BAYSHORE WEST SUBDIVISION RID
STORMWATER ILLUDAS MODEL

EXISTING SYSTEM - 2 YR 6 HR STORM

UPSTREAM MANHOLE	DOWNSTREAM MANHOLE	BRANCH	REACH	FLOW (CFS)
16717	17206	1	0	0.85
17206	17151	1	1	1.29
17151	17588	1	2	1.28
17588	17428	1	3	1.28
17428	17427	1	4	1.30
17427	17941	1	5	1.28
17941	18157	1	6	1.48
18361	18253	2	0	0.00
18253	18157	2	1	0.31
18157	18252	1	7	1.63
18252	18544	1	8	1.62

EXISTING SYSTEM - 10 YR 3 HR STORM

UPSTREAM MANHOLE	DOWNSTREAM MANHOLE	BRANCH	REACH	FLOW (CFS)
16717	17206	1	0	1.55
17206	17151	1	1	2.65
17151	17588	1	2	2.45
17588	17428	1	3	2.41
17428	17427	1	4	2.49
17427	17941	1	5	2.41
17941	18157	1	6	2.92
18361	18253	2	0	0.00
18253	18157	2	1	0.66
18157	18252	1	7	3.44
18252	18544	1	8	3.42

BAYSHORE WEST SUBDIVISION RID
STORMWATER ILLUDAS MODEL

PROPOSED SYSTEM - 2 YR 6 HR STORM

UPSTREAM MANHOLE	DOWNSTREAM MANHOLE	BRANCH	REACH	FLOW (CFS)
B6	B5	1	0	0.36
B5	B4	1	1	0.35
B4	B3	1	2	0.34
B3	B2	1	3	0.33
B2	B1	1	4	0.95
B1	17206	1	5	0.95
A2	A1	2	0	0.70
A1	16717	2	1	0.65
16717	17206	2	1	0.97
17206	17151	1	6	1.68
17151	17588	1	7	1.59
17588	17428	1	8	2.35
17428	17427	1	9	2.39
17427	17941	1	10	2.25
17941	18157	1	11	2.09
18157	18253	3	0	0.00
18253	18157	3	1	0.31
18157	18252	1	12	2.23
18252	18544	1	13	2.23

PROPOSED SYSTEM - 10 YR 3 HR STORM

UPSTREAM MANHOLE	DOWNSTREAM MANHOLE	BRANCH	REACH	FLOW (CFS)
B6	B5	1	0	0.63
B5	B4	1	1	0.62
B4	B3	1	2	0.60
B3	B2	1	3	0.58
B2	B1	1	4	1.68
B1	17206	1	5	1.68
A2	A1	2	0	1.24
A1	16717	2	1	1.15
16717	17206	2	1	1.76
17206	17151	1	6	3.07
17151	17588	1	7	2.92
17588	17428	1	8	4.29
17428	17427	1	9	4.36
17427	17941	1	10	4.13
17941	18157	1	11	3.88
18157	18253	3	0	0.00
18253	18157	3	1	0.55
18157	18252	1	12	4.07
18252	18544	1	13	4.07

BAYSHORE ELEMENTARY SCHOOL

TO BAYSHORE LAKE

BAYSHORE DRIVE

WEST 100th Ave

ADMIRALTY BAY DRIVE

JACKPOT BAY CIRCLE

BETTLES BAY LOOP

KFQD PARK

EAGLEK BAY CIRCLE

ENSIGN DRIVE

HOGAN BAY CIRCLE

ROCKY BAY CIRCLE

ESHAMY BAY DR

16717
B2R2
17206
B1R6
17151
B1R7
17588
B1R8
17428
B1R9
17427
B1R10
17941
B1R11
18157
B1R12
18252
B1R13
18544
B3R2
18253
B3R1
18361
18539

LEGEND

B1R11	ILLUDAS MODEL BRANCH AND REACH
18157	MANHOLE NUMBER

CRW ENGINEERING GROUP, LLC

PROJECT: 10108

STATUS DRAFT DSR

MUNICIPALITY OF ANCHORAGE

MOA PROJECT NO. 04-09

BAYSHORE WEST SUBDIVISION RID
STREET RECONSTRUCTION PROJECT

EXISTING STORM DRAIN SYSTEM

DATE: DEC 2005

SCALE: NTS

FIGURE: G1

File: J:\Jobsdata\10108_Bayshore_RID_Improvements\CADD\Drawings\108_STORM SEWER.dwg

BAYSHORE ELEMENTARY SCHOOL

TO BAYSHORE LAKE

BAYSHORE DRIVE

WEST 100th Ave

ADMIRALTY BAY DRIVE

JACKPOT BAY CIRCLE

BETTLES BAY LOOP

KFQD PARK

EAGLEK BAY CIRCLE

ENSIGN DRIVE

HOGAN BAY CIRCLE

ROCKY BAY CIRCLE

ESHAMY BAY DR

A1 A2 B1 B2 B3 B4 B5 B6

16717 17206 17151 17588 17428 17427 17941 18157 18252 18253 18361 18544 18539

B1R0 B1R1 B1R2 B1R3 B1R4 B1R5 B1R6 B1R7 B1R8 B1R9 B1R10 B1R11 B1R12 B1R13 B2R0 B2R1 B2R2 B3R1 B3R2

LEGEND

B1R11	ILLUDAS MODEL BRANCH AND REACH
18157	MANHOLE NUMBER

CRW ENGINEERING GROUP, LLC

PROJECT: 10108

STATUS DRAFT DSR

MUNICIPALITY OF ANCHORAGE

MOA PROJECT NO. 04-09

BAYSHORE WEST SUBDIVISION RID
STREET RECONSTRUCTION PROJECT

PROPOSED STORM DRAIN SYSTEM

DATE DEC 2005

SCALE NTS

FIGURE G2

File: J:\Jobsdata\10108_Bayshore_RID_Improvements\CADD\Drawings\108_STORM SEWER.dwg

