREA(FEET) = 513.00 CHANNEL SLOPE = CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION EL FLOW THRU SUBAREA(CFS) = 0.16
                                                                                                        >>>>TRAVELTIME THRU SUBAREA<
 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VEHICLE 20.1.

CHANNEL FLOW THRU SUBAREA(CFS) = 0.16

FLOW VELOCITY(FEET/SEC) = 2.47 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)

TRAVEL TIME(MIN.) = 3.46 TC(MIN.) = 10.52

LONGEST FLOWPATH FROM NODE 990.00 TO NODE 992.00 = 613.00 FEET.
                                                                                                        ELEVATION DATA: UPSTREAM(FEET) = 600.00 DOWNSTREAM(FEET) = 559.

CHANNEL LENGTH THRU SUBAREA(FEET) = 1925.00 CHANNEL SLOPE = 0.0213

CHANNEL FLOW THRU SUBAREA(CFS) = 1373.90
                                                                                                                                                                                               559.00
                                                                                                        CHANNEL FLOW THRU SUBAREA(CFS) = 1373.90 FLOW VELOCITY(FEET/SEC) = 15.88 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) TRAVEL TIME(MIN.) = 2.02 TC(MIN.) = 22.06 LONGEST FLOWPATH FROM NODE 990.00 TO NODE 998.00 = 3702.00 FEET.
**************
 FLOW PROCESS FROM NODE 991.00 TO NODE 992.00 IS CODE = 81
                                                                                                                                                               998.00 IS CODE =
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
                                                                                                        FLOW PROCESS FROM NODE 997.00 TO NODE
                                                              -----
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.056
                                                                                                         >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
   USER SPECIFIED(SUBAREA):
                                                                                                      _____
 NATURAL DESERT LANDSCAPING RUNOFF
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) = 7.79 SUBAREA RUNOFF(CFS) = 13.79
TOTAL AREA(ACRES) = 7.9 TOTAL RUNOFF(CFS) = 13.59
                                                                                                          100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.135
                                                                                                                SPECIFIED(SUBAREA)
                                                                                                         NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
                                                                                                        S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.5634
                                                                                                        SUBAREA AREA(ACRES) = 32.59 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 751.2 TOTAL RUNOFF(CFS) =
                                                                                                                                                                                 1373 90
                                                                                                        TC(MIN.) = 22.06
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 FLOW PROCESS FROM NODE 992.00 TO NODE 993.00 IS CODE = 31
                                                                                                        ......
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
                                                                                                        FLOW PROCESS FROM NODE 998.00 TO NODE 998.00 IS CODE = 1
  ELEVATION DATA: UPSTREAM(FEET) = 570.00 DOWNSTREAM
 ELEVATION DATA: UPSTREAM(FEET) =
                                                        DOWNSTREAM(FEET) = 545.00
                                                                                                         >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE
 DEDUCATION DATA: OFFIKEARM(FEEL) = 5/0.00 DOWNSTI
FLOW LENGTH(FEET) = 160.00 MAINING'S N = 0.00
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 7.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 20.78
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER (
                                                                                                      -----
                                                             0.013
                                                                                                        TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
                                                                                                        TIME OF CONCENTRATION(MIN.) = 22.06
RAINFALL INTENSITY(INCH/HR) = 3.14
                                                       NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 13.91
PIPE TRAVEL TIME(MIN.) = (
                                                                                                                                              751.25
 PIPE-FLOW(CFS) = 13.91

PIPE TRAVEL TIME(MIN.) = 0.13 Tc(MIN.) = 10.64

LONGEST FLOWPATH FROM NODE 990.00 TO NODE 993.00 =
                                                                                                         TOTAL STREAM AREA(ACRES) =
                                                                                                         PEAK FLOW RATE(CFS) AT CONFLUENCE = 1373.90
                                                                                                        FLOW PROCESS FROM NODE 998.10 TO NODE 998.20 IS CODE = 21
  FLOW PROCESS FROM NODE 994.00 TO NODE 994.00 IS CODE =
                                                                                                         >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
 >>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE << < <
                                                                                                         *USER SPECIFIED(SUBAREA):
                                                                                                         NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN) = 22.29 RAIN INTENSITY(INCH/HOUR) = 3.11
TOTAL AREA(ACRES) = 261.03 TOTAL RUNOFF(CFS) =
                                                                                                        S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
                                                                      469 76
                                                                                                        UPSTREAM ELEVATION(FEET) = 745.00
DOWNSTREAM ELEVATION(FEET) = 742.0
ELEVATION DIFFERENCE(FEET) = 3.0
 FLOW PROCESS FROM NODE 994.00 TO NODE 995.00 IS CODE = 31
                                                                                                                                                    3.00
                                                                                                        SUBAREA OVERLAND TIME OF FLOW(MIN.) = 9.361
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.451
     >>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
                                                                                                        SUBAREA RUNOFF(CFS) = 0.17
TOTAL AREA(ACRES) = 0.09 TOTAL RUNOFF(CFS) =
 ELEVATION DATA: UPSTREAM(FEET) = 605.00 DC
                                                                                                                                                                               0.17
                                               605.00 DOWNSTREAM(FEET) = 600.00
 FLOW LENGTH(FEET) = 233.00 MANNING'S
DEPTH OF FLOW IN 66.0 INCH PIPE IS 52.
PIPE-FLOW VELOCITY(FEET/SEC.) = 23.00
ESTIMATED PIPE DIAMETER(INCH) = 66.00
PIPE-FLOW(CFS) = 469.76
PIPE TRAVEL TIME(MIN.) = 0.17 TC(MI
                                                            0.013
                                                 52.9 INCHES
                                                                                                        FLOW PROCESS FROM NODE 998.20 TO NODE 998.30 IS CODE = 52
                                                                                                        >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>
>TRAVELTIME THRU SUBAREA
                                                       NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 469.76

