HDPE PIPE NORMAL DEPTH CAPACITY

ID	HDPE PIPE SIZE (in)	Qcap at S=0.003 (cfs)	Sub-drainage Area (acre)	Qcap at S=0.005 (cfs)	Sub-drainage Area (acre)	Remarks
1	24	13.4	12.2	17.3	15.7	
2	30	25.4	23.1	31.4	28.5	
3	36	39.6	36.0	51.1	46.5	
4	42	59.7	54.3	77.1	70.1	
5	48	85.2	77.5	110	100.0	
6	54	116.7	106.1	150.6	136.9	
7	60	154.5	140.5	199.5	181.4	
8	66	199.3	181.2	257.2	233.8	
9	72	251.3	228.5	324.4	294.9	
10	78	311.1	282.8	401.6	365.1	
11	84	395.0	359.1	489.4	444.9	
12	90	455.6	414.2	588.2	534.7	
13	96	541.2	492.0	698.7	635.2	

N=0.012

Average Development Area 100-year Peak Q=1.1*(Area in AC)

```
 ************************************************************************
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                              Analysis prepared by:

 ------------------------------------------------------------------------
   TIME/DATE OF STUDY: 11:37 04/04/2019
 ========================================================================
  Problem Descriptions:
   INDIO MDP
   HDPE PIPE CAPACITY @S=0.003

 ************************************************************************
 >>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<
 ------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   2.000
     FLOWDEPTH(FEET) =   2.000
     PIPE SLOPE(FEET/FEET) =  0.0030
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =     13.42
 ========================================================================
 ------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   2.500
     FLOWDEPTH(FEET) =   2.480
     PIPE SLOPE(FEET/FEET) =  0.0030
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =     25.36
 ========================================================================
     NORMAL-DEPTH FLOW INFORMATION:
 ------------------------------------------------------------------------
     NORMAL DEPTH(FEET) =      2.47
     FLOW AREA(SQUARE FEET) =      4.90
     FLOW TOP-WIDTH(FEET) =     0.497
     FLOW PRESSURE + MOMENTUM(POUNDS) =          629.92
     FLOW VELOCITY(FEET/SEC.) =           5.175
     FLOW VELOCITY HEAD(FEET) =           0.416
     HYDRAULIC DEPTH(FEET) =      9.85
     FROUDE NUMBER =     0.291
     SPECIFIC ENERGY(FEET) =            2.89
 ========================================================================
 ------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   2.500
     FLOWDEPTH(FEET) =   2.500
     PIPE SLOPE(FEET/FEET) =  0.0030
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =     24.34
 ========================================================================
 ------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   3.000
     FLOWDEPTH(FEET) =   3.000
     PIPE SLOPE(FEET/FEET) =  0.0030
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =     39.58
 ========================================================================
 ------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   3.500
     FLOWDEPTH(FEET) =   3.500
     PIPE SLOPE(FEET/FEET) =  0.0030
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =     59.70
```

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 ===============================================================================

-------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   4.000
     FLOWDEPTH(FEET) =   4.000
     PIPE SLOPE(FEET/FEET) =  0.0030
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =     85.23
 ===============================================================================
-------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   4.500
     FLOWDEPTH(FEET) =   4.500
     PIPE SLOPE(FEET/FEET) =  0.0030
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    116.69
 ===============================================================================
-------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   5.000
     FLOWDEPTH(FEET) =   5.000
     PIPE SLOPE(FEET/FEET) =  0.0030
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    154.54
 ===============================================================================
-------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   5.500
     FLOWDEPTH(FEET) =   5.500
     PIPE SLOPE(FEET/FEET) =  0.0030
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    199.26
 ===============================================================================
-------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   6.000
     FLOWDEPTH(FEET) =   6.000
     PIPE SLOPE(FEET/FEET) =  0.0030
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    251.30
 ===============================================================================
-------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   6.500
     FLOWDEPTH(FEET) =   6.500
     PIPE SLOPE(FEET/FEET) =  0.0030
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    311.09
 ===============================================================================
-------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   7.000
     FLOWDEPTH(FEET) =   6.950
     PIPE SLOPE(FEET/FEET) =  0.0030
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    394.97
 ===============================================================================
     NORMAL-DEPTH FLOW INFORMATION:
 -------------------------------------------------------------------------------
     NORMAL DEPTH(FEET) =      6.93
     FLOW AREA(SQUARE FEET) =     38.42
     FLOW TOP-WIDTH(FEET) =     1.393
     FLOW PRESSURE + MOMENTUM(POUNDS) =        16114.01
     FLOW VELOCITY(FEET/SEC.) =          10.280
     FLOW VELOCITY HEAD(FEET) =           1.641
     HYDRAULIC DEPTH(FEET) =     27.58
     FROUDE NUMBER =     0.345
     SPECIFIC ENERGY(FEET) =            8.57
 ===============================================================================
```