Design Criteria: J:\Jobsdata\10108 Bayshore RID Improvements\06 Analysis Calcs\08 Storm Drain Design\HYDSYS\10108_EXST_HYDSYS.DCT
Drainage Model: J:\Jobsdata\10108 Bayshore RID Improvements\06 Analysis Calcs\08 Storm Drain Design\HYDSYS\10108_EXST_HYDSYS.HYN
Rainstorm: J:\Jobsdata\10101 84th & Spruce\06 Analysis Calcs\08 Storm Drain Design\HYDSYS\STORM DATA\2YR-6HR STORM.HYE
Storm description: REC: MOA Design Criteria 2yr 6hr Hyetograph

5 min increment, AMC= 3 2 yr return
ILLUDAS ** ILLINOIS STATE WATER SURVEY ** ILAG82 August, 1997
Time Shift Routing Activated.

Design Mode

RAINFALL PATTERN

0.000	0.004	0.004	0.004	0.004	0.004	0.005	0.005	0.005
0.005								
0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.006
0.006								
0.006	0.006	0.006	0.006	0.007	0.007	0.007	0.007	0.008
0.008								
0.009	0.009	0.010	0.011	0.013	0.015	0.062	0.016	0.014
0.012								
0.011	0.010	0.009	0.009	0.008	0.008	0.007	0.007	0.007
0.007								
0.006	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.005
0.005								
0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.004
0.004								
0.004	0.004	0.004						

RUN NUMBER	BASIN AREA ACRES	TIME INCREMENT MINUTES	SOIL GROUP 1234=ABCD
1	35.0	5.0	3

TOTAL RAIN INCHES	FREQUENCY YEARS	DURATION MINUTES	AMC	PAVED ABS. INCHES	GRASS ABS. INCHES
0.53	2	360.0	3	0.00	0.00

Pipe 16717 17206 Branch 1 Reach 0 13-Dec-05 15:02
PAVED ENTRY TIME= 6.3 MIN
ACCUM CONTRIBUTING AREAS: CPA=1.4, SPA=0.5, CGA=8.4

LENG FT	SLP PCT	N	HT FT	BW FT	V/H	DIA INS	CAPAC CFS	VEL FPS	DESIGN Q-CFS	INLET Q-CFS	DETENTION CUBIC FT	STORAGE REQUESTED
216	0.29	0.024	0.00	0.00	0.00	15	1.87	1.53	0.00	0.0	0	
REQUIRED PIPE =						12	1.03	1.32	0.85	0.85	0.00	

EXISTING PIPE HAS ADEQUATE CAPACITY

Pipe 17206 17151 Branch 1 Reach 1 13-Dec-05 15:02
PAVED ENTRY TIME= 7.2 MIN
ACCUM CONTRIBUTING AREAS: CPA=2.7, SPA=1.0, CGA=15.8

LENG FT	SLP PCT	N	HT FT	BW FT	V/H	DIA INS	CAPAC CFS	VEL FPS	DESIGN Q-CFS	INLET Q-CFS	DETENTION CUBIC FT	STORAGE REQUESTED
110	0.21	0.024	0.00	0.00	0.00	15	1.60	1.30	0.00	0.0	0	
REQUIRED PIPE =						15	1.60	1.30	1.29	0.77	0.00	

EXISTING PIPE HAS ADEQUATE CAPACITY

Pipe 17151 17588 Branch 1 Reach 2 13-Dec-05 15:02
ACCUM CONTRIBUTING AREAS: CPA=2.7, SPA=1.0, CGA=15.8

LENG	SLP	N	HT	BW	V/H	DIA	CAPAC	VEL	DESIGN	INLET	DETENTION	STORAGE
FT	PCT		FT	FT		INS	CFS	FPS	Q-CFS	Q-CFS	CUBIC FT	REQUESTED
114	0.03	0.024	0.00	0.00	0.00	15	0.56	0.46	0.00	0.0	0	
REQUIRED PIPE =						21	1.38	0.58	1.28	0.00	0.00	

Pipe 17588 17428 Branch 1 Reach 3 13-Dec-05 15:02
ACCUM CONTRIBUTING AREAS: CPA=2.7, SPA=1.0, CGA=15.8

LENG	SLP	N	HT	BW	V/H	DIA	CAPAC	VEL	DESIGN	INLET	DETENTION	STORAGE
FT	PCT		FT	FT		INS	CFS	FPS	Q-CFS	Q-CFS	CUBIC FT	REQUESTED
110	0.33	0.024	0.00	0.00	0.00	15	2.00	1.63	0.00	0.0	0	
REQUIRED PIPE =						15	2.00	1.63	1.28	0.00	0.00	

EXISTING PIPE HAS ADEQUATE CAPACITY

Pipe 17428 17427 Branch 1 Reach 4 13-Dec-05 15:02
PAVED ENTRY TIME= 6.7 MIN
ACCUM CONTRIBUTING AREAS: CPA=2.9, SPA=1.0, CGA=16.8