PIPE TRAVEL TIME(MIN.) = 0.17  Tc(MIN.) = 22.46

LONGEST FLOWPATH FROM NODE 990.00 TO NODE 995.00 = 1006.00 FEET.
                                                                                                        CHANNEL LENGTH THRU SUBAREA(FEET) = 1153.00 CHANNEL SLOPE = NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION CHANNEL FLOW THRU SUBAREA(CFS) = 0.17
FLOW VELOCITY(FRET/CEPA)
                                                                                                        ELEVATION DATA: UPSTREAM(FEET) = 742.00 DOWNSTREAM(FEET) = 650.
CHANNEL LENGTH THRU SUBAREA(FEET) = 1153.00 CHANNEL SLOPE = 0.0798
 FLOW PROCESS FROM NODE 994.00 TO NODE 995.00 IS CODE = 81
                                                                                                        CHANNEL FLOW IRRU SUBAREA(CFS) = 0.17
FLOW VELOCITY(FEET/SEC) = 4.24 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 4.54 Tc(MIN.) = 13.90
LONGEST FLOWPATH FROM NODE 998.10 TO NODE 998.30 = 1253.00 FEET.
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.099
  *USER SPECIFIED(SUBAREA):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.5754
                                                                                                        FLOW PROCESS FROM NODE 998.20 TO NODE 998.30 IS CODE = 81
                                                                                                        >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
 SUBAREA AREA(ACRES) = 2.78 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 263.8 TOTAL RUNOFF(CFS) =
                                                                            3.02
                                                                                                          100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.224
                                                                           470.50
  TC(MIN.) =
                 22.46
                                                                                                        *USER SPECIFIED(SUBAREA):
```

```
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 NATURAL DESERT LANDSCAPING ROMORY COEFFICIENT = .3300 S.C.S. CURVE NUMBER (AMC II) = 0 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500 SUBAREA REA(ACRES) = 10.82 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 10.9 TOTAL RUNOFF(CFS) =
  TC(MIN.) =
               13.90
*******************
  FLOW PROCESS FROM NODE 998.30 TO NODE 998.00 IS CODE = 52
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>>TRAVELTIME THRU SUBAREA
_____
  ELEVATION DATA: UPSTREAM(FEET) = 650.00 DOWNSTREAM(FEET) = 559.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 1816.00 CHANNEL SLOPE = 0.0501
 CHANNEL LENGTH THRU SUBARBA(FEET) = 1610.00 CHANNEL SLOPE = 0.091

CHANNEL FLOW THRU SUBARBA(CFS) = 16.13

FLOW VELOCITY(FEET/SEC) = 6.33 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)

TRAVEL TIME(MIN.) = 4.78 TC (MIN.) = 18.68

LONGEST FLOWPATH FROM NODE 998.10 TO NODE 998.00 = 3069.00 FEE
                                                       998.00 = 3069.00 FEET.
***********************
 FLOW PROCESS FROM NODE 998.30 TO NODE 998.00 IS CODE = 81
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.491
  *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) = 36.38 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 47.3 TOTAL RUNOFF(CFS) =
              18.68
  TC(MIN.) =
********************
 FLOW PROCESS FROM NODE 998.00 TO NODE 998.00 IS CODE = 1
  >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <---
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES
  TOTAL NUMBER OF STREAMS = 2
 TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 18.68
RAINFALL INTENSITY(INCH/HR) = 3.49
TOTAL STREAM AREA (ACRES) = 47.29
  PEAK FLOW RATE(CFS) AT CONFLUENCE =
                                                57.78
  ** CONFLUENCE DATA **
             RUNOFF
                             Tc
                                       INTENSITY
  STREAM
                                                        AREA
                         TC (MIN.) (INCH/HOUR)
22.06 3.135
18.68 3.491
  NUMBER
             (CFS)
1373.90
                                                      (ACRE)
751.25
                        18.68
      2
              57.78
                                                        47.29
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO CONFLUENCE FORMULA USED FOR \ \ 2 STREAMS.
  ** PEAK FLOW RATE TABLE **
  STREAM
              RUNOFF
                            TC
                                      INTENSITY
                       (MIN.)
             (CFS)
1220.83
                                  (INCH/HOUR)
                         18.68
                                  3.491
3.135
                        22.06
      2
             1425.80
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) = 1425.80 Tc(MIN.) = TOTAL AREA(ACRES) = 798.5
                                                         22.06
  LONGEST FLOWPATH FROM NODE 990.00 TO NODE 998.00 = 3702.00 FEET.
FLOW PROCESS FROM NODE 998.00 TO NODE 999.00 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
 JM(LFS) - 1423.80
AVEL TIME(MIN.) = 0.09 Tc(MIN.) = 22.15
FLOWPATH FROM NODE 990.00 TO NODE 999.00 = 3912.00 FEET.
  END OF STUDY SUMMARY:
  END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 798.5 TC(MIN.) =

PEAK FLOW RATE(CFS) = 1425.80
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  END OF RATIONAL METHOD ANALYSIS
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CHAPTER 5

5.1.5 – Rational Method Hydrologic Analysis (AES 2015)

Eastern Slopes Drainage Areas bypassing WQ Basins