STORMWATER IMPACT ANALYSIS

Reserve @ Mitchell Mill

Town of Rolesville

Wake County, NC

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TABLE OF CONTENTS

1. Narrative....3
    1.1. Project Data 4
    1.2. Site History & Project Description 4
    1.3. Calculation Methodology 4
    1.4. Results 5
2. Stormwater Impact Analysis 6
    2.1. Rainfall data 7
    2.2. Drainage Area Delineation Pre- & Post-Development, CN and Tc Values 12
    2.3. Pre-Development 13
    2.4. Post-Development 17
3. SCM and Other Design Calculations 41
    3.1. Wet Pond #1 42
    3.2. Wet Pond #3 46
    3.3. Wet Pond #4 50
    3.4. Wet Pond #5 54
    3.5. Wet Pond #6 58
    3.6. Wet Pond #7 62
    3.7. Wet Pond #8 66

4. HGL & Gutter Spread Calculations 70
5. Appendix A: Hydrograph Report .... PART II ...95

1. Narrative

1.1. Project Data

Name:	Reserve at Mitchell Mill
Parent Pin:	1757571035
Address:	Jonesville Road & Mitchell Mill Rd, Rolesville NC
Property Boundary:	138.69 AC
Proposed Open Space:	2,999,482 SF (68.86 AC)
Proposed Impervious Area:	2,200,589 SF (50.52 AC)
Proposed Impervious Percentage:	36.43 %

1.2. Site History & Project Description

The project is 138.69-acres that includes undeveloped and grassed areas. The development proposes 390 residential lots and all the associated infrastructure including roadways, sidewalks, and public utilities needed to facilitate the development.

Structural and non-structural BMPs shall be used to ensure there is no net increase in peak flow leaving the site from the pre-development conditions for 1-, 10- and 100-year & 24-hour storm events. Eight (8) stormwater wet ponds with a curb and gutter/rolled curb storm network system have been proposed to meet the requirements.

1.3. Calculation Methodology

- Rainfall data for this area in Wake, NC region is obtained from NOAA website. This data contains a depth-duration-frequency (DDF) table describing rainfall depth versus time for varying return periods in the area. These rainfall depths are input into the meteorological model for peak flow rate calculations.

- Using WebSoil Survey, the on-site soils were determined to be of Hydrological Soil Groups ‘B’, ‘C’, and ‘D’. Since the method chosen to compute pre- and post-development peak flow rates and runoff volumes is dependent upon the soil type, care was taken when selecting the appropriate Soil Conservation Service Curve Number (SCS CN).

- The time of concentration was calculated using SCS TR-55 (Segmental Approach, 1986).

- The SA/DA method was used for sizing the pond. AutoCAD Civil 3D, AutoCAD Sanitary Storm Analysis, and Excel Calculation Spreadsheets have been utilized in determining the pre- & post-development peak flow rates for the 1-, 2-, and 10-year storm events, as well as the Total Suspended Solids (TSS).

1.4. Results

The SA/DA method was used for sizing the wet ponds. Based on the results, implementation of the eight designed wet ponds satisfies the minimum requirements for water quality volume, permanent pool volume, and forebay volume based on NCDEQ wet pond design criteria.

Table 1.4.1 Point of Analysis Comparison

Storm Event	Pre-Development POI 1	Post Development POI 1
1	312.38 CFS	280.42 CFS
10	1017.83 CFS	925.43 CFS
100	1972.73 CFS	1850.27 CFS

2. Stormwater Impact Analysis

2.1. Rainfall Data

NOAA Atlas 14, Volume 2, Version 3
Location name: Wake Forest, North Carolina, USA*
Latitude: 35.8853°, Longitude: -78.4782°
Elevation: 235 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**4.84** (4.43-5.30)	**5.63** (5.16-6.16)	**6.42** (5.88-7.01)	**7.20** (6.59-7.86)	**7.99** (7.27-8.71)	**8.62** (7.81-9.38)	**9.17** (8.27-9.98)	**9.66** (8.65-10.5)	**10.2** (9.07-11.1)	**10.7** (9.42-11.7)
10-min	**3.86** (3.54-4.23)	**4.50** (4.13-4.92)	**5.14** (4.71-5.61)	**5.76** (5.27-6.28)	**6.37** (5.80-6.94)	**6.86** (6.22-7.48)	**7.28** (6.56-7.93)	**7.66** (6.86-8.35)	**8.07** (7.17-8.81)	**8.41** (7.42-9.20)
15-min	**3.22** (2.95-3.53)	**3.77** (3.46-4.12)	**4.34** (3.97-4.73)	**4.86** (4.44-5.30)	**5.38** (4.90-5.86)	**5.79** (5.25-6.31)	**6.14** (5.53-6.68)	**6.44** (5.77-7.02)	**6.77** (6.02-7.39)	**7.04** (6.21-7.70)
30-min	**2.21** (2.02-2.42)	**2.60** (2.39-2.85)	**3.08** (2.82-3.36)	**3.52** (3.22-3.84)	**3.98** (3.63-4.34)	**4.36** (3.95-4.75)	**4.70** (4.24-5.12)	**5.01** (4.49-5.47)	**5.39** (4.79-5.88)	**5.70** (5.03-6.24)
60-min	**1.38** (1.26-1.51)	**1.63** (1.50-1.79)	**1.97** (1.81-2.15)	**2.29** (2.10-2.50)	**2.65** (2.42-2.89)	**2.95** (2.68-3.22)	**3.24** (2.92-3.53)	**3.52** (3.15-3.83)	**3.86** (3.44-4.22)	**4.16** (3.67-4.55)
2-hr	**0.805** (0.731-0.889)	**0.958** (0.875-1.05)	**1.17** (1.06-1.28)	**1.37** (1.25-1.51)	**1.61** (1.46-1.77)	**1.82** (1.64-2.00)	**2.03** (1.81-2.22)	**2.23** (1.98-2.44)	**2.50** (2.20-2.74)	**2.74** (2.38-3.00)
3-hr	**0.568** (0.516-0.629)	**0.676** (0.618-0.746)	**0.829** (0.754-0.915)	**0.980** (0.889-1.08)	**1.16** (1.05-1.28)	**1.33** (1.19-1.46)	**1.49** (1.32-1.63)	**1.66** (1.46-1.82)	**1.88** (1.64-2.06)	**2.09** (1.80-2.29)
6-hr	**0.341** (0.312-0.377)	**0.407** (0.373-0.448)	**0.499** (0.456-0.549)	**0.591** (0.538-0.648)	**0.704** (0.637-0.771)	**0.807** (0.724-0.881)	**0.909** (0.809-0.992)	**1.02** (0.896-1.11)	**1.16** (1.01-1.27)	**1.30** (1.11-1.41)
12-hr	**0.200** (0.183-0.220)	**0.238** (0.219-0.261)	**0.294** (0.269-0.322)	**0.349** (0.319-0.383)	**0.420** (0.380-0.458)	**0.484** (0.435-0.526)	**0.549** (0.488-0.596)	**0.618** (0.544-0.671)	**0.714** (0.618-0.775)	**0.803** (0.685-0.872)
24-hr	**0.119** (0.111-0.128)	**0.144** (0.134-0.155)	**0.181** (0.168-0.195)	**0.210** (0.195-0.226)	**0.250** (0.232-0.270)	**0.283** (0.261-0.304)	**0.316** (0.290-0.340)	**0.350** (0.320-0.377)	**0.397** (0.362-0.429)	**0.435** (0.394-0.470)
2-day	**0.069** (0.064-0.074)	**0.083** (0.077-0.089)	**0.103** (0.096-0.111)	**0.120** (0.111-0.129)	**0.142** (0.131-0.153)	**0.159** (0.147-0.172)	**0.178** (0.163-0.191)	**0.196** (0.180-0.212)	**0.222** (0.202-0.240)	**0.242** (0.220-0.262)
3-day	**0.048** (0.045-0.052)	**0.058** (0.054-0.063)	**0.072** (0.068-0.078)	**0.084** (0.078-0.090)	**0.099** (0.092-0.106)	**0.111** (0.103-0.119)	**0.124** (0.114-0.133)	**0.137** (0.125-0.147)	**0.154** (0.141-0.166)	**0.168** (0.153-0.182)
4-day	**0.038** (0.036-0.041)	**0.046** (0.043-0.049)	**0.057** (0.053-0.061)	**0.066** (0.061-0.070)	**0.078** (0.072-0.083)	**0.087** (0.081-0.093)	**0.097** (0.089-0.104)	**0.107** (0.098-0.115)	**0.121** (0.110-0.130)	**0.132** (0.120-0.142)
7-day	**0.025** (0.024-0.027)	**0.030** (0.028-0.032)	**0.037** (0.035-0.039)	**0.042** (0.039-0.045)	**0.050** (0.046-0.053)	**0.056** (0.052-0.059)	**0.062** (0.057-0.066)	**0.068** (0.062-0.073)	**0.076** (0.070-0.082)	**0.083** (0.076-0.089)
10-day	**0.020** (0.019-0.021)	**0.024** (0.022-0.025)	**0.029** (0.027-0.031)	**0.033** (0.031-0.035)	**0.038** (0.035-0.041)	**0.042** (0.039-0.045)	**0.046** (0.043-0.050)	**0.051** (0.047-0.054)	**0.057** (0.052-0.061)	**0.061** (0.056-0.066)
20-day	**0.013** (0.012-0.014)	**0.016** (0.015-0.017)	**0.019** (0.018-0.020)	**0.021** (0.020-0.022)	**0.024** (0.023-0.026)	**0.027** (0.025-0.029)	**0.029** (0.027-0.031)	**0.032** (0.030-0.034)	**0.035** (0.033-0.038)	**0.038** (0.035-0.041)
30-day	**0.011** (0.010-0.012)	**0.013** (0.012-0.014)	**0.015** (0.014-0.016)	**0.017** (0.016-0.018)	**0.019** (0.018-0.020)	**0.021** (0.019-0.022)	**0.023** (0.021-0.024)	**0.024** (0.023-0.026)	**0.027** (0.025-0.028)	**0.028** (0.026-0.030)
45-day	**0.009** (0.009-0.010)	**0.011** (0.010-0.011)	**0.012** (0.012-0.013)	**0.014** (0.013-0.015)	**0.015** (0.015-0.016)	**0.017** (0.016-0.018)	**0.018** (0.017-0.019)	**0.019** (0.018-0.020)	**0.021** (0.019-0.022)	**0.022** (0.020-0.023)
60-day	**0.008** (0.008-0.009)	**0.010** (0.009-0.010)	**0.011** (0.010-0.012)	**0.012** (0.011-0.013)	**0.013** (0.013-0.014)	**0.014** (0.014-0.015)	**0.015** (0.014-0.016)	**0.016** (0.015-0.017)	**0.018** (0.016-0.019)	**0.018** (0.017-0.020)