LENG	SLP	N	HT	BW	V/H	DIA	CAPAC	VEL	DESIGN	INLET	DETENTION	STORAGE
FT	PCT		FT	FT		INS	CFS	FPS	Q-CFS	Q-CFS	CUBIC FT	REQUESTED
126	0.24	0.024	0.00	0.00	0.00	15	1.71	1.39	0.00	0.0	0	
REQUIRED PIPE =						15	1.71	1.39	1.30	0.12	0.00	

EXISTING PIPE HAS ADEQUATE CAPACITY

Pipe 17427 17941 Branch 1 Reach 5 13-Dec-05 15:02
ACCUM CONTRIBUTING AREAS: CPA=2.9, SPA=1.0, CGA=16.8

LENG	SLP	N	HT	BW	V/H	DIA	CAPAC	VEL	DESIGN	INLET	DETENTION	STORAGE
FT	PCT		FT	FT		INS	CFS	FPS	Q-CFS	Q-CFS	CUBIC FT	REQUESTED
125	0.56	0.024	0.00	0.00	0.00	15	2.62	2.13	0.00	0.0	0	
REQUIRED PIPE =						12	1.44	1.84	1.28	0.00	0.00	

EXISTING PIPE HAS ADEQUATE CAPACITY

Pipe 17941 18157 Branch 1 Reach 6 13-Dec-05 15:02
PAVED ENTRY TIME= 3.2 MIN
ACCUM CONTRIBUTING AREAS: CPA=4.1, SPA=1.5, CGA=24.2

LENG	SLP	N	HT	BW	V/H	DIA	CAPAC	VEL	DESIGN	INLET	DETENTION	STORAGE
FT	PCT		FT	FT		INS	CFS	FPS	Q-CFS	Q-CFS	CUBIC FT	REQUESTED
400	0.27	0.024	0.00	0.00	0.00	15	1.82	1.48	0.00	0.0	0	
REQUIRED PIPE =						15	1.82	1.48	1.48	0.87	0.00	

EXISTING PIPE HAS ADEQUATE CAPACITY

Pipe 18361 18253 Branch 2 Reach 0 13-Dec-05 15:02
ACCUM CONTRIBUTING AREAS: CPA=4.1, SPA=1.5, CGA=24.2

LENG	SLP	N	HT	BW	V/H	DIA	CAPAC	VEL	DESIGN	INLET	DETENTION	STORAGE
FT	PCT		FT	FT		INS	CFS	FPS	Q-CFS	Q-CFS		

```
CUBIC FT   REQUESTED
   115 0.31 0.024 0.00 0.00 0.00   15    1.96  1.59      0.00
0.0            0
       REQUIRED PIPE =              8    0.37  1.05      0.00     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      18253      18157  Branch   2 Reach   1   13-Dec-05 15:02
     ACCUM CONTRIBUTING AREAS:  CPA=4.5,  SPA=1.6,   CGA=26.4
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
    65 0.55 0.024 0.00 0.00 0.00   15    2.60  2.12      0.00
0.0            0
       REQUIRED PIPE =              8    0.49  1.39      0.31     0.31
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      18157      18252  Branch   1 Reach   7   13-Dec-05 15:02
 PAVED ENTRY TIME=    4.0 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=4.9,  SPA=1.8,   CGA=28.6
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
    80 0.21 0.024 0.00 0.00 0.00   15    1.61  1.31      0.00
0.0            0
       REQUIRED PIPE =             18    2.62  1.48      1.63     0.28
0.00

Pipe      18252      18544  Branch   1 Reach   8   13-Dec-05 15:02
     ACCUM CONTRIBUTING AREAS:  CPA=4.9,  SPA=1.8,   CGA=28.6
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   140 1.32 0.024 0.00 0.00 0.00   15    4.02  3.28      0.00
0.0            0
       REQUIRED PIPE =             12    2.22  2.82      1.62     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

OUTFALL HYDROGRAPH IN CFS, ACCUMULATED RUNOFF IN CU FT= 9427
     0.0     0.0     0.1     0.1     0.2     0.2     0.2     0.3     0.3
0.3
     0.3     0.3     0.3     0.3     0.3     0.3     0.3     0.3     0.3
0.3
     0.3     0.3     0.4     0.4     0.4     0.4     0.4     0.4     0.4
0.4
     0.4     0.5     0.5     0.5     0.6     0.5     1.3     1.6     1.5
1.6
     1.2     0.8     0.7     0.6     0.6     0.5     0.5     0.5     0.4
0.4
     0.4     0.4     0.4     0.4     0.4     0.4     0.3     0.3     0.3
0.3
     0.3     0.3     0.3     0.3     0.3     0.3     0.3     0.3     0.3
0.3
     0.3     0.2     0.2     0.2     0.2     0.1     0.0     0.0     0.0
0.0
     0.0     0.0     0.0     0.0

THE JOB IS FINISHED
```

  Design Criteria: J:\Jobsdata\10108 Bayshore RID Improvements\06 Analysis Calcs\08 Storm Drain Design\HYDSYS\10108_EXST_HYDSYS.DCT
   Drainage Model: J:\Jobsdata\10108 Bayshore RID Improvements\06 Analysis Calcs\08 Storm Drain Design\HYDSYS\10108_EXST_HYDSYS.HYN
        Rainstorm: J:\Jobsdata\10101 84th & Spruce\06 Analysis Calcs\08 Storm Drain Design\HYDSYS\STORM DATA\10YR-3HR STORM.hye
Storm description: DIS: MOA Design Criteria 10yr 3hr Hyetograph

    5 min increment, AMC= 3   10 yr return
ILLUDAS ** ILLINOIS STATE WATER SURVEY ** ILAG82   August, 1997
Time Shift Routing Activated.