```
--------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   7.500
     FLOWDEPTH(FEET) =   7.500
     PIPE SLOPE(FEET/FEET) =  0.0030
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    455.63
 ================================================================================
--------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   8.000
     FLOWDEPTH(FEET) =   8.000
     PIPE SLOPE(FEET/FEET) =  0.0030
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    541.20
```

```
================================================================================

  Problem Descriptions:
   INDIO MDP
   HDPE PIPE CAPACITY @S=0.005

 ********************************************************************************
 >>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<
 --------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   8.000
     FLOWDEPTH(FEET) =   8.000
     PIPE SLOPE(FEET/FEET) =  0.0050
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    698.69
 ================================================================================
--------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   7.500
     FLOWDEPTH(FEET) =   7.500
     PIPE SLOPE(FEET/FEET) =  0.0050
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    588.22
 ================================================================================
--------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   7.000
     FLOWDEPTH(FEET) =   7.000
     PIPE SLOPE(FEET/FEET) =  0.0050
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    489.37
 ================================================================================
--------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   6.500
     FLOWDEPTH(FEET) =   6.500
     PIPE SLOPE(FEET/FEET) =  0.0050
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    401.62
 ================================================================================
     PIPE DIAMETER(FEET) =   6.000
     FLOWDEPTH(FEET) =   6.000
     PIPE SLOPE(FEET/FEET) =  0.0050
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    324.42
 ================================================================================
--------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   5.500
     FLOWDEPTH(FEET) =   5.500
     PIPE SLOPE(FEET/FEET) =  0.0050
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    257.24
 ================================================================================
--------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   5.000
     FLOWDEPTH(FEET) =   5.000
     PIPE SLOPE(FEET/FEET) =  0.0050
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    199.51
 ================================================================================
--------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   4.500
     FLOWDEPTH(FEET) =   4.500
     PIPE SLOPE(FEET/FEET) =  0.0050
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    150.64
```

```
 ================================================================================
--------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   4.000
     FLOWDEPTH(FEET) =   4.000
     PIPE SLOPE(FEET/FEET) =  0.0050
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =    110.04
 ================================================================================
--------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   3.500
     FLOWDEPTH(FEET) =   3.500
     PIPE SLOPE(FEET/FEET) =  0.0050
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =     77.07
 ================================================================================
--------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   3.000
     FLOWDEPTH(FEET) =   3.000
     PIPE SLOPE(FEET/FEET) =  0.0050
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =     51.09
 ================================================================================
--------------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   2.000
     FLOWDEPTH(FEET) =   2.000
     PIPE SLOPE(FEET/FEET) =  0.0050
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =     17.33
 ================================================================================
```

4-LANE STREET NORMAL DEPTH CAPACITY FOR 100-YEAR STORM

ID	Street Slope	Street Width (ft)	Street Curb Height (ft)	Ponding Depth @ R/W (88') (cfs)	Street Capacity 100-Year Storm (cfs)	Ponding Center/Left Lane (10') (in)	Ponding Center Travel Lane (11') (in)	Ponding @ Outer Travel Lane (11') (in)	Remarks
	STREET CROSS-SLOPE S=1.6%								
1	S=0.001	64.0	0.5	0.74	**37.5**	0-1"	1"-3"	3"-5.2"	
2	S=0.002	64.0	0.5	0.74	**53.0**	0-1"	1"-3"	3"-5.2"	
3	S=0.003	64.0	0.5	0.74	**64.9**	0-1"	1"-3"	3"-5.2"	
4	S=0.004	64.0	0.5	0.74	**75.0**	0-1"	1"-3"	3"-5.2"	
5	S=0.005	64.0	0.5	0.74	**83.8**	0-1"	1"-3"	3"-5.2"	
	STREET CROSS-SLOPE S=2.0%								
1	S=0.001	64.0	0.5	0.74	**28.2**	0-1.1"	1.1"-3.7"	3.7"-5.6"	
2	S=0.002	64.0	0.5	0.74	**40.0**	0-1.1"	1.1"-3.7"	3.7"-5.6"	
3	S=0.003	64.0	0.5	0.74	**48.9**	0-1.1"	1.1"-3.7"	3.7"-5.6"	
4	S=0.004	64.0	0.5	0.74	**56.4**	0-1.1"	1.1"-3.7"	3.7"-5.6"	
5	S=0.005	64.0	0.5	0.74	**63.1**	0-1.1"	1.1"-3.7"	3.7"-5.6"	