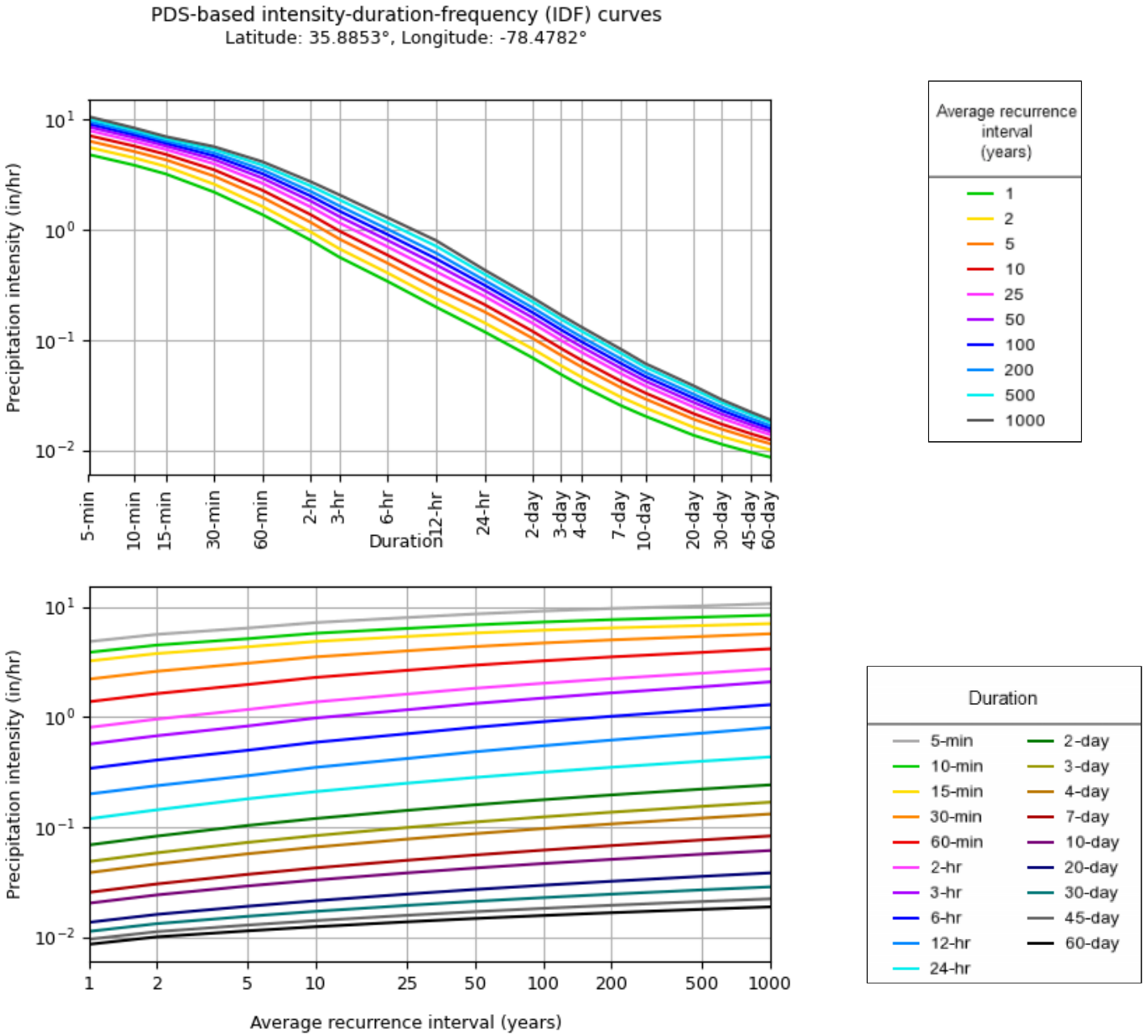
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical



NOAA Atlas 14, Volume 2, Version 3

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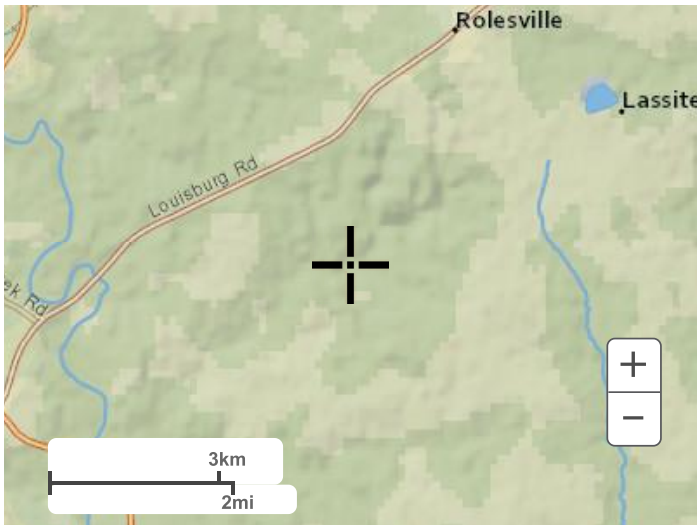
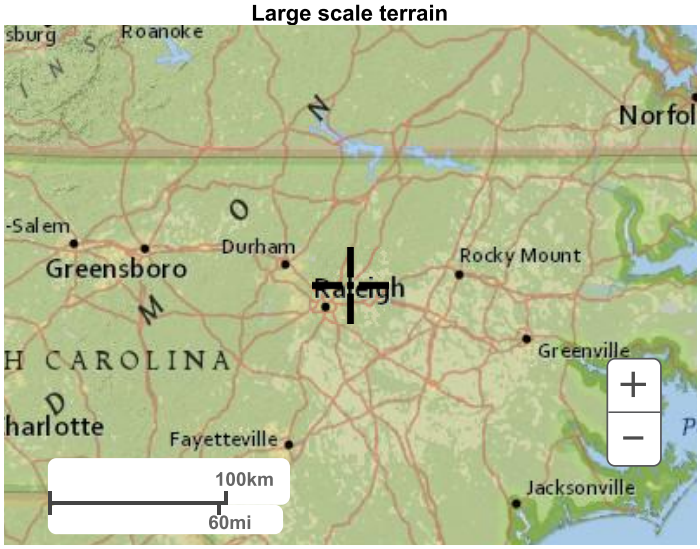
Back to Top

Maps & aerials

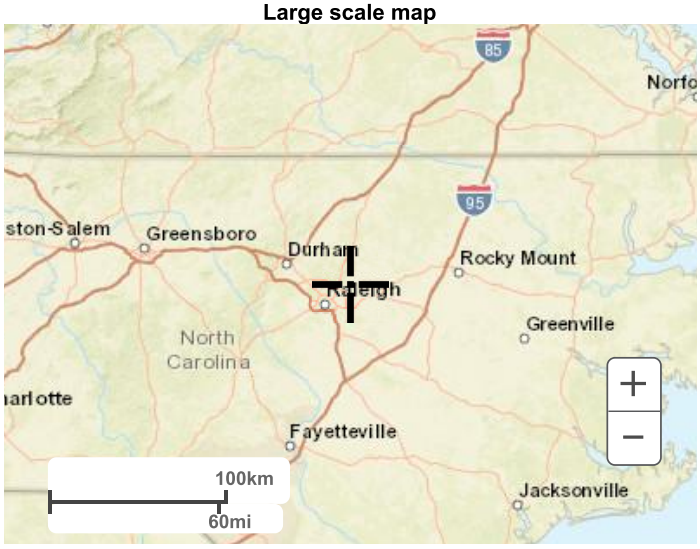
Small scale terrain



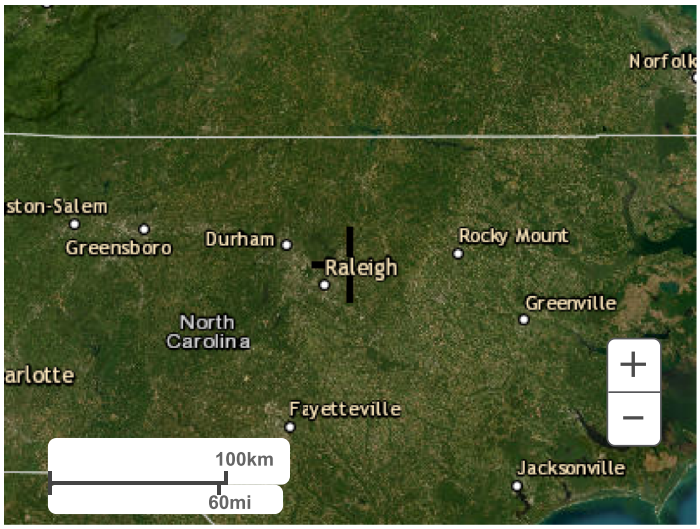
Large scale terrain



Large scale map



Large scale aerial



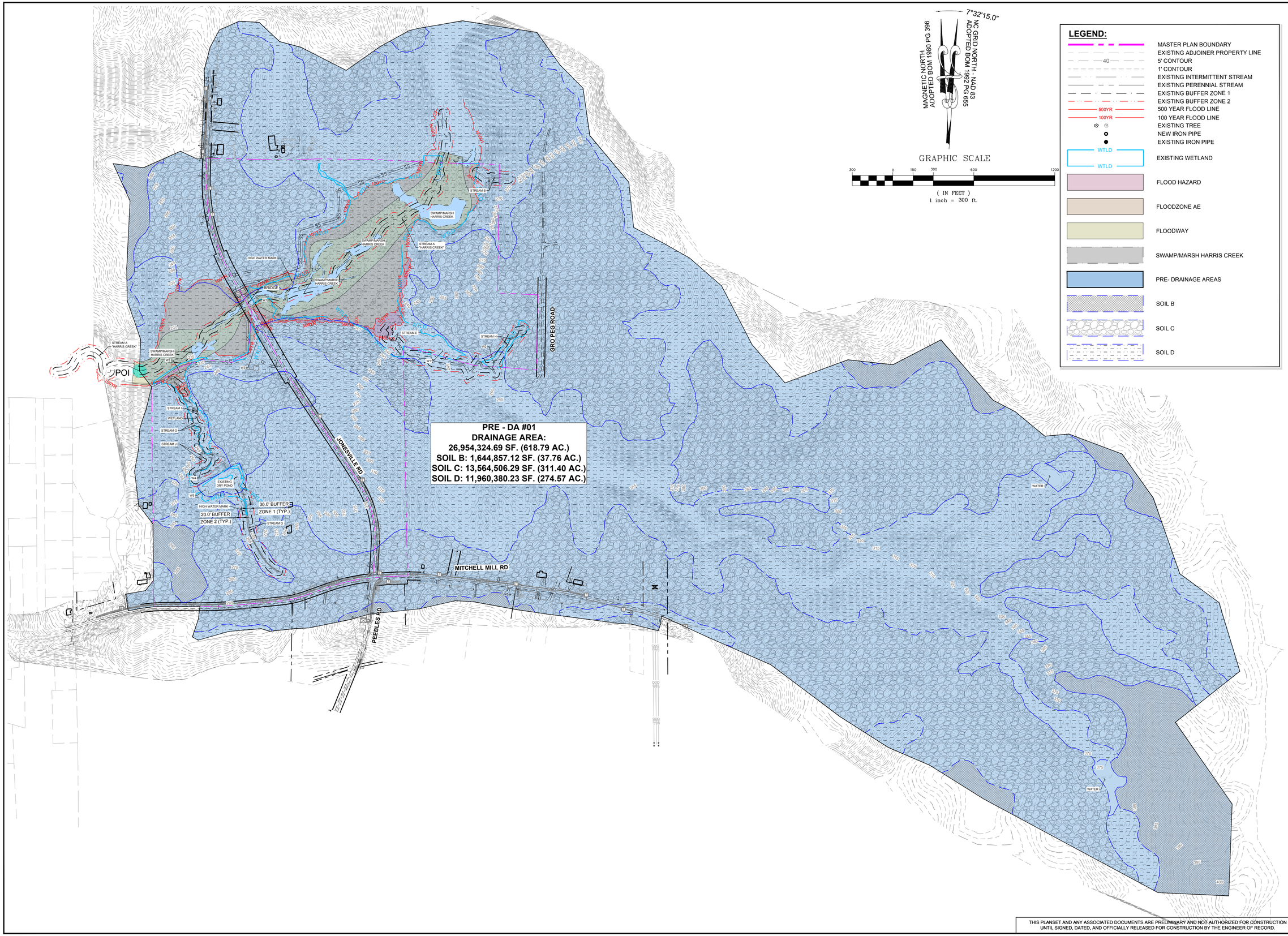
Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