Design Mode

RAINFALL PATTERN
   0.000   0.008   0.008   0.009   0.010   0.010   0.010   0.011   0.011
0.012
   0.012   0.013   0.014   0.015   0.016   0.018   0.021   0.024   0.098
0.025
   0.023   0.019   0.017   0.015   0.014   0.013   0.013   0.012   0.011
0.011
   0.011   0.010   0.010   0.010   0.009   0.009   0.008
     RUN NUMBER   BASIN AREA   TIME INCREMENT   SOIL GROUP
                     ACRES   MINUTES   1234=ABCD
             1   35.0   5.0   3
      TOTAL RAIN   FREQUENCY   DURATION   AMC   PAVED ABS.   GRASS ABS.
        INCHES   YEARS   MINUTES   INCHES   INCHES
          0.56   10   180.0   3   0.00   0.00

Pipe   16717   17206 Branch   1 Reach   0   13-Dec-05 15:02
 PAVED ENTRY TIME=   6.3 MIN
     ACCUM CONTRIBUTING AREAS: CPA=1.4, SPA=0.5,   CGA=8.4
GRASSED ENTRY TIME=   62.7 MIN
  LENG SLP   N   HT   BW V/H   DIA   CAPAC   VEL   DESIGN   INLET
DETENTION   STORAGE
   FT   PCT   FT   FT   INS   CFS   FPS   Q-CFS   Q-CFS
CUBIC FT   REQUESTED
   216 0.29 0.024 0.00 0.00 0.00   15   1.87 1.53   0.00
0.0   0
       REQUIRED PIPE =   15   1.87 1.53   1.55   1.55
0.00
EXISTING PIPE HAS ADEQUATE CAPACITY

Pipe   17206   17151 Branch   1 Reach   1   13-Dec-05 15:02
 PAVED ENTRY TIME=   7.2 MIN
     ACCUM CONTRIBUTING AREAS: CPA=2.7, SPA=1.0,   CGA=15.8
GRASSED ENTRY TIME=   57.4 MIN
  LENG SLP   N   HT   BW V/H   DIA   CAPAC   VEL   DESIGN   INLET
DETENTION   STORAGE
   FT   PCT   FT   FT   INS   CFS   FPS   Q-CFS   Q-CFS
CUBIC FT   REQUESTED
   110 0.21 0.024 0.00 0.00 0.00   15   1.60 1.30   0.00
0.0   0
       REQUIRED PIPE =   21   3.92 1.63   2.65   1.43
0.00

Pipe   17151   17588 Branch   1 Reach   2   13-Dec-05 15:02
     ACCUM CONTRIBUTING AREAS: CPA=2.7, SPA=1.0,   CGA=15.8
  LENG SLP   N   HT   BW V/H   DIA   CAPAC   VEL   DESIGN   INLET
DETENTION   STORAGE
   FT   PCT   FT   FT   INS   CFS   FPS   Q-CFS   Q-CFS
CUBIC FT   REQUESTED
   114 0.03 0.024 0.00 0.00 0.00   15   0.56 0.46   0.00

```
0.0            0
       REQUIRED PIPE =             27    2.70  0.68      2.45     0.00
0.00

Pipe      17588      17428  Branch   1 Reach   3   13-Dec-05 15:02
     ACCUM CONTRIBUTING AREAS:  CPA=2.7,  SPA=1.0,   CGA=15.8
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   110 0.33 0.024 0.00 0.00 0.00   15    2.00  1.63      0.00
0.0            0
       REQUIRED PIPE =             18    3.25  1.84      2.41     0.00
0.00

Pipe      17428      17427  Branch   1 Reach   4   13-Dec-05 15:02
 PAVED ENTRY TIME=    6.7 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=2.9,  SPA=1.0,   CGA=16.8
GRASSED ENTRY TIME=   46.1 MIN
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   126 0.24 0.024 0.00 0.00 0.00   15    1.71  1.39      0.00
0.0            0
       REQUIRED PIPE =             18    2.77  1.57      2.49     0.22
0.00

Pipe      17427      17941  Branch   1 Reach   5   13-Dec-05 15:02
     ACCUM CONTRIBUTING AREAS:  CPA=2.9,  SPA=1.0,   CGA=16.8
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   125 0.56 0.024 0.00 0.00 0.00   15    2.62  2.13      0.00
0.0            0
       REQUIRED PIPE =             15    2.62  2.13      2.41     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      17941      18157  Branch   1 Reach   6   13-Dec-05 15:02
 PAVED ENTRY TIME=    3.2 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=4.1,  SPA=1.5,   CGA=24.2
GRASSED ENTRY TIME=   45.7 MIN
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   400 0.27 0.024 0.00 0.00 0.00   15    1.82  1.48      0.00
0.0            0
       REQUIRED PIPE =             18    2.95  1.67      2.92     1.64
0.00

Pipe      18361      18253  Branch   2 Reach   0   13-Dec-05 15:02
     ACCUM CONTRIBUTING AREAS:  CPA=4.1,  SPA=1.5,   CGA=24.2
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   115 0.31 0.024 0.00 0.00 0.00   15    1.96  1.59      0.00
0.0            0
       REQUIRED PIPE =              8    0.37  1.05      0.00     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      18253      18157  Branch   2 Reach   1   13-Dec-05 15:02
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     ACCUM CONTRIBUTING AREAS:  CPA=4.5,  SPA=1.6,   CGA=26.4
GRASS ENT ASSUMED = 20 MIN.  GIVE MORE DATA
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
    65 0.55 0.024 0.00 0.00 0.00   15    2.60  2.12      0.00
0.0            0
       REQUIRED PIPE =             10    0.88  1.62      0.66     0.66
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      18157      18252  Branch   1 Reach   7   13-Dec-05 15:02
 PAVED ENTRY TIME=    4.0 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=4.9,  SPA=1.8,   CGA=28.6
GRASSED ENTRY TIME=   39.2 MIN
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
    80 0.21 0.024 0.00 0.00 0.00   15    1.61  1.31      0.00
0.0            0
       REQUIRED PIPE =             21    3.95  1.64      3.44     0.53
0.00

Pipe      18252      18544  Branch   1 Reach   8   13-Dec-05 15:02
     ACCUM CONTRIBUTING AREAS:  CPA=4.9,  SPA=1.8,   CGA=28.6
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   140 1.32 0.024 0.00 0.00 0.00   15    4.02  3.28      0.00
0.0            0
       REQUIRED PIPE =             15    4.02  3.28      3.42     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

OUTFALL HYDROGRAPH IN CFS, ACCUMULATED RUNOFF IN CU FT= 12508
     0.0     0.1     0.2     0.3     0.5     0.5     0.6     0.6     0.6
0.6
     0.7     0.7     0.7     0.8     0.8     0.9     1.0     0.9     2.0
3.3
     3.4     3.2     2.4     2.0     1.8     1.7     1.5     1.4     1.2
1.1
     1.1     1.0     0.8     0.7     0.6     0.6     0.6     0.5     0.3
0.1
     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0

THE JOB IS FINISHED
```