```
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                            Analysis prepared by:
     ------------------------------------------------------------------------
TIME/DATE OF STUDY: 10:22 04/16/2019
========================================================================
========================================================================

  Problem Descriptions:
   INDIO MDP
   4-LANE STREET CAPACITY AT S=0.003 CROSS SLOPE = 1.6%
   100-YEAR FLOW 0.74 PONDING DEPTH
 ************************************************************************
 >>>>STREETFLOW MODEL INPUT INFORMATION<<<<
 ------------------------------------------------------------------------
     CONSTANT STREET GRADE(FEET/FEET) = 0.003000
     CONSTANT STREET FLOW DEPTH(FEET) =    0.74
     AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
     CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   32.00
     DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   16.00
     INTERIOR STREET CROSSFALL(DECIMAL) = 0.016000
     OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.016000
     CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.50
     CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   2.00
     CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03000
     CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
     FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES
 ========================================================================
     STREET FLOW MODEL RESULTS:
 ------------------------------------------------------------------------
     NOTE: STREET FLOW EXCEEDS TOP OF CURB.
           THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
           THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
           THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
     STREET FLOW DEPTH(FEET) =  0.74
     HALFSTREET FLOOD WIDTH(FEET) =   32.00
     HALFSTREET FLOW(CFS) =   32.46
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.76
     PRODUCT OF DEPTH&VELOCITY =    2.04
 ========================================================================
  Problem Descriptions:
   INDIO MDP
   4-LANE STREET CAPACITY AT S=0.002 CROSS SLOPE = 1.6%
   100-YEAR FLOW 0.74 PONDING DEPTH
 ************************************************************************
 >>>>STREETFLOW MODEL INPUT INFORMATION<<<<
 ------------------------------------------------------------------------
     CONSTANT STREET GRADE(FEET/FEET) = 0.002000
     CONSTANT STREET FLOW DEPTH(FEET) =    0.74
     AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
     CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   32.00
     DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   16.00
     INTERIOR STREET CROSSFALL(DECIMAL) = 0.016000
     OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.016000
     CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.50
     CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   2.00
     CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03000
     CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
     FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES
```

```
==============================================================================
    STREET FLOW MODEL RESULTS:
------------------------------------------------------------------------------
    NOTE: STREET FLOW EXCEEDS TOP OF CURB.
          THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
          THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
          THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   32.00
    HALFSTREET FLOW(CFS) =   26.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.25
    PRODUCT OF DEPTH&VELOCITY =    1.67
==============================================================================
 Problem Descriptions:
  INDIO MDP
  4-LANE STREET CAPACITY AT S=0.004 CROSS SLOPE = 1.6%
  100-YEAR FLOW 0.74 PONDING DEPTH
******************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
------------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.004000
    CONSTANT STREET FLOW DEPTH(FEET) =    0.74
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   32.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   16.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.016000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.016000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.50
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   2.00
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03000
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
    FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES
==============================================================================
    STREET FLOW MODEL RESULTS:
------------------------------------------------------------------------------
    NOTE: STREET FLOW EXCEEDS TOP OF CURB.
          THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
          THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
          THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   32.00
    HALFSTREET FLOW(CFS) =   37.49
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.19
    PRODUCT OF DEPTH&VELOCITY =    2.36
==============================================================================
==============================================================================
 Problem Descriptions:
 INDIO MDP
  4-LANE STREET CAPACITY AT S=0.001 CROSS SLOPE = 1.6%
  100-YEAR FLOW 0.74 PONDING DEPTH

******************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
------------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.001000
    CONSTANT STREET FLOW DEPTH(FEET) =    0.74
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   32.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   16.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.016000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.016000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.50
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   2.00
```