2.2. Drainage Area Delineation Pre- & Post-Development

2.3 Pre-Development

PROGRESS PLOT DATE: 10/01/2024



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No.	REVISIONS	DATE	BY

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036225 ENGINEER JOSHUA W. LAMBERT

STRONGROCK ENGINEERING GROUP

STRONG ROCK ENGINEERING GROUP, PLLC | COMPANY LICENSE # P-2166
305 CHURCH AT NORTH HILLS STREET, SUITE 1110 RALEIGH, NC 27609 | INFORMATION@STRONGROCKGROUP.COM

STRONG ROCK PROJECT	PSP-23-03
NOT FOR CONSTRUCTION	
SCALE	AS SHOWN
DESIGNED BY	JWL
DRAWN BY	SRG
CHECKED BY	JWL

RESERVE @ MITCHELL MILL
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

THE PRE - DRAINAGE AREA MAP

DRAWING SHEET

EXH-01

01 OF 04

Project:
Reserve @ Mitchell Mill

STRONGROCK ENGINEERING GROUP

Calculated By:
TT
Date:
10/28/24

Weighted CN Coefficient Worksheet (PRE-Development)

Pre POI 1					
Weighted CN Value					
HSG	Category	Land Use	CN_i	A_i	$CN_i \times A_i$
A	Pervious	Managed Open Space	39		0.00
		Woods	30		0.00
B	Pervious	Managed Open Space	61	10.97	669.17
		Woods	55	24.22	1332.10
C	Pervious	Managed Open Space	74	96.30	7126.20
		Woods	70	205.54	14387.80
D	Pervious	Managed Open Space	80	84.82	6785.60
		Woods	77	181.13	13947.01
Open Water		Ponds, Lakes, Rivers, Etc.	100	9.08	908.00
Impervious		Road, Roof, Sidewalk, Etc.	98	6.75	661.50
				618.81	45817.38
				CN Value	74

STRONGROCK ENGINEERING GROUP

TIME OF CONCENTRATION INFORMATION

Project:	**Reserve at Mitchell Mill**
Subcatchment:	**Sub #1**

Location:	**0**
Date:	**6/4/2024**

Segment 1: Sheet Flow (Overland Flow)

Length =	50	ft
Top Elev =	402.5	ft
Bot Elev =	402	ft
Height =	0.5	ft
Slope =	0.010	ft/ft
Surface Type =	Light Woods	
Manning's n =	0.4	
P (2-year/24-hour) =	3.46	inch
Tt =	0.26	hour
Tt =	**15.65**	**minutes**

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

Segment 2: Shallow Concentrated Flow

Length =	857	ft
Top Elev =	402	ft
Bot Elev =	380	ft
Height =	22	ft
Slope =	0.026	ft/ft
Surface Type =	Unpaved	
Average Velocity =	2.59	ft/s
Tt =	0.09	hour
Tt =	**5.53**	**minutes**

$$T_t = \frac{L}{3600V}$$

Segment 3: Channel Flow

Length =	10000	ft
Top Elev =	380	ft
Bot Elev =	229.46	ft
Height =	150.54	ft
Slope =	0.015	ft/ft
Surface Type =	Grass	
Manning's n =	0.035	
Flow Area =	15	sf (5'w*3'h channel)
Wetted Perimeter =	11	ft (5'w*3'h channel)
Hydraulic Radius =	1.36	ft
Velocity =	6.42	ft/s
Tt =	0.43	hour
Tt =	**25.95**	**minutes**

$$T_t = \frac{L}{3600V} \qquad V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$

Time of Concentration (Tc)

Tc = 47.1	**minutes**
SCS lag Time = 28.27	minutes
Time Increment = 8.20	minutes

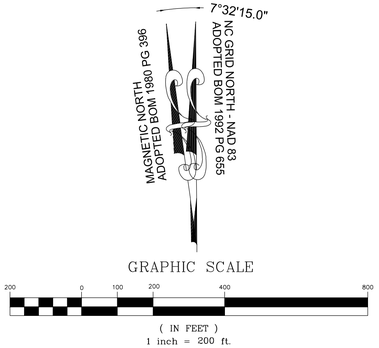
Discharge point :		
Reach to point:		
Reach:		
Distance =		ft

2.4 Post-Development

PROGRESS PLOT DATE: 10/31/2024

TOWNHOME NOTES:

STATES INTERNAL TOWNHOME DRIVEWAYS ARE PRIVATE EASEMENTS AS PER CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT



LEGEND:

- STORM DRAIN LINE
- FLARED END SECTION
- YARD INLET
- CATCH BASIN
- EX. MAJOR CONTOURS
- EX. MINOR CONTOURS
- PROP. MAJOR CONTOURS
- PROP. MINOR CONTOURS
- PERVIOUS DRAINAGE AREA 1
- PERVIOUS DRAINAGE AREA 2 (ONSITE)
- PERVIOUS DRAINAGE AREA 2 (OFFSITE)
- PERVIOUS DRAINAGE AREA 3
- PERVIOUS DRAINAGE AREA 4
- PERVIOUS DRAINAGE AREA 5
- PERVIOUS DRAINAGE AREA 6
- PERVIOUS DRAINAGE AREA 7
- PERVIOUS DRAINAGE AREA 8
- PERVIOUS DRAINAGE AREA 9
- PERVIOUS DRAINAGE AREA 10
- PERVIOUS DRAINAGE AREA 11
- PERVIOUS DRAINAGE AREA 12
- IMPERVIOUS AREA
- EXISTING DRAINAGE AREA 1
- EXISTING DRAINAGE AREA 2
- EXISTING DRAINAGE AREA 3
- EXISTING DRAINAGE AREA 4
- SOIL B
- SOIL C
- SOIL D

BYPASS #1
DRAINAGE AREA:
TOTAL: 101,255 SF. (2.32 AC.)
IMPERVIOUS: 57,449 SF. (1.32 AC.)
SOIL D: 101,255 SF. (2.32 AC.)

POST DA 6
DRAINAGE AREA:
TOTAL: 635,325 SF. (14.58 AC.)
IMPERVIOUS: 343,690 SF. (7.89 AC.)
SOIL C: 544,745 SF. (12.51 AC.)
SOIL D: 90,299 SF. (2.07 AC.)

EXISTING DA 3
DRAINAGE AREA:
TOTAL: 1,085,551 SF. (24.92 AC.)

POST DA 5
DRAINAGE AREA:
TOTAL: 150,642 SF. (3.46 AC.)
IMPERVIOUS: 81,857 SF. (1.88 AC.)
SOIL C: 93,372 SF. (2.14 AC.)
SOIL D: 57,271 SF. (1.31 AC.)

POST DA 4
DRAINAGE AREA:
TOTAL: 446,942 SF. (10.26 AC.)
IMPERVIOUS: 285,215 SF. (6.55 AC.)
SOIL C: 348,578 SF. (8.00 AC.)
SOIL D: 98,364 SF. (2.26 AC.)

POST DA 7
DRAINAGE AREA:
TOTAL: 619,888 SF. (14.23 AC.)
IMPERVIOUS: 380,017 SF. (8.72 AC.)
SOIL C: 275,843 SF. (6.33 AC.)
SOIL D: 343,987 SF. (7.90 AC.)

POST DA 3
DRAINAGE AREA:
TOTAL: 813,480 SF. (18.67 AC.)
IMPERVIOUS: 432,986 SF. (9.94 AC.)
SOIL C: 227.804 SF. (5.23 AC.)
SOIL D: 585,676 SF. (13.45 AC.)

EXISTING DA 4
DRAINAGE AREA:
TOTAL: 83,756 SF. (1.92 AC.)

POST DA 8
DRAINAGE AREA:
TOTAL: 276,126 SF. (6.34 AC.)
IMPERVIOUS: 152,421 SF. (3.50 AC.)
SOIL B: 43,251 SF. (0.99 AC.)
SOIL C: 47,242 SF. (3.50 AC.)
SOIL D: 185,602 SF. (4.26 AC.)

EXISTING DA 2
DRAINAGE AREA:
TOTAL: 18,503,194 SF. (424.77 AC.)

POST DA 1
DRAINAGE AREA:
TOTAL: 434,349 SF. (9.97 AC.)
IMPERVIOUS: 241,466 SF. (5.54 AC.)
SOIL B: 99,913 SF. (2.29 AC.)
SOIL C: 297,250 SF. (6.82 AC.)
SOIL D: 37,188 SF. (0.85 AC.)

EXISTING DA 1
DRAINAGE AREA:
TOTAL: 858,950 SF. (19.72 AC.)