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  Design Criteria:  J:\Jobsdata\10108 Bayshore RID Improvements\06 Analysis
Calcs\08 Storm Drain Design\HYDSYS\10108_PROPOSED_HYDSYS.DCT
   Drainage Model:  J:\Jobsdata\10108 Bayshore RID Improvements\06 Analysis
Calcs\08 Storm Drain Design\HYDSYS\10108_PROPOSED_HYDSYS.HYN
        Rainstorm:  J:\Jobsdata\10101 84th & Spruce\06 Analysis Calcs\08 Storm
Drain Design\HYDSYS\STORM DATA\2YR-6HR STORM.HYE
Storm description:  REC:  MOA Design Criteria 2yr 6hr Hyetograph

    5 min increment, AMC=  3    2 yr return
ILLUDAS ** ILLINOIS STATE WATER SURVEY **  ILAG82                August, 1997
Time Shift Routing Activated.



Design Mode

RAINFALL PATTERN
   0.000   0.004   0.004   0.004   0.004   0.004   0.005   0.005   0.005
0.005
   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.006
0.006
   0.006   0.006   0.006   0.006   0.007   0.007   0.007   0.007   0.008
0.008
   0.009   0.009   0.010   0.011   0.013   0.015   0.062   0.016   0.014
0.012
   0.011   0.010   0.009   0.009   0.008   0.008   0.007   0.007   0.007
0.007
   0.006   0.006   0.006   0.006   0.006   0.006   0.005   0.005   0.005
0.005
   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.005   0.004
0.004
   0.004   0.004   0.004
     RUN NUMBER   BASIN AREA   TIME INCREMENT   SOIL GROUP
                     ACRES         MINUTES      1234=ABCD
            1          34.0          5.0            3
      TOTAL RAIN   FREQUENCY   DURATION    AMC   PAVED ABS.   GRASS ABS.
        INCHES       YEARS      MINUTES          INCHES         INCHES
          0.53          2        360.0       3       0.00          0.00

Pipe         B6         B5  Branch   1 Reach   0   06-Dec-05 10:47
 PAVED ENTRY TIME=    4.3 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=0.5,  SPA=0.2,   CGA=2.5
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
    97 0.90 0.015 0.00 0.00 0.00   18    8.63  4.88      0.00
0.0          0
       REQUIRED PIPE =              8    0.99  2.84      0.36     0.36
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe         B5         B4  Branch   1 Reach   1   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=0.5,  SPA=0.2,   CGA=2.5
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   134 0.88 0.015 0.00 0.00 0.00   18    8.51  4.82      0.00
0.0          0
       REQUIRED PIPE =              8    0.98  2.80      0.35     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe         B4         B3  Branch   1 Reach   2   06-Dec-05 10:47
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     ACCUM CONTRIBUTING AREAS:  CPA=0.5,  SPA=0.2,   CGA=2.5
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   129 0.88 0.015 0.00 0.00 0.00   18    8.54  4.84      0.00
0.0            0
       REQUIRED PIPE =              8    0.98  2.82      0.34     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe         B3         B2  Branch   1 Reach   3   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=0.5,  SPA=0.2,   CGA=2.5
 TRAVEL TIME SO SMALL THAT ROUTED =DESIGN HYDRO.
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
    45 1.02 0.015 0.00 0.00 0.00   18    9.19  5.20      0.00
0.0            0
       REQUIRED PIPE =              8    1.06  3.03      0.33     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe         B2         B1  Branch   1 Reach   4   06-Dec-05 10:47
 PAVED ENTRY TIME=    6.0 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=1.4,  SPA=0.5,   CGA=7.3
 TRAVEL TIME SO SMALL THAT ROUTED =DESIGN HYDRO.
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
    53 0.99 0.015 0.00 0.00 0.00   18    9.05  5.12      0.00
0.0            0
       REQUIRED PIPE =              8    1.04  2.98      0.95     0.62
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe         B1       17206  Branch   1 Reach   5   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=1.4,  SPA=0.5,   CGA=7.3
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   300 0.80 0.015 0.00 0.00 0.00   18    8.14  4.60      0.00
0.0            0
       REQUIRED PIPE =             10    1.70  3.11      0.95     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe         A2         A1  Branch   2 Reach   0   06-Dec-05 10:47
 PAVED ENTRY TIME=    8.6 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=2.8,  SPA=0.9,   CGA=14.4
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   170 0.31 0.015 0.00 0.00 0.00   18    5.09  2.88      0.00
0.0            0
       REQUIRED PIPE =             10    1.06  1.95      0.70     0.70
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe         A1       16717  Branch   2 Reach   1   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=2.8,  SPA=0.9,   CGA=14.4
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
```