```
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03000
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
    FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES
================================================================================
    STREET FLOW MODEL RESULTS:
--------------------------------------------------------------------------------
    NOTE: STREET FLOW EXCEEDS TOP OF CURB.
          THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
          THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
          THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   32.00
    HALFSTREET FLOW(CFS) =   18.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.59
    PRODUCT OF DEPTH&VELOCITY =    1.18
================================================================================
 Problem Descriptions:
 INDIO MDP
  4-LANE STREET CAPACITY AT S=0.005 CROSS SLOPE = 1.6%
  100-YEAR FLOW 0.74 PONDING DEPTH

********************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
--------------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.005000
    CONSTANT STREET FLOW DEPTH(FEET) =    0.74
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   32.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   16.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.016000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.016000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.50
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   2.00
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03000
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
    FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES
================================================================================
    STREET FLOW MODEL RESULTS:
--------------------------------------------------------------------------------
    NOTE: STREET FLOW EXCEEDS TOP OF CURB.
          THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
          THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
          THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   32.00
    HALFSTREET FLOW(CFS) =   41.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.56
    PRODUCT OF DEPTH&VELOCITY =    2.64
================================================================================

================================================================================
 Problem Descriptions:
  INDIO MDP
  4-LANE STREET CAPACITY AT S=0.001 CROSS SLOPE = 2.0%
  100-YEAR FLOW 0.74 PONDING DEPTH

********************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
--------------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.001000
    CONSTANT STREET FLOW DEPTH(FEET) =    0.74
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   32.00
```

```
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   16.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.020000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.50
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   2.00
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03000
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
    FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES
============================================================================
    STREET FLOW MODEL RESULTS:
----------------------------------------------------------------------------
    NOTE: STREET FLOW EXCEEDS TOP OF CURB.
          THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
          THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
          THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   31.25
    HALFSTREET FLOW(CFS) =   14.11
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.42
    PRODUCT OF DEPTH&VELOCITY =    1.05
============================================================================

 Problem Descriptions:
  INDIO MDP
  4-LANE STREET CAPACITY AT S=0.002 CROSS SLOPE = 2.0%
  100-YEAR FLOW 0.74 PONDING DEPTH

****************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
----------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.002000
    CONSTANT STREET FLOW DEPTH(FEET) =    0.74
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   32.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   16.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.020000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.50
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   2.00
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03000
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
    FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES
============================================================================
    STREET FLOW MODEL RESULTS:
----------------------------------------------------------------------------
    NOTE: STREET FLOW EXCEEDS TOP OF CURB.
          THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
          THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
          THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   31.25
    HALFSTREET FLOW(CFS) =   19.95
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.01
    PRODUCT OF DEPTH&VELOCITY =    1.49
============================================================================

 Problem Descriptions:
 INDIO MDP
  4-LANE STREET CAPACITY AT S=0.003 CROSS SLOPE = 2.0%
  100-YEAR FLOW 0.74 PONDING DEPTH