PROPERTY LINE
GRO PEG ROAD
60' PRIVATE R/W
RECORDED BOOK OF MAPS 1999 PAGE 356
FUTURE DAYS WAY
JONESVILLE RD
SUPERSONIC WAY
CORNELL GARDEN STREET
LUKIN LANE
UNPLUGGED AVENUE
VEDDER LANE
GUARANTEED ALLEY
LIGHTNING BOLT LANE
PARACHUTE PLACE
COUNTER STREET
MCCREADY COURT
PENDULUM STREET
DARK MATTER ALLEY
CAMERON SOUND ALLEY
MONKEYWRENCH STREET
MOOKIE ALLEY
BETTERMAN DRIVE
EVEN FLOW LANE
YELLOW MOON COURT
MITCHELL MILL RD.
80' PUBLIC R/W
PEEBLES RD.
80' PUBLIC R/W
POI #1
POI #2
POI #3
POI #4
POI #5
POI #6
POI #7
POI #8
POI #9
POI #10
POI #11
POI

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No.	REVISIONS	DATE	BY

NORTH CAROLINA PROFESSIONAL SEAL 036225 ENGINEER JOSHUA W. LAMBERT
SEAL

STRONGROCK
ENGINEERING GROUP
STRONG ROCK ENGINEERING GROUP, PLLC | COMPANY LICENSE # P-2166
305 CHURCH AT NORTH HILLS STREET, SUITE 1110 RALEIGH, NC 27609 | INFORMATION@STRONGROCKGROUP.COM

STRONG ROCK PROJECT PSP-23-03	NOT FOR CONSTRUCTION	SCALE	AS SHOWN
DESIGNED BY	JWL	DRAWN BY	SRG
CHECKED BY	JWL		

RESERVE @ MITCHELL MILL
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

THE POST- DRAINAGE AREA FOR SCM

DRAWING SHEET
EXH-03

03 OF 04

PROGRESS PLOT DATE: 10/31/2024

ADJOINER INFORMATION

1	CHARLES E. FERRELL AND WIFE GRETTA LOUISE FERRELL PIN: 1757481951 DB 1813 PG 421 ZONING: R-30 (WC) USE: SF	20	CECIL L. GOODNIGHT AND WIFE, JUDY J. GOODNIGHT PIN: 1757650296 DB 5344 PG 819 ZONING: R-30 (WC) USE: SF
2	ABRAHAM T.BURNHAM ANDKYLA L. BURNHAM PIN: 1757481832 DB 19140 PG 734 ZONING: R-30 (WC) USE: SF	21	CECIL L. GOODNIGHT AND WIFE, JUDY J. GOODNIGHT PIN: 1757641415 DB 5344 PG 819 ZONING: R-30 (WC) USE: VA
3	JOE L. GREEN PIN: 1757483799 DB 15-E PG 2691 ZONING: R-30 (WC) USE: SF	22	CHRISTOPHER GHOLSON AND WIFE, KELLY GAITHER GHOLSON PIN: 1757556361 DB 17855 PG 457 LOT 4 - BM 2018 PG 1333 ZONING: R-30 (WC) USE: SF
4	CHARLES ALFONSA JONES AND WIFE ALLIE V.JONES PIN: 1757484609 DB 2305 PG 673 ZONING: R-30 (WC) USE: SF	23	ABAHOR ELIAS AND SPOUSE, SUSAN ELIAS PIN: 1757553215 DB 17220 PG 2509 LOT 3 - BM 2018 PG 1333 ZONING: R-30 (WC) USE: SF
5	BENJAMIN FERRELL PIN: 1757485713 DB 1697 PG 465 ZONING: R-30 (WC) USE: SF	24	TODD KENDALL HONEYCUTT PIN: 1757551202 DB 13474 PG 1974 LOT 2 - BM 2018 PG 1333 ZONING: R-30 (WC) USE: SF
6	ALESHIA FERRELL & ARRON WALKER PIN: 1757486733 DB 6374 PG 89 BM 1996 PG 00524 ZONING: R-30 (WC) USE: SF	25	CURTIS L. HONEYCUTT AND WIFE TODD KENDALL PIN: 1757540996 DB 19269 PG 2474 LOT 1 - BM 2018 PG 1333 ZONING: R-30 (WC) USE: SF
7	CHRIST HOLINESS CHURCH #1 PIN: 1757487783 DB 2928 PG 328 ZONING: R-30 (WC) USE: CH	26	PHETIS JONES BRADSHER PIN: 1757349473 DB 15208 PG 2320 BM 2013 PG 868 ZONING: R-30 (WC) USE: FO
8	CHRIST HOLINESS CHURCH #1 PIN: 1757489733 DB 4321 PG 788 ZONING: R-30 (WC) USE: VA	27	PHETIS JONES BRADSHER PIN: 1757349473 DB 15208 PG 2320 ZONING: R-30 (WC) USE: FO
9	CHRIST HOLINESS CHURCH #1 PIN: 1757580764 DB 9467 PG 430 ZONING: R-30 (WC) USE: VA	28	PERRY.ELWOOD RYAN PIN: 1757357582 DB 19292 PG 2780 ZONING: R-30 (WC) USE: MO
10	ALICIA BROWN & CARL T. JONES PIN: 1757582714 DB 16128 PG 183 ZONING: R-30 (WC) USE: SF	29	TOUTLOFF, KENNETH S. TOUTLOFF, BILLIE ANNE PIN: 1757357764 DB 9236 PG 2229 LOT 3 - BM 1990 PG 956 ZONING: R-30 (WC) USE: SF
11	RS RENTAL II LLC PIN: 1757584724 DB 18703 PG 2414 BM 1981 PG 894 ZONING: R-30 (WC) USE: SF	30	BERNARD MILLER PIN: 1757357865 DB 15416 PG 1651 LOT 4 - BM 1990 PG 956 ZONING: R-30 (WC) USE: SF
12	KAREN E. BASS PIN: 1757586704 DB 12560 PG 1626 BM 1984 PG 943 ZONING: R-30 (WC) USE: SF	31	MARCIE L. HOLDEN PIN: 1757358908 DB 15599 PG 1003 LOT 5 - BM 1990 PG 956 ZONING: R-30 (WC) USE: SF
13	JAMES K. WILLIAMS PIN: 1757588784 DB 16784 PG 1013 BM 1989 PG 01474 ZONING: R-30 (WC) USE: VA	32	MEGAN KULAWIAK PIN: 1757367367 DB 16226 PG 1133 LOT 6 BM 1990 PG 00387 ZONING: R-30 (WC) USE: VA
14	GRO PEG PROPERTIES LLC PIN: 1757684697 DB 18359 PG 1707 LOT 5 - BM 1980 PG 00396 ZONING: R-30 (WC) USE: VA	33	KENNETH INVESTMENT LLC. PIN: 1757368816 DB 19248 PG 1884 ZONING: R-30 (WC) USE: VA
15	SCOTT & THERESA CARLE PIN: 1757675786 DB 14863 PG 2493 LOT 4A- BM 1980 PG 00396 ZONING: R-30 (WC) USE: VA	34	KENNETH INVESTMENT LLC PIN: 1757471559 DB 19248 PG 1884 LOT - BM 2007 PG 01224 ZONING: R-30 (WC) USE: VA
16	GRO PEG PROPERTIES PIN: 1757664956 DB 19081 PG 2786 LOT 2A- BM 1982 PG 00581 ZONING: R-30 (WC) USE: VA	35	HENRY ALSTON PIN: 1757481376 DB 19248 PG 984 BM 1982 PG 721 ZONING: R-30 (WC) USE: SF
17	MT. CALVARY HOLINESS CHURCH OF WAKE CO. INC PIN: 1757660324 DB 10124 PG 2778 LOT 1- BM 2002 PG 991 ZONING: R-30 (WC) USE: VA	36	UNIVERSAL CHURCH OF PRAYER PIN: 1757388408 DB 19559 PG 1723 LOT - BM 2002 PG 00667 ZONING: R-30 (WC) USE: CH
18	G.ARCHIE UNDERHILL, JR. AND WIFE, TERESSA C. UNDERHILL PIN: 1757653765 DB 8443 PG 2129 BM 1999 PG 1357 ZONING: R-30 (WC) USE: SF	37	ROZELIA J. HARTSFIELD HEIRS PIN: 1757481740 DB 10-E PG 1220 ZONING: R-30 (WC) USE: VA
19	GENADIUS MAC PREDDY AND WIFE, MATTIE F. PREDDY PIN: 1757656586 DB 1882 PG 342 ZONING: R-30 (WC) USE: SF		

CALCULATION OF IMPERVIOUS AREA

TYPE OF IMPERVIOUS	AREA (SF)	AREA (AC)
ROADS AND SIDEWALKS	880,651	20.22
PONDS	280,471	6.44
BUILD UPON AREA (BUA) AND DRIVEWAY	1,039,033	23.85
TOTAL IMPERVIOUS AREA	**2,200,155**	**50.51**

LEGEND:

- IMPERVIOUS AREA OF ROADS & SIDEWALKS
- IMPERVIOUS AREA OF PONDS
- IMPERVIOUS AREA OF BUILD & DRIVEWAY
- PERVIOUS

7°32'15.0"
MAGNETIC NORTH
ADOPTED BOM 1980 PG 396
NC GRID NORTH - NAD 83
ADOPTED BOM 1992 PG 655

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

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No.	REVISIONS	DATE	BY

NORTH CAROLINA PROFESSIONAL SEAL 036225 ENGINEER JOSHUA W. L AMBERT
SEAL

STRONGROCK
ENGINEERING GROUP
STRONG ROCK ENGINEERING GROUP, PLLC | COMPANY LICENSE # P-2165
305 CHURCH AT NORTH HILLS STREET, SUITE 1110 RALEIGH, NC 27609 | INFORMATION@STRONGROCKGROUP.COM

STRONG ROCK PROJECT	PSP-23-03
NOT FOR CONSTRUCTION	
SCALE	AS SHOWN
DESIGNED BY	JWL
DRAWN BY	SRG
CHECKED BY	JWL

RESERVE @ MITCHELL MILL
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

THE IMPERVIOUS MAP

DRAWING SHEET
EXH-02

02 OF 04

Project:
Reserve @ Mitchell Mill

STRONGROCK ENGINEERING GROUP

Calculated By:
TT
Date:
10/31/24

Weighted CN Coefficient Worksheet (POST-Development)

Post DA 1					
Weighted CN Value					
HSG	Category	Land Use	CN_i	A_i	$CN_i \times A_i$
A	Pervious	Managed Open Space	39		0.00
		Woods	30		0.00
B	Pervious	Managed Open Space	61	1.02	62.22
		Woods	55		0.00
C	Pervious	Managed Open Space	74	3.03	224.22
		Woods	70		0.00
D	Pervious	Managed Open Space	80	0.38	30.40
		Woods	77		0.00
Open Water		Ponds, Lakes, Rivers, Etc.	100	0.83	83.00
Impervious		Road, Roof, Sidewalk, Etc.	98	4.71	461.58
				9.97	861.42
				CN Value	86

Post DA 3					
Weighted CN Value					
HSG	Category	Land Use	CN_i	A_i	$CN_i \times A_i$
A	Pervious	Managed Open Space	39		0.00
		Woods	30		0.00
B	Pervious	Managed Open Space	61		0.00
		Woods	55		0.00
C	Pervious	Managed Open Space	74	2.47	182.78
		Woods	70		0.00
D	Pervious	Managed Open Space	80	6.26	500.80
		Woods	77		0.00
Open Water		Ponds, Lakes, Rivers, Etc.	100	0.97	97.00
Impervious		Road, Roof, Sidewalk, Etc.	98	8.97	879.06
				18.67	1659.64
				CN Value	89