```
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
    96 0.31 0.015 0.00 0.00 0.00   18    5.08  2.88      0.00
0.0            0
       REQUIRED PIPE =             10    1.06  1.94      0.65     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      16717      17206  Branch   2 Reach   2   06-Dec-05 10:47
 PAVED ENTRY TIME=    3.0 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=3.3,  SPA=1.1,   CGA=16.9
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   216 0.31 0.015 0.00 0.00 0.00   18    5.07  2.87      0.00
0.0            0
       REQUIRED PIPE =             10    1.06  1.94      0.97     0.37
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      17206      17151  Branch   1 Reach   6   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=3.3,  SPA=1.1,   CGA=16.9
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   110 0.31 0.015 0.00 0.00 0.00   18    5.06  2.86      0.00
0.0            0
       REQUIRED PIPE =             12    1.72  2.18      1.68     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      17151      17588  Branch   1 Reach   7   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=3.3,  SPA=1.1,   CGA=16.9
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   114 0.31 0.015 0.00 0.00 0.00   18    5.04  2.85      0.00
0.0            0
       REQUIRED PIPE =             12    1.71  2.18      1.59     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      17588      17428  Branch   1 Reach   8   06-Dec-05 10:47
 PAVED ENTRY TIME=    3.0 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=4.5,  SPA=1.4,   CGA=23.0
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   110 0.31 0.015 0.00 0.00 0.00   18    5.06  2.86      0.00
0.0            0
       REQUIRED PIPE =             15    3.11  2.53      2.35     0.88
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      17428      17427  Branch   1 Reach   9   06-Dec-05 10:47
 PAVED ENTRY TIME=    3.0 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=4.7,  SPA=1.5,   CGA=23.9
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
```

```
   126 0.31 0.015 0.00 0.00 0.00   18    5.07  2.87      0.00
0.0            0
       REQUIRED PIPE =             15    3.12  2.54      2.39     0.14
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      17427      17941  Branch   1 Reach  10   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=4.7,  SPA=1.5,   CGA=23.9
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   125 0.31 0.015 0.00 0.00 0.00   18    5.08  2.88      0.00
0.0            0
       REQUIRED PIPE =             15    3.13  2.55      2.25     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      17941      18157  Branch   1 Reach  11   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=4.7,  SPA=1.5,   CGA=23.9
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   400 0.31 0.015 0.00 0.00 0.00   18    5.07  2.87      0.00
0.0            0
       REQUIRED PIPE =             15    3.12  2.54      2.09     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      18361      18253  Branch   3 Reach   0   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=4.7,  SPA=1.5,   CGA=23.9
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   115 0.90 0.015 0.00 0.00 0.00   18    8.65  4.90      0.00
0.0            0
       REQUIRED PIPE =              8    1.00  2.85      0.00     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      18253      18157  Branch   3 Reach   1   06-Dec-05 10:47
 PAVED ENTRY TIME=    3.5 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=5.1,  SPA=1.6,   CGA=26.1
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
    65 0.49 0.015 0.00 0.00 0.00   18    6.37  3.60      0.00
0.0            0
       REQUIRED PIPE =              8    0.73  2.10      0.31     0.31
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      18157      18252  Branch   1 Reach  12   06-Dec-05 10:47
 PAVED ENTRY TIME=    4.0 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=5.3,  SPA=1.7,   CGA=27.3
 TRAVEL TIME SO SMALL THAT ROUTED =DESIGN HYDRO.
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
    80 0.31 0.015 0.00 0.00 0.00   18    5.09  2.88      0.00
0.0            0
       REQUIRED PIPE =             15    3.13  2.55      2.23     0.17
```

```
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      18252      18544  Branch   1 Reach  13   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=5.3,  SPA=1.7,   CGA=27.3
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   140 0.40 0.015 0.00 0.00 0.00   18    5.75  3.26      0.00
0.0            0
       REQUIRED PIPE =             15    3.54  2.88      2.23     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

OUTFALL HYDROGRAPH IN CFS, ACCUMULATED RUNOFF IN CU FT= 10204
     0.0     0.1     0.1     0.2     0.2     0.3     0.3     0.3     0.3
0.3
     0.3     0.3     0.3     0.3     0.3     0.3     0.3     0.3     0.3
0.4
     0.4     0.4     0.4     0.4     0.4     0.4     0.4     0.4     0.5
0.5
     0.5     0.5     0.6     0.6     0.7     0.5     1.6     2.2     1.9
1.3
     0.9     0.8     0.7     0.6     0.6     0.6     0.5     0.5     0.5
0.5
     0.4     0.4     0.4     0.4     0.4     0.4     0.4     0.3     0.3
0.3
     0.3     0.3     0.3     0.3     0.3     0.3     0.3     0.3     0.3
0.3
     0.3     0.2     0.3     0.2     0.1     0.0     0.0     0.0     0.0
0.0
     0.0     0.0     0.0     0.0     0.0