****************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
```

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--------------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.003000
    CONSTANT STREET FLOW DEPTH(FEET) =    0.74
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   32.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   16.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.020000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.50
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   2.00
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03000
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
    FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES
================================================================================
    STREET FLOW MODEL RESULTS:
--------------------------------------------------------------------------------
    NOTE: STREET FLOW EXCEEDS TOP OF CURB.
          THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
          THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
          THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   31.25
    HALFSTREET FLOW(CFS) =   24.43
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.47
    PRODUCT OF DEPTH&VELOCITY =    1.82
================================================================================

 Problem Descriptions:
 INDIO MDP
  4-LANE STREET CAPACITY AT S=0.004 CROSS SLOPE = 2.0%
  100-YEAR FLOW 0.74 PONDING DEPTH

********************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
--------------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.004000
    CONSTANT STREET FLOW DEPTH(FEET) =    0.74
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   32.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   16.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.020000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.50
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   2.00
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03000
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
    FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES
================================================================================
    STREET FLOW MODEL RESULTS:
--------------------------------------------------------------------------------
    NOTE: STREET FLOW EXCEEDS TOP OF CURB.
          THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
          THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
          THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   31.25
    HALFSTREET FLOW(CFS) =   28.21
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.85
    PRODUCT OF DEPTH&VELOCITY =    2.11
================================================================================

 Problem Descriptions:
  INDIO MDP
```

```
  4-LANE STREET CAPACITY AT S=0.005 CROSS SLOPE = 2.0%
  100-YEAR FLOW 0.74 PONDING DEPTH

 ************************************************************************
 >>>>STREETFLOW MODEL INPUT INFORMATION<<<<
 ------------------------------------------------------------------------
     CONSTANT STREET GRADE(FEET/FEET) = 0.005000
     CONSTANT STREET FLOW DEPTH(FEET) =    0.74
     AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
     CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   32.00
     DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   16.00
     INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
     OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.020000
     CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.50
     CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   2.00
     CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03000
     CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
     FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES
 ========================================================================
     STREET FLOW MODEL RESULTS:
 ------------------------------------------------------------------------
     NOTE: STREET FLOW EXCEEDS TOP OF CURB.
           THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
           THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
           THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
     STREET FLOW DEPTH(FEET) =  0.74
     HALFSTREET FLOOD WIDTH(FEET) =   31.25
     HALFSTREET FLOW(CFS) =   31.54
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.18
     PRODUCT OF DEPTH&VELOCITY =    2.36
 ========================================================================


 ========================================================================
  Problem Descriptions:
   INDIO MDP
   FAIRGROUNDS BASIN OUTLET 24" PIPE HALF FULL
   NORMAL DEPTH
 ************************************************************************
 >>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<
 ------------------------------------------------------------------------
     PIPE DIAMETER(FEET) =   2.000
     FLOWDEPTH(FEET) =   1.000
     PIPE SLOPE(FEET/FEET) =  0.0030
     MANNINGS FRICTION FACTOR = 0.012000
     >>>>> NORMAL DEPTH FLOW(CFS) =      6.71
 ========================================================================
     NORMAL-DEPTH FLOW INFORMATION:
 ------------------------------------------------------------------------
     NORMAL DEPTH(FEET) =      1.00
     FLOW AREA(SQUARE FEET) =      1.57
     FLOW TOP-WIDTH(FEET) =     2.000
     FLOW PRESSURE + MOMENTUM(POUNDS) =           97.13
     FLOW VELOCITY(FEET/SEC.) =           4.273
     FLOW VELOCITY HEAD(FEET) =           0.283
     HYDRAULIC DEPTH(FEET) =      0.79
     FROUDE NUMBER =     0.850
     SPECIFIC ENERGY(FEET) =            1.28
```

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******************************************************************************
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                           Analysis prepared by:

------------------------------------------------------------------------------
  TIME/DATE OF STUDY: 17:11 04/05/2019
==============================================================================
 Problem Descriptions:
  INDIO MDP
  TRAP CHANNEL CAPACITY

******************************************************************************
>>>>CHANNEL INPUT INFORMATION<<<<
------------------------------------------------------------------------------
    NORMAL DEPTH(FEET) =   3.50
    CHANNEL Z1(HORIZONTAL/VERTICAL) =    1.50
            Z2(HORIZONTAL/VERTICAL) =    1.50
    BASEWIDTH(FEET) =     6.00
    CONSTANT CHANNEL SLOPE(FEET/FEET) = 0.003000
    MANNINGS FRICTION FACTOR = 0.0140
==============================================================================
    NORMAL-DEPTH FLOW INFORMATION:
------------------------------------------------------------------------------
    >>>>> NORMAL DEPTH FLOW(CFS) =    377.15
    FLOW TOP-WIDTH(FEET) =        16.50
    FLOW AREA(SQUARE FEET) =          39.38
    HYDRAULIC DEPTH(FEET) =     2.39
    FLOW AVERAGE VELOCITY(FEET/SEC.) =     9.58
    UNIFORM FROUDE NUMBER =    1.093
    PRESSURE + MOMENTUM(POUNDS) =        10631.36
    AVERAGED VELOCITY HEAD(FEET) =      1.425
    SPECIFIC ENERGY(FEET) =      4.925
==============================================================================
    CRITICAL-DEPTH FLOW INFORMATION:
------------------------------------------------------------------------------
    CRITICAL FLOW TOP-WIDTH(FEET) =        17.00
    CRITICAL FLOW AREA(SQUARE FEET) =          42.19
    CRITICAL FLOW HYDRAULIC DEPTH(FEET) =     2.48
    CRITICAL FLOW AVERAGE VELOCITY(FEET/SEC.) =     8.94
    CRITICAL DEPTH(FEET) =     3.67
    CRITICAL FLOW PRESSURE + MOMENTUM(POUNDS) =        10591.83
    AVERAGED CRITICAL FLOW VELOCITY HEAD(FEET) =      1.241
    CRITICAL FLOW SPECIFIC ENERGY(FEET) =      4.909
==============================================================================