Post DA 4					
Weighted CN Value					
HSG	Category	Land Use	CN_i	A_i	$CN_i \times A_i$
A	Pervious	Managed Open Space	39		0.00
		Woods	30		0.00
B	Pervious	Managed Open Space	61		0.00
		Woods	55		0.00
C	Pervious	Managed Open Space	74	2.86	211.64
		Woods	70		0.00
D	Pervious	Managed Open Space	80	0.81	64.80
		Woods	77		0.00
Open Water		Ponds, Lakes, Rivers, Etc.	100	0.79	79.00
Impervious		Road, Roof, Sidewalk, Etc.	98	5.76	564.48
				10.22	919.92
				CN Value	90

Post DA 5					
Weighted CN Value					
HSG	Category	Land Use	CN_i	A_i	$CN_i \times A_i$
A	Pervious	Managed Open Space	39		0.00
		Woods	30		0.00
B	Pervious	Managed Open Space	61		0.00
		Woods	55		0.00
C	Pervious	Managed Open Space	74	1.02	75.48
		Woods	70		0.00
D	Pervious	Managed Open Space	80	0.56	44.80
		Woods	77		0.00
Open Water		Ponds, Lakes, Rivers, Etc.	100	0.49	49.00
Impervious		Road, Roof, Sidewalk, Etc.	98	1.39	136.22
				3.46	305.50
				CN Value	88

Post DA 6					
Weighted CN Value					
HSG	Category	Land Use	CN_i	A_i	$CN_i \times A_i$
A	Pervious	Managed Open Space	39		0.00
		Woods	30		0.00
B	Pervious	Managed Open Space	61		0.00
		Woods	55		0.00
C	Pervious	Managed Open Space	74	5.73	424.02
		Woods	70		0.00
D	Pervious	Managed Open Space	80	0.96	76.80
		Woods	77		0.00
Open Water		Ponds, Lakes, Rivers, Etc.	100	0.66	66.00
Impervious		Road, Roof, Sidewalk, Etc.	98	7.23	708.54
				14.58	1275.36
				CN Value	87

Post DA 7					
Weighted CN Value					
HSG	Category	Land Use	CN_i	A_i	$CN_i \times A_i$
A	Pervious	Managed Open Space	39		0.00
		Woods	30		0.00
B	Pervious	Managed Open Space	61		0.00
		Woods	55		0.00
C	Pervious	Managed Open Space	74	2.45	181.30
		Woods	70		0.00
D	Pervious	Managed Open Space	80	3.06	244.80
		Woods	77		0.00
Open Water		Ponds, Lakes, Rivers, Etc.	100	0.82	82.00
Impervious		Road, Roof, Sidewalk, Etc.	98	7.90	774.20
				14.23	1282.30
				CN Value	90

Post DA 8					
Weighted CN Value					
HSG	Category	Land Use	CN_i	A_i	$CN_i \times A_i$
A	Pervious	Managed Open Space	39		0.00
		Woods	30		0.00
B	Pervious	Managed Open Space	61	0.45	27.45
		Woods	55		0.00
C	Pervious	Managed Open Space	74	0.48	35.52
		Woods	70		0.00
D	Pervious	Managed Open Space	80	1.91	152.80
		Woods	77		0.00
Open Water		Ponds, Lakes, Rivers, Etc.	100	0.33	33.00
Impervious		Road, Roof, Sidewalk, Etc.	98	3.17	310.66
				6.34	559.43
				CN Value	88

Bypass #1					
Weighted CN Value					
HSG	Category	Land Use	CN_i	A_i	$CN_i \times A_i$
A	Pervious	Managed Open Space	39		0.00
		Woods	30		0.00
B	Pervious	Managed Open Space	61		0.00
		Woods	55		0.00
C	Pervious	Managed Open Space	74		0.00
		Woods	70		0.00
D	Pervious	Managed Open Space	80	1.00	80.00
		Woods	77		0.00
Open Water		Ponds, Lakes, Rivers, Etc.	100		0.00
Impervious		Road, Roof, Sidewalk, Etc.	98	1.32	129.36
				2.32	209.36
				CN Value	90

STRONGROCK ENGINEERING GROUP

TIME OF CONCENTRATION INFORMATION

Project:	**Reserve at Mitchell Mill**
Subcatchment:	**Post DA 1**

Date:	**10/31/2024**

Segment 1: Sheet Flow (Overland Flow)

Length =	30	ft
Top Elev =	291.43	ft
Bot Elev =	291	ft
Height =	0.43	ft
Slope =	0.014	ft/ft
Surface Type =	Paved	
Manning's n =	0.011	
P (2-year/24-hour) =	3.46	inch
Tt =	0.01	hour
Tt =	**0.51**	**minutes**

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

Segment 2: Shallow Concentrated Flow

Length =	930	ft
Top Elev =	291	ft
Bot Elev =	272.71	ft
Height =	18.29	ft
Slope =	0.020	ft/ft
Surface Type =	Paved	
Average Velocity =	2.85	ft/s
Tt =	0.09	hour
Tt =	**5.44**	**minutes**

$$T_t = \frac{L}{3600V}$$

Segment 3: Channel Flow

Length =	473	ft
Top Elev =	272.71	ft
Bot Elev =	262	ft
Height =	10.71	ft
Slope =	0.023	ft/ft
Surface Type =	Concrete finished	
Manning's n =	0.012	
Flow Area =	7.07	sf (36" pipe)
Wetted Perimeter =	9.42	ft (36" pipe)
Hydraulic Radius =	0.75	ft
Velocity =	15.42	ft/s
Tt =	0.01	hour
Tt =	**0.51**	**minutes**

$$T_t = \frac{L}{3600V} \qquad V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$

Time of Concentration (Tc)

Tc = 6.5	**minutes**
SCS lag Time = 3.87	minutes
Time Increment = 1.12	minutes

Discharge point :		
Reach to point:		
Reach:		
Distance =		ft

STRONGROCK ENGINEERING GROUP

TIME OF CONCENTRATION INFORMATION

Project:	**Reserve at Mitchell Mill**
Subcatchment:	**Post DA 3**

Date:	**10/31/2024**

Segment 1: Sheet Flow (Overland Flow)

Length =	50	ft
Top Elev =	311.54	ft
Bot Elev =	311	ft
Height =	0.54	ft
Slope =	0.011	ft/ft
Surface Type =	Paved	
Manning's n =	0.011	
P (2-year/24-hour) =	3.46	inch
Tt =	0.01	hour
Tt =	**0.86**	**minutes**

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

Segment 2: Shallow Concentrated Flow

Length =	1515	ft
Top Elev =	311	ft
Bot Elev =	250	ft
Height =	61	ft
Slope =	0.040	ft/ft
Surface Type =	Paved	
Average Velocity =	4.08	ft/s
Tt =	0.10	hour
Tt =	**6.19**	**minutes**

$$T_t = \frac{L}{3600V}$$

Segment 3: Channel Flow

Length =	314	ft
Top Elev =	250	ft
Bot Elev =	242	ft
Height =	8	ft
Slope =	0.025	ft/ft
Surface Type =	Concrete finished	
Manning's n =	0.012	
Flow Area =	7.07	sf (36" pipe)
Wetted Perimeter =	9.42	ft (36" pipe)
Hydraulic Radius =	0.75	ft
Velocity =	16.36	ft/s
Tt =	0.01	hour
Tt =	**0.32**	**minutes**

$$T_t = \frac{L}{3600V} \qquad V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$

Time of Concentration (Tc)

Tc = 7.4 minutes

SCS lag Time =	4.42	minutes
Time Increment =	1.28	minutes

Discharge point :		
Reach to point:		
Reach:		
Distance =		ft

STRONGROCK ENGINEERING GROUP

TIME OF CONCENTRATION INFORMATION

Project:	**Reserve at Mitchell Mill**
Subcatchment:	**Post DA 4**

Date:	**10/31/2024**

Segment 1: Sheet Flow (Overland Flow)

Length =	60	ft
Top Elev =	288.66	ft
Bot Elev =	288	ft
Height =	0.66	ft
Slope =	0.011	ft/ft
Surface Type =	Paved	
Manning's n =	0.011	
P (2-year/24-hour) =	3.46	inch
Tt =	0.02	hour
Tt =	**0.98**	**minutes**

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

Segment 2: Shallow Concentrated Flow

Length =	1000	ft
Top Elev =	288	ft
Bot Elev =	250	ft
Height =	38	ft
Slope =	0.038	ft/ft
Surface Type =	Paved	
Average Velocity =	3.96	ft/s
Tt =	0.07	hour
Tt =	**4.21**	**minutes**

$$T_t = \frac{L}{3600V}$$

Segment 3: Channel Flow

Length =	207	ft
Top Elev =	250	ft
Bot Elev =	238.5	ft
Height =	11.5	ft
Slope =	0.056	ft/ft
Surface Type =	Concrete finished	
Manning's n =	0.012	
Flow Area =	7.07	sf (36" pipe)
Wetted Perimeter =	9.42	ft (36" pipe)
Hydraulic Radius =	0.75	ft
Velocity =	24.16	ft/s
Tt =	0.00	hour
Tt =	**0.14**	**minutes**

$$T_t = \frac{L}{3600V} \qquad V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$

Time of Concentration (Tc)

Tc = 5.3 minutes

SCS lag Time =	3.20	minutes
Time Increment =	0.93	minutes

Discharge point :		
Reach to point:		
Reach:		
Distance =		ft

STRONGROCK ENGINEERING GROUP

TIME OF CONCENTRATION INFORMATION

Project:	**Reserve at Mitchell Mill**
Subcatchment:	**Post DA 5**

Date:	**10/31/2024**

Segment 1: Sheet Flow (Overland Flow)

Length =	43	ft
Top Elev =	263.91	ft
Bot Elev =	263	ft
Height =	0.91	ft
Slope =	0.021	ft/ft
Surface Type =	Paved	
Manning's n =	0.011	
P (2-year/24-hour) =	3.46	inch
Tt =	0.01	hour
Tt =	**0.58**	**minutes**

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

Segment 2: Shallow Concentrated Flow

Length =	300	ft
Top Elev =	263	ft
Bot Elev =	260.24	ft
Height =	2.76	ft
Slope =	0.009	ft/ft
Surface Type =	Paved	
Average Velocity =	1.95	ft/s
Tt =	0.04	hour
Tt =	**2.56**	**minutes**

$$T_t = \frac{L}{3600V}$$

Segment 3: Channel Flow

Length =	167	ft
Top Elev =	260.24	ft
Bot Elev =	250	ft
Height =	10.24	ft
Slope =	0.061	ft/ft
Surface Type =	Concrete finished	
Manning's n =	0.012	
Flow Area =	4.91	sf (30" pipe)
Wetted Perimeter =	7.85	ft (30" pipe)
Hydraulic Radius =	0.63	ft
Velocity =	22.48	ft/s
Tt =	0.00	hour
Tt =	**0.12**	**minutes**

$$T_t = \frac{L}{3600V} \qquad V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$