THE JOB IS FINISHED
```

Design Criteria: J:\Jobsdata\10108 Bayshore RID Improvements\06 Analysis Calcs\08 Storm Drain Design\HYDSYS\10108_PROPOSED_HYDSYS.DCT
Drainage Model: J:\Jobsdata\10108 Bayshore RID Improvements\06 Analysis Calcs\08 Storm Drain Design\HYDSYS\10108_PROPOSED_HYDSYS.HYN
Rainstorm: J:\Jobsdata\10101 84th & Spruce\06 Analysis Calcs\08 Storm Drain Design\HYDSYS\STORM DATA\10YR-3HR STORM.hye
Storm description: DIS: MOA Design Criteria 10yr 3hr Hyetograph

5 min increment, AMC= 3 10 yr return
ILLUDAS ** ILLINOIS STATE WATER SURVEY ** ILAG82 August, 1997
Time Shift Routing Activated.

Design Mode

RAINFALL PATTERN
0.000 0.008 0.008 0.009 0.010 0.010 0.010 0.011 0.011 0.012
0.012 0.013 0.014 0.015 0.016 0.018 0.021 0.024 0.098 0.025
0.023 0.019 0.017 0.015 0.014 0.013 0.013 0.012 0.011 0.011
0.011 0.010 0.010 0.010 0.009 0.009 0.008

RUN NUMBER	BASIN AREA ACRES	TIME INCREMENT MINUTES	SOIL GROUP 1234=ABCD
1	34.0	5.0	3

TOTAL RAIN INCHES	FREQUENCY YEARS	DURATION MINUTES	AMC	PAVED ABS. INCHES	GRASS ABS. INCHES
0.56	10	180.0	3	0.00	0.00

Pipe B6 B5 Branch 1 Reach 0 06-Dec-05 10:47
PAVED ENTRY TIME= 4.3 MIN
ACCUM CONTRIBUTING AREAS: CPA=0.5, SPA=0.2, CGA=2.5
GRASSED ENTRY TIME= 61.2 MIN

LENG FT	SLP PCT	N	HT FT	BW FT	V/H	DIA INS	CAPAC CFS	VEL FPS	DESIGN Q-CFS	INLET Q-CFS	DETENTION CUBIC FT	STORAGE REQUESTED
97	0.90	0.015	0.00	0.00	0.00	18	8.63	4.88	0.00	0.0	0	
REQUIRED PIPE =						8	0.99	2.84	0.63	0.63	0.00	

EXISTING PIPE HAS ADEQUATE CAPACITY

Pipe B5 B4 Branch 1 Reach 1 06-Dec-05 10:47
ACCUM CONTRIBUTING AREAS: CPA=0.5, SPA=0.2, CGA=2.5

LENG FT	SLP PCT	N	HT FT	BW FT	V/H	DIA INS	CAPAC CFS	VEL FPS	DESIGN Q-CFS	INLET Q-CFS	DETENTION CUBIC FT	STORAGE REQUESTED
134	0.88	0.015	0.00	0.00	0.00	18	8.51	4.82	0.00	0.0	0	
REQUIRED PIPE =						8	0.98	2.80	0.62	0.00	0.00	

EXISTING PIPE HAS ADEQUATE CAPACITY

Pipe B4 B3 Branch 1 Reach 2 06-Dec-05 10:47
ACCUM CONTRIBUTING AREAS: CPA=0.5, SPA=0.2, CGA=2.5

LENG FT	SLP PCT	N	HT FT	BW FT	V/H	DIA INS	CAPAC CFS	VEL FPS	DESIGN Q-CFS	INLET Q-CFS	DETENTION CUBIC FT	STORAGE REQUESTED
129	0.88	0.015	0.00	0.00	0.00	18	8.54	4.84	0.00	0.0	0	

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       REQUIRED PIPE =              8    0.98  2.82      0.60     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe         B3         B2  Branch   1 Reach   3   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=0.5,  SPA=0.2,   CGA=2.5
 TRAVEL TIME SO SMALL THAT ROUTED =DESIGN HYDRO.
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
    45 1.02 0.015 0.00 0.00 0.00   18    9.19  5.20      0.00
0.0            0
       REQUIRED PIPE =              8    1.06  3.03      0.58     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe         B2         B1  Branch   1 Reach   4   06-Dec-05 10:47
 PAVED ENTRY TIME=    6.0 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=1.4,  SPA=0.5,   CGA=7.3
GRASSED ENTRY TIME=   64.3 MIN
 TRAVEL TIME SO SMALL THAT ROUTED =DESIGN HYDRO.
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
    53 0.99 0.015 0.00 0.00 0.00   18    9.05  5.12      0.00
0.0            0
       REQUIRED PIPE =             10    1.89  3.46      1.68     1.10
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe         B1      17206  Branch   1 Reach   5   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=1.4,  SPA=0.5,   CGA=7.3
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   300 0.80 0.015 0.00 0.00 0.00   18    8.14  4.60      0.00
0.0            0
       REQUIRED PIPE =             10    1.70  3.11      1.68     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe         A2         A1  Branch   2 Reach   0   06-Dec-05 10:47
 PAVED ENTRY TIME=    8.6 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=2.8,  SPA=0.9,   CGA=14.4
GRASSED ENTRY TIME=   85.6 MIN
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   170 0.31 0.015 0.00 0.00 0.00   18    5.09  2.88      0.00
0.0            0
       REQUIRED PIPE =             12    1.73  2.20      1.24     1.24
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe         A1      16717  Branch   2 Reach   1   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=2.8,  SPA=0.9,   CGA=14.4
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
    96 0.31 0.015 0.00 0.00 0.00   18    5.08  2.88      0.00
0.0            0
```

```
       REQUIRED PIPE =             12    1.72  2.19      1.15     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      16717      17206  Branch   2 Reach   2   06-Dec-05 10:47
 PAVED ENTRY TIME=    3.0 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=3.3,  SPA=1.1,   CGA=16.9
GRASSED ENTRY TIME=   46.3 MIN
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   216 0.31 0.015 0.00 0.00 0.00   18    5.07  2.87      0.00
0.0            0
       REQUIRED PIPE =             15    3.12  2.54      1.76     0.67