 Problem Descriptions:
  INDIO MDP
  TRAP CHANNEL CAPACITY
  DILLON
******************************************************************************
>>>>CHANNEL INPUT INFORMATION<<<<
------------------------------------------------------------------------------
    NORMAL DEPTH(FEET) =   5.00
    CHANNEL Z1(HORIZONTAL/VERTICAL) =    1.50
            Z2(HORIZONTAL/VERTICAL) =    1.50
    BASEWIDTH(FEET) =     8.00
    CONSTANT CHANNEL SLOPE(FEET/FEET) = 0.002000
    MANNINGS FRICTION FACTOR = 0.0140
==============================================================================
```

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    NORMAL-DEPTH FLOW INFORMATION:
-------------------------------------------------------------------------------
    >>>>> NORMAL DEPTH FLOW(CFS) =    761.41
    FLOW TOP-WIDTH(FEET) =        23.00
    FLOW AREA(SQUARE FEET) =          77.50
    HYDRAULIC DEPTH(FEET) =     3.37
    FLOW AVERAGE VELOCITY(FEET/SEC.) =     9.82
    UNIFORM FROUDE NUMBER =    0.943
    PRESSURE + MOMENTUM(POUNDS) =        24636.56
    AVERAGED VELOCITY HEAD(FEET) =      1.499
    SPECIFIC ENERGY(FEET) =      6.499
===============================================================================
    CRITICAL-DEPTH FLOW INFORMATION:
-------------------------------------------------------------------------------
    CRITICAL FLOW TOP-WIDTH(FEET) =        22.54
    CRITICAL FLOW AREA(SQUARE FEET) =          74.04
    CRITICAL FLOW HYDRAULIC DEPTH(FEET) =     3.28
    CRITICAL FLOW AVERAGE VELOCITY(FEET/SEC.) =    10.28
    CRITICAL DEPTH(FEET) =     4.85
    CRITICAL FLOW PRESSURE + MOMENTUM(POUNDS) =        24595.68
    AVERAGED CRITICAL FLOW VELOCITY HEAD(FEET) =      1.642
    CRITICAL FLOW SPECIFIC ENERGY(FEET) =      6.490
===============================================================================

 Problem Descriptions:
  INDIO MDP
  TRAP CHANNEL CAPACITY
  DILLON 2
*******************************************************************************
>>>>CHANNEL INPUT INFORMATION<<<<
-------------------------------------------------------------------------------
    NORMAL DEPTH(FEET) =   6.00
    CHANNEL Z1(HORIZONTAL/VERTICAL) =    1.50
            Z2(HORIZONTAL/VERTICAL) =    1.50
    BASEWIDTH(FEET) =    10.00
    CONSTANT CHANNEL SLOPE(FEET/FEET) = 0.002000
    MANNINGS FRICTION FACTOR = 0.0140
===============================================================================
    NORMAL-DEPTH FLOW INFORMATION:
-------------------------------------------------------------------------------
    >>>>> NORMAL DEPTH FLOW(CFS) =   1272.00
    FLOW TOP-WIDTH(FEET) =        28.00
    FLOW AREA(SQUARE FEET) =         114.00
    HYDRAULIC DEPTH(FEET) =     4.07
    FLOW AVERAGE VELOCITY(FEET/SEC.) =    11.16
    UNIFORM FROUDE NUMBER =    0.974
    PRESSURE + MOMENTUM(POUNDS) =        45475.20
    AVERAGED VELOCITY HEAD(FEET) =      1.933
    SPECIFIC ENERGY(FEET) =      7.933
===============================================================================
    CRITICAL-DEPTH FLOW INFORMATION:
-------------------------------------------------------------------------------
    CRITICAL FLOW TOP-WIDTH(FEET) =        27.76
    CRITICAL FLOW AREA(SQUARE FEET) =         111.73
    CRITICAL FLOW HYDRAULIC DEPTH(FEET) =     4.03
    CRITICAL FLOW AVERAGE VELOCITY(FEET/SEC.) =    11.38
    CRITICAL DEPTH(FEET) =     5.92
    CRITICAL FLOW PRESSURE + MOMENTUM(POUNDS) =        45460.53
    AVERAGED CRITICAL FLOW VELOCITY HEAD(FEET) =      2.012
    CRITICAL FLOW SPECIFIC ENERGY(FEET) =      7.931
===============================================================================
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