Time of Concentration (Tc)

Tc =	**5.0** **minutes**
SCS lag Time =	3.00 minutes
Time Increment =	0.87 minutes

Discharge point :		
Reach to point:		
Reach:		
Distance =		ft

STRONGROCK ENGINEERING GROUP

TIME OF CONCENTRATION INFORMATION

Project:	**Reserve at Mitchell Mill**
Subcatchment:	**Post DA 6**

Date:	**10/31/2024**

Segment 1: Sheet Flow (Overland Flow)

Length =	60	ft
Top Elev =	260.54	ft
Bot Elev =	260	ft
Height =	0.54	ft
Slope =	0.009	ft/ft
Surface Type =	Paved	
Manning's n =	0.011	
P (2-year/24-hour) =	3.46	inch
Tt =	0.02	hour
Tt =	**1.07**	**minutes**

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

Segment 2: Shallow Concentrated Flow

Length =	1700	ft
Top Elev =	260	ft
Bot Elev =	241.93	ft
Height =	18.07	ft
Slope =	0.011	ft/ft
Surface Type =	Paved	
Average Velocity =	2.10	ft/s
Tt =	0.23	hour
Tt =	**13.52**	**minutes**

$$T_t = \frac{L}{3600V}$$

Segment 3: Channel Flow

Length =	199	ft
Top Elev =	241.93	ft
Bot Elev =	234	ft
Height =	7.93	ft
Slope =	0.040	ft/ft
Surface Type =	Concrete finished	
Manning's n =	0.012	
Flow Area =	4.91	sf (30" pipe)
Wetted Perimeter =	7.85	ft (30" pipe)
Hydraulic Radius =	0.63	ft
Velocity =	18.12	ft/s
Tt =	0.00	hour
Tt =	**0.18**	**minutes**

$$T_t = \frac{L}{3600V} \qquad V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$

Time of Concentration (Tc)

Tc = 14.8 minutes

SCS lag Time =	8.86	minutes
Time Increment =	2.57	minutes

Discharge point :		
Reach to point:		
Reach:		
Distance =		ft

STRONGROCK ENGINEERING GROUP

TIME OF CONCENTRATION INFORMATION

Project:	**Reserve at Mitchell Mill**
Subcatchment:	**Post DA 7**

Date:	**10/31/2024**

Segment 1: Sheet Flow (Overland Flow)

Length =	21	ft
Top Elev =	310.25	ft
Bot Elev =	310	ft
Height =	0.25	ft
Slope =	0.012	ft/ft
Surface Type =	Paved	
Manning's n =	0.011	
P (2-year/24-hour) =	3.46	inch
Tt =	0.01	hour
Tt =	**0.41**	**minutes**

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

Segment 2: Shallow Concentrated Flow

Length =	1400	ft
Top Elev =	310	ft
Bot Elev =	248.75	ft
Height =	61.25	ft
Slope =	0.044	ft/ft
Surface Type =	Paved	
Average Velocity =	4.25	ft/s
Tt =	0.09	hour
Tt =	**5.49**	**minutes**

$$T_t = \frac{L}{3600V}$$

Segment 3: Channel Flow

Length =	313	ft
Top Elev =	248.75	ft
Bot Elev =	239	ft
Height =	9.75	ft
Slope =	0.031	ft/ft
Surface Type =	Concrete finished	
Manning's n =	0.012	
Flow Area =	9.62	sf (42" pipe)
Wetted Perimeter =	11.00	ft (42" pipe)
Hydraulic Radius =	0.88	ft
Velocity =	20.05	ft/s
Tt =	0.00	hour
Tt =	**0.26**	**minutes**

$$T_t = \frac{L}{3600V} \qquad V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$

Time of Concentration (Tc)

Tc = 6.2 minutes

SCS lag Time =	3.70	minutes
Time Increment =	1.07	minutes

Discharge point :		
Reach to point:		
Reach:		
Distance =		ft

STRONGROCK ENGINEERING GROUP

TIME OF CONCENTRATION INFORMATION

Project:	**Reserve at Mitchell Mill**
Subcatchment:	**Post DA 8**

Date:	**10/31/2024**

Segment 1: Sheet Flow (Overland Flow)

Length =	33	ft
Top Elev =	280.57	ft
Bot Elev =	280	ft
Height =	0.57	ft
Slope =	0.017	ft/ft
Surface Type =	Paved	
Manning's n =	0.011	
P (2-year/24-hour) =	3.46	inch
Tt =	0.01	hour
Tt = 0.51		**minutes**

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

Segment 2: Shallow Concentrated Flow

Length =	850	ft
Top Elev =	280	ft
Bot Elev =	269.18	ft
Height =	10.82	ft
Slope =	0.013	ft/ft
Surface Type =	Paved	
Average Velocity =	2.29	ft/s
Tt =	0.10	hour
Tt = 6.18		**minutes**

$$T_t = \frac{L}{3600V}$$

Segment 3: Channel Flow

Length =	248	ft
Top Elev =	269.18	ft
Bot Elev =	238.72	ft
Height =	30.46	ft
Slope =	0.123	ft/ft
Surface Type =	Concrete finished	
Manning's n =	0.012	
Flow Area =	4.91	sf (36" pipe)
Wetted Perimeter =	7.85	ft (36" pipe)
Hydraulic Radius =	0.63	ft
Velocity =	31.81	ft/s
Tt =	0.00	hour
Tt = 0.13		**minutes**

$$T_t = \frac{L}{3600V} \qquad V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$

Time of Concentration (Tc)

Tc = 6.8 minutes

SCS lag Time =	4.09 minutes
Time Increment =	1.19 minutes

Discharge point :		
Reach to point:		
Reach:		
Distance =		ft

STRONGROCK ENGINEERING GROUP

TIME OF CONCENTRATION INFORMATION

Project:	**Reserve at Mitchell Mill**
Subcatchment:	**Existing DA 1**

Date:	**10/31/2024**

Segment 1: Sheet Flow (Overland Flow)

Length =	40	ft
Top Elev =	300	ft
Bot Elev =	298	ft
Height =	2	ft
Slope =	0.050	ft/ft
Surface Type =	Dense Woods	
Manning's n =	0.8	
P (2-year/24-hour) =	3.46	inch
Tt =	0.20	hour
Tt =	**11.97**	**minutes**

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

Segment 2: Shallow Concentrated Flow

Length =	192	ft
Top Elev =	298	ft
Bot Elev =	290.13	ft
Height =	7.87	ft
Slope =	0.041	ft/ft
Surface Type =	Unpaved	
Average Velocity =	3.27	ft/s
Tt =	0.02	hour
Tt =	**0.98**	**minutes**

$$T_t = \frac{L}{3600V}$$

Segment 3: Channel Flow

Length =	556	ft
Top Elev =	290.13	ft
Bot Elev =	274.65	ft
Height =	15.48	ft
Slope =	0.028	ft/ft
Surface Type =	Grass	
Manning's n =	0.035	
Flow Area =	15	sf (5'w*3'h channel)
Wetted Perimeter =	11	ft (5'w*3'h channel)
Hydraulic Radius =	1.36	ft
Velocity =	8.74	ft/s
Tt =	0.02	hour
Tt =	**1.06**	**minutes**

$$T_t = \frac{L}{3600V} \qquad V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$

Time of Concentration (Tc)

Tc = 14.0 minutes

SCS lag Time =	8.41	minutes
Time Increment =	2.44	minutes

Discharge point :		
Reach to point:		
Reach:		
Distance =		ft

STRONGROCK
ENGINEERING GROUP

TIME OF CONCENTRATION INFORMATION

Project:	**Reserve at Mitchell Mill**
Subcatchment:	**Existing DA 2**

Date: **10/31/2024**

Segment 1: Sheet Flow (Overland Flow)

Length =	50	ft
Top Elev =	402.5	ft
Bot Elev =	402	ft
Height =	0.5	ft
Slope =	0.010	ft/ft
Surface Type =	Light Woods	
Manning's n =	0.4	
P (2-year/24-hour) =	3.46	inch
Tt =	0.26	hour
Tt =	**15.65**	**minutes**

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

Segment 2: Shallow Concentrated Flow

Length =	857	ft
Top Elev =	402	ft
Bot Elev =	380	ft
Height =	22	ft
Slope =	0.026	ft/ft
Surface Type =	Unpaved	
Average Velocity =	2.59	ft/s
Tt =	0.09	hour
Tt =	**5.53**	**minutes**

$$T_t = \frac{L}{3600V}$$

Segment 3: Channel Flow

Length =	7515	ft
Top Elev =	380	ft
Bot Elev =	229.46	ft
Height =	150.54	ft
Slope =	0.020	ft/ft
Surface Type =	Grass	
Manning's n =	0.035	
Flow Area =	15	sf (5'w*3'h channel)
Wetted Perimeter =	11	ft (5'w*3'h channel)
Hydraulic Radius =	1.36	ft
Velocity =	7.41	ft/s
Tt =	0.28	hour
Tt =	**16.90**	**minutes**

$$T_t = \frac{L}{3600V} \qquad V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$

Time of Concentration (Tc)

Tc = 38.1 minutes

SCS lag Time =	22.85	minutes
Time Increment =	6.63	minutes

Discharge point :		
Reach to point:		
Reach:		
Distance =		ft

STRONGROCK ENGINEERING GROUP

TIME OF CONCENTRATION INFORMATION

Project:	**Reserve at Mitchell Mill**
Subcatchment:	**Existing DA 3**

Date:	**10/31/2024**

Segment 1: Sheet Flow (Overland Flow)

Length =	65	ft
Top Elev =	286.5	ft
Bot Elev =	286	ft
Height =	0.5	ft
Slope =	0.008	ft/ft
Surface Type =	Dense Grass	
Manning's n =	0.24	
P (2-year/24-hour) =	3.46	inch
Tt =	0.24	hour
Tt =	**14.25**	**minutes**

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

Segment 2: Shallow Concentrated Flow

Length =	825	ft
Top Elev =	286	ft
Bot Elev =	249.9	ft
Height =	36.1	ft
Slope =	0.044	ft/ft
Surface Type =	Unpaved	
Average Velocity =	3.38	ft/s
Tt =	0.07	hour
Tt =	**4.07**	**minutes**

$$T_t = \frac{L}{3600V}$$

Segment 3: Channel Flow

Length =	663	ft
Top Elev =	249.9	ft
Bot Elev =	231.48	ft
Height =	18.42	ft
Slope =	0.028	ft/ft
Surface Type =	Grass	
Manning's n =	0.035	
Flow Area =	15	sf (5'w*3'h channel)
Wetted Perimeter =	11	ft (5'w*3'h channel)
Hydraulic Radius =	1.36	ft
Velocity =	8.73	ft/s
Tt =	0.02	hour
Tt =	**1.27**	**minutes**

$$T_t = \frac{L}{3600V} \qquad V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$