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      17206      17151  Branch   1 Reach   6   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=3.3,  SPA=1.1,   CGA=16.9
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   110 0.31 0.015 0.00 0.00 0.00   18    5.06  2.86      0.00
0.0            0
       REQUIRED PIPE =             15    3.11  2.53      3.07     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      17151      17588  Branch   1 Reach   7   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=3.3,  SPA=1.1,   CGA=16.9
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   114 0.31 0.015 0.00 0.00 0.00   18    5.04  2.85      0.00
0.0            0
       REQUIRED PIPE =             15    3.10  2.53      2.92     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      17588      17428  Branch   1 Reach   8   06-Dec-05 10:47
 PAVED ENTRY TIME=    3.0 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=4.5,  SPA=1.4,   CGA=23.0
GRASSED ENTRY TIME=   59.9 MIN
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   110 0.31 0.015 0.00 0.00 0.00   18    5.06  2.86      0.00
0.0            0
       REQUIRED PIPE =             18    5.06  2.86      4.29     1.54
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      17428      17427  Branch   1 Reach   9   06-Dec-05 10:47
 PAVED ENTRY TIME=    3.0 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=4.7,  SPA=1.5,   CGA=23.9
GRASSED ENTRY TIME=   52.6 MIN
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   126 0.31 0.015 0.00 0.00 0.00   18    5.07  2.87      0.00
0.0            0
```

```
       REQUIRED PIPE =             18    5.07  2.87      4.36     0.25
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      17427      17941  Branch   1 Reach  10   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=4.7,  SPA=1.5,   CGA=23.9
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   125 0.31 0.015 0.00 0.00 0.00   18    5.08  2.88      0.00
0.0            0
       REQUIRED PIPE =             18    5.08  2.88      4.13     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      17941      18157  Branch   1 Reach  11   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=4.7,  SPA=1.5,   CGA=23.9
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   400 0.31 0.015 0.00 0.00 0.00   18    5.07  2.87      0.00
0.0            0
       REQUIRED PIPE =             18    5.07  2.87      3.88     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      18361      18253  Branch   3 Reach   0   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=4.7,  SPA=1.5,   CGA=23.9
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   115 0.90 0.015 0.00 0.00 0.00   18    8.65  4.90      0.00
0.0            0
       REQUIRED PIPE =              8    1.00  2.85      0.00     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      18253      18157  Branch   3 Reach   1   06-Dec-05 10:47
 PAVED ENTRY TIME=    3.5 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=5.1,  SPA=1.6,   CGA=26.1
GRASSED ENTRY TIME=   61.9 MIN
 TRAVEL TIME SO SMALL THAT ROUTED =DESIGN HYDRO.
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
    65 0.49 0.015 0.00 0.00 0.00   18    6.37  3.60      0.00
0.0            0
       REQUIRED PIPE =              8    0.73  2.10      0.55     0.55
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      18157      18252  Branch   1 Reach  12   06-Dec-05 10:47
 PAVED ENTRY TIME=    4.0 MIN
     ACCUM CONTRIBUTING AREAS:  CPA=5.3,  SPA=1.7,   CGA=27.3
GRASSED ENTRY TIME=   62.4 MIN
 TRAVEL TIME SO SMALL THAT ROUTED =DESIGN HYDRO.
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
    80 0.31 0.015 0.00 0.00 0.00   18    5.09  2.88      0.00
0.0            0
```

```
       REQUIRED PIPE =             18    5.09  2.88      4.07     0.30
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

Pipe      18252      18544  Branch   1 Reach  13   06-Dec-05 10:47
     ACCUM CONTRIBUTING AREAS:  CPA=5.3,  SPA=1.7,   CGA=27.3
  LENG  SLP    N   HT   BW  V/H   DIA    CAPAC   VEL    DESIGN    INLET
DETENTION    STORAGE
   FT   PCT        FT   FT        INS    CFS    FPS    Q-CFS     Q-CFS
CUBIC FT   REQUESTED
   140 0.40 0.015 0.00 0.00 0.00   18    5.75  3.26      0.00
0.0            0
       REQUIRED PIPE =             18    5.75  3.26      4.07     0.00
0.00
***EXISTING PIPE HAS ADEQUATE CAPACITY***

OUTFALL HYDROGRAPH IN CFS, ACCUMULATED RUNOFF IN CU FT= 13516
     0.0     0.2     0.3     0.5     0.5     0.6     0.6     0.7     0.7
0.7
     0.7     0.8     0.8     0.9     0.9     0.9     1.4     0.8     3.2
4.1
     3.5     2.6     2.1     1.8     1.7     1.6     1.6     1.5     1.4
1.3
     1.2     1.0     0.8     0.8     0.8     0.7     0.7     0.5     0.2
0.1
     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0

THE JOB IS FINISHED
```