Time of Concentration (Tc)

Tc = 19.6 minutes

SCS lag Time =	11.75	minutes
Time Increment =	3.41	minutes

Discharge point :		
Reach to point:		
Reach:		
Distance =		ft

STRONGROCK ENGINEERING GROUP

TIME OF CONCENTRATION INFORMATION

Project:	**Reserve at Mitchell Mill**
Subcatchment:	**Existing DA 4**

Date:	**10/31/2024**

Segment 1: Sheet Flow (Overland Flow)

Length =	73	ft
Top Elev =	296.5	ft
Bot Elev =	296	ft
Height =	0.5	ft
Slope =	0.007	ft/ft
Surface Type =	Light Woods	
Manning's n =	0.4	
P (2-year/24-hour) =	3.46	inch
Tt =	0.41	hour
Tt =	**24.65**	**minutes**

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

Segment 2: Shallow Concentrated Flow

Length =	456	ft
Top Elev =	296	ft
Bot Elev =	250	ft
Height =	46	ft
Slope =	0.101	ft/ft
Surface Type =	Unpaved	
Average Velocity =	5.12	ft/s
Tt =	0.02	hour
Tt =	**1.48**	**minutes**

$$T_t = \frac{L}{3600V}$$

Segment 3: Channel Flow

Length =	125	ft
Top Elev =	250	ft
Bot Elev =	232.53	ft
Height =	17.47	ft
Slope =	0.140	ft/ft
Surface Type =	Grass	
Manning's n =	0.035	
Flow Area =	15	sf (5'w*3'h channel)
Wetted Perimeter =	11	ft (5'w*3'h channel)
Hydraulic Radius =	1.36	ft
Velocity =	19.57	ft/s
Tt =	0.00	hour
Tt =	**0.11**	**minutes**

$$T_t = \frac{L}{3600V} \qquad V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$

Time of Concentration (Tc)

Tc = 26.2 minutes

SCS lag Time =	15.74	minutes
Time Increment =	4.57	minutes

Discharge point :		
Reach to point:		
Reach:		
Distance =		ft

STRONGROCK ENGINEERING GROUP

TIME OF CONCENTRATION INFORMATION

Project:	**Reserve at Mitchell Mill**
Subcatchment:	**Culvert 1**

Date:	**10/31/2024**

Segment 1: Sheet Flow (Overland Flow)

Length =	46	ft
Top Elev =	402.5	ft
Bot Elev =	402	ft
Height =	0.5	ft
Slope =	0.011	ft/ft
Surface Type =	Light Woods	
Manning's n =	0.4	
P (2-year/24-hour) =	3.46	inch
Tt =	0.24	hour
Tt =	**14.16**	**minutes**

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

Segment 2: Shallow Concentrated Flow

Length =	331	ft
Top Elev =	402	ft
Bot Elev =	382	ft
Height =	20	ft
Slope =	0.060	ft/ft
Surface Type =	Unpaved	
Average Velocity =	3.97	ft/s
Tt =	0.02	hour
Tt =	**1.39**	**minutes**

$$T_t = \frac{L}{3600V}$$

Segment 3: Channel Flow

Length =	8084	ft
Top Elev =	382	ft
Bot Elev =	238.99	ft
Height =	143.01	ft
Slope =	0.018	ft/ft
Surface Type =	Grass	
Manning's n =	0.035	
Flow Area =	15	sf (5'w*3'h channel)
Wetted Perimeter =	11	ft (5'w*3'h channel)
Hydraulic Radius =	1.36	ft
Velocity =	6.96	ft/s
Tt =	0.32	hour
Tt =	**19.35**	**minutes**

$$T_t = \frac{L}{3600V} \qquad V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$

Time of Concentration (Tc)

Tc =	**34.9** **minutes**
SCS lag Time =	20.94 minutes
Time Increment =	6.07 minutes

Discharge point :		
Reach to point:		
Reach:		
Distance =		ft

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TIME OF CONCENTRATION INFORMATION

Project:	**Reserve at Mitchell Mill**
Subcatchment:	**Culvert 2**

Date:	**10/31/2024**

Segment 1: Sheet Flow (Overland Flow)

Length =	91	ft
Top Elev =	319.5	ft
Bot Elev =	315	ft
Height =	4.5	ft
Slope =	0.049	ft/ft
Surface Type =	Short Grass	
Manning's n =	0.15	
P (2-year/24-hour) =	3.46	inch
Tt =	0.10	hour
Tt = 6.08		**minutes**

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

Segment 2: Shallow Concentrated Flow

Length =	607	ft
Top Elev =	315	ft
Bot Elev =	276.08	ft
Height =	38.92	ft
Slope =	0.064	ft/ft
Surface Type =	Unpaved	
Average Velocity =	4.09	ft/s
Tt =	0.04	hour
Tt = 2.48		**minutes**

$$T_t = \frac{L}{3600V}$$

Segment 3: Channel Flow

Length =	109	ft
Top Elev =	276.08	ft
Bot Elev =	274	ft
Height =	2.08	ft
Slope =	0.019	ft/ft
Surface Type =	Grass	
Manning's n =	0.035	
Flow Area =	15.00	sf (5'w*3'h channe)
Wetted Perimeter =	11.00	ft (5'w*3'h channe)
Hydraulic Radius =	1.36	ft
Velocity =	7.23	ft/s
Tt =	0.00	hour
Tt = 0.25		**minutes**

$$T_t = \frac{L}{3600V} \qquad V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$

Time of Concentration (Tc)

Tc = 8.8 minutes

SCS lag Time =	5.29	minutes
Time Increment =	1.53	minutes

Discharge point :		
Reach to point:		
Reach:		
Distance =		ft

STRONGROCK ENGINEERING GROUP

TIME OF CONCENTRATION INFORMATION

Project:	**Reserve at Mitchell Mill**
Subcatchment:	**Culvert 3**

Date:	**10/31/2024**

Segment 1: Sheet Flow (Overland Flow)

Length =	11	ft
Top Elev =	276	ft
Bot Elev =	275.5	ft
Height =	0.5	ft
Slope =	0.045	ft/ft
Surface Type =	Short Grass	
Manning's n =	0.15	
P (2-year/24-hour) =	3.46	inch
Tt =	0.02	hour
Tt = 1.16		**minutes**

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

Segment 2: Shallow Concentrated Flow

Length =	134	ft
Top Elev =	275.5	ft
Bot Elev =	269.88	ft
Height =	5.62	ft
Slope =	0.042	ft/ft
Surface Type =	Unpaved	
Average Velocity =	3.30	ft/s
Tt =	0.01	hour
Tt = 0.68		**minutes**

$$T_t = \frac{L}{3600V}$$

Segment 3: Channel Flow

Length =	270	ft
Top Elev =	269.88	ft
Bot Elev =	263.1	ft
Height =	6.78	ft
Slope =	0.025	ft/ft
Surface Type =	Grass	
Manning's n =	0.035	
Flow Area =	15	sf (5'w*3'h channel)
Wetted Perimeter =	11	ft (5'w*3'h channel)
Hydraulic Radius =	1.36	ft
Velocity =	8.30	ft/s
Tt =	0.01	hour
Tt = 0.54		**minutes**

$$T_t = \frac{L}{3600V} \qquad V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$

Time of Concentration (Tc)

Tc = 5.0 minutes

SCS lag Time =	3.00	minutes
Time Increment =	0.87	minutes

Discharge point :		
Reach to point:		
Reach:		
Distance =		ft

PROGRESS PLOT DATE: 10/31/2024

LEGEND:

- STORM DRAIN LINE
- FLARED END SECTION
- YARD INLET
- CATCH BASIN
- EX. MAJOR CONTOURS (280)
- EX. MINOR CONTOURS
- PROP. MAJOR CONTOURS (280)
- PROP. MINOR CONTOURS
- CULVERT DRAINAGE AREA 1
- CULVERT DRAINAGE AREA 2
- CULVERT DRAINAGE AREA 3

BALLFIELD
POI #6
POI #7
SCM #5 WET POND
SUPERSONIC WAY
FUTURE DAYS WAY
CORNELL GARDEN STREET
LUKIN LANE
POI #8
POI #5
JONESVILLE RD
SUPERSONIC WAY
SCM #6 WET POND
POI #9
SCM #4 WET POND
SCM #3 WET POND
POI #4
LIGHTNING BOLT LANE
LIGHTNING BOLT LANE
VEDDER LANE
POI #3
GUARANTEED ALLEY
SMALL IPEMA PLAYGROUND
POI #10
SCM #7 WET POND
UNPLUGGED AVENUE
PARACHUTE PLACE
LIGHTNING BOLT LANE
POI #11
SCM #8 WET POND
COUNTER STREET
PENDULUM STREET
AMENITY CENTER
GIGATON STREET
MCCREADY COURT
MONKEYWRENCH STREET
DARK MATTER ALLEY
CAMERON SOUND ALLEY
POI #1
POI #2
MOOKIE ALLEY
PENDULUM STREET
BETTERMAN DRIVE
CRICKET PITCH
SCM #1 WET POND
JONESVILLE RD
EVEN FLOW LANE
YELLOW MOON COURT
MITCHELL MILL RD.
60' PUBLIC R/W
PEEBLES RD.
60' PUBLIC R/W
POI #12
CULVERT DA #3
69,046 SF. (1.59 AC.)
CULVERT DA #2
251,519 SF. (5.77 AC.)
CULVERT DA #1
15,538,149 SF. (356.71 AC.)

7°32'15.0"
MAGNETIC NORTH
ADOPTED BOM 1980 PG 396
NC GRID NORTH - NAD 83
ADOPTED BOM 1992 PG 655

GRAPHIC SCALE

300 0 150 300 600 1200

(IN FEET)
1 inch = 300 ft.

TOWNHOME NOTES:

STATES INTERNAL TOWNHOME DRIVEWAYS ARE PRIVATE EASEMENTS AS PER CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT

THIS PLANSET AND ANY ASSOCIATED DOCUMENTS ARE PRELIMINARY AND NOT AUTHORIZED FOR CONSTRUCTION UNTIL SIGNED, DATED, AND OFFICIALLY RELEASED FOR CONSTRUCTION BY THE ENGINEER OF RECORD.

No.	REVISIONS	DATE	BY

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036225 ENGINEER JOSHUA W. LAMBERT

STRONGROCK ENGINEERING GROUP
STRONG ROCK ENGINEERING GROUP, PLLC | COMPANY LICENSE # P-2166
305 CHURCH AT NORTH HILLS STREET, SUITE 1110 RALEIGH, NC 27609 | INFORMATION@STRONGROCKGROUP.COM

STRONG ROCK PROJECT	PSP-23-03
NOT FOR CONSTRUCTION	
SCALE	AS SHOWN
DESIGNED BY	JWL
DRAWN BY	SRG
CHECKED BY	JWL

RESERVE @ MITCHELL MILL
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

THE DRAINAGE AREA AND THE PROFILE HGL 25YR FOR CULVERT

DRAWING SHEET
EXH-04

04 OF 04

Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Oct 31 2024

Culvert 1 - 25 year

Invert Elev Dn (ft)	=	237.63
Pipe Length (ft)	=	74.00
Slope (%)	=	0.50
Invert Elev Up (ft)	=	238.00
Rise (in)	=	73.0
Shape	=	Elliptical
Span (in)	=	228.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Horizontal Ellipse Concrete
Culvert Entrance	=	Square edge w/headwall (H)
Coeff. K,M,c,Y,k	=	0.01, 2, 0.0398, 0.67, 0.5

Embankment

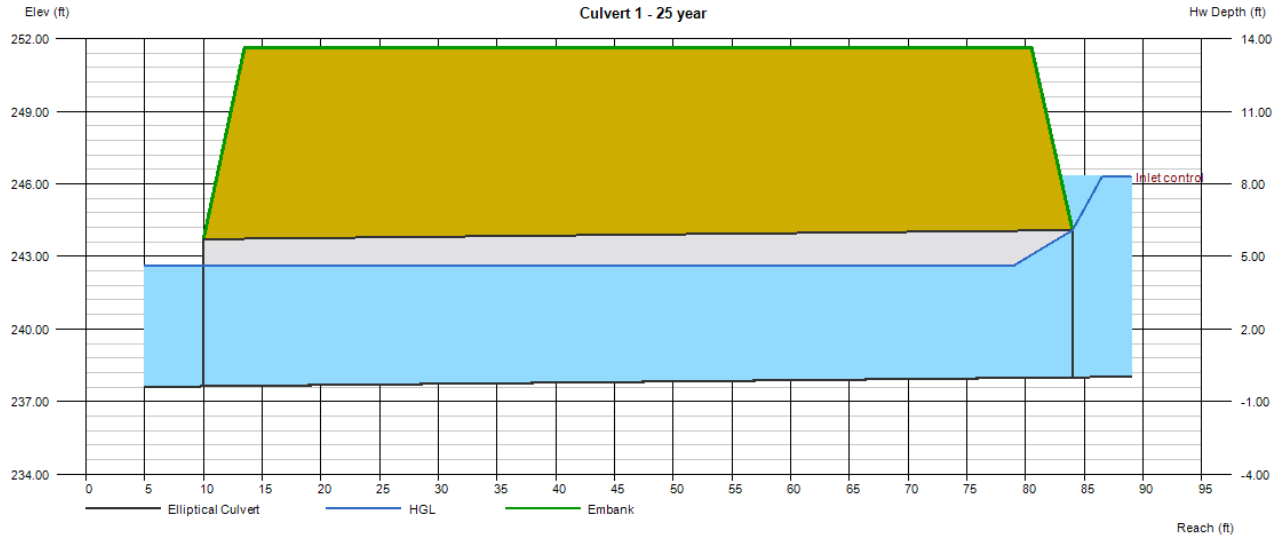
Top Elevation (ft)	=	251.65
Top Width (ft)	=	67.00
Crest Width (ft)	=	10.00

Calculations

Qmin (cfs)	=	932.87
Qmax (cfs)	=	932.87
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	932.87
Qpipe (cfs)	=	932.87
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	11.36
Veloc Up (ft/s)	=	12.31
HGL Dn (ft)	=	242.62
HGL Up (ft)	=	242.62
Hw Elev (ft)	=	246.28
Hw/D (ft)	=	1.36
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Oct 31 2024

Culvert 2 - 25 year

Invert Elev Dn (ft)	=	271.02
Pipe Length (ft)	=	83.00
Slope (%)	=	2.11
Invert Elev Up (ft)	=	272.77
Rise (in)	=	36.0
Shape	=	Circular
Span (in)	=	36.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

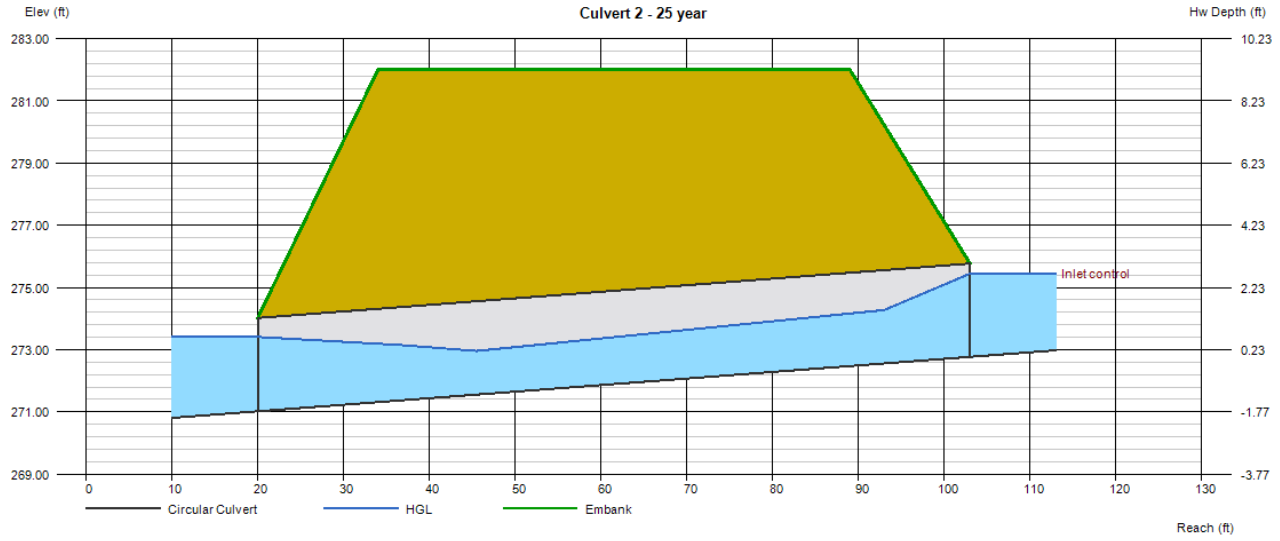
Top Elevation (ft)	=	282.00
Top Width (ft)	=	55.00
Crest Width (ft)	=	10.00

Calculations

Qmin (cfs)	=	30.30
Qmax (cfs)	=	30.30
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	30.30
Qpipe (cfs)	=	30.30
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	5.02
Veloc Up (ft/s)	=	6.92
HGL Dn (ft)	=	273.41
HGL Up (ft)	=	274.55
Hw Elev (ft)	=	275.45
Hw/D (ft)	=	0.89
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Oct 31 2024

Culvert 3 - 25 year

Invert Elev Dn (ft)	=	261.40
Pipe Length (ft)	=	42.00
Slope (%)	=	0.50
Invert Elev Up (ft)	=	261.61
Rise (in)	=	36.0
Shape	=	Circular
Span (in)	=	36.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

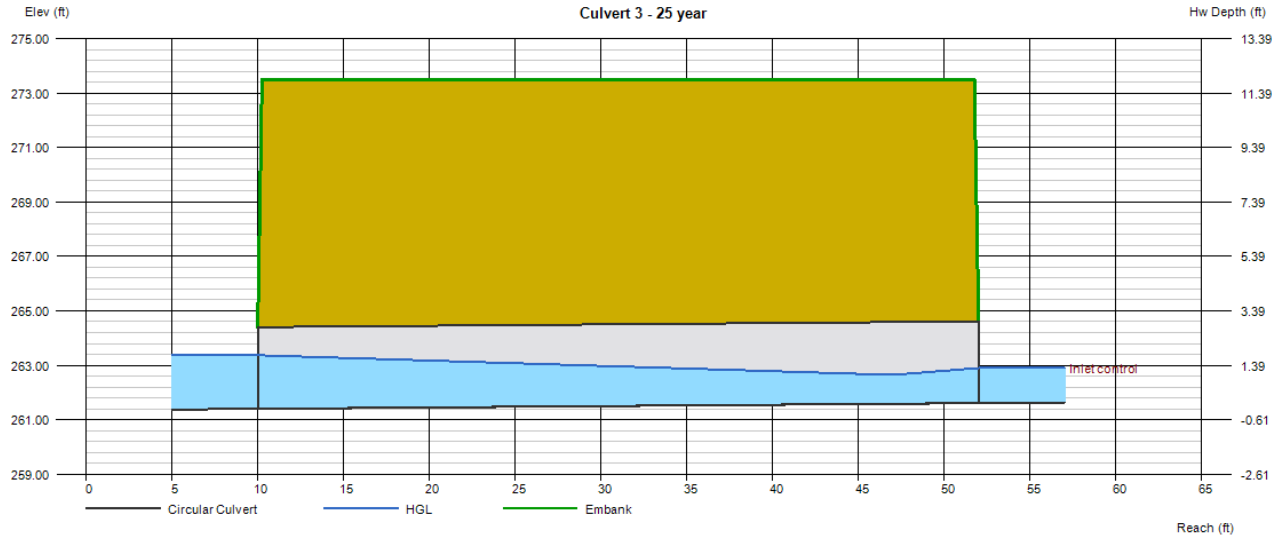
Top Elevation (ft)	=	273.50
Top Width (ft)	=	41.50
Crest Width (ft)	=	10.00

Calculations

Qmin (cfs)	=	8.85
Qmax (cfs)	=	8.85
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	8.85
Qpipe (cfs)	=	8.85
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	1.80
Veloc Up (ft/s)	=	4.68
HGL Dn (ft)	=	263.37
HGL Up (ft)	=	262.55
Hw Elev (ft)	=	262.90
Hw/D (ft)	=	0.43
Flow Regime	=	Inlet Control



3. SCM and Other Design Calculations

3.1. WetPond #1

STRONGROCK ENGINEERING GROUP

Project: HOPPER ROLESVILLE MITCHELL MILL
Calculated By: TOM T Date: 11/1/2024

Wet Pond Design Calculations — SCM 1

Pollutant / Nutrient Removal

Total Suspended Solids (TSS)	85%
Nitrogen	30%
Phosphorus	40%

Basin Characteristics

Post-Development Drainage Area

Area to Pond

Description	Acres
Impervious Lots	2.98
Impervious R/W	1.73
Managed Pervious	4.43
Impervious Other	0.83
Total to Pond (AC)	9.97
Pond Basin C	0.68

Estimated Impervious

Lots

Description		Imp (SF)	Total Imp Area
BUA		129929	2.98
			0.00
			0.00
			0.00
			0.00
			0.00
Subtotal	**0**	**-**	**2.98**

Streets and SW

Description		Imp (SF)	Total Imp Area
Roads & Sidewalks		75461	1.73
			0.00
			0.00
			0.00
			0.00
			0.00
Subtotal			**1.73**

Other

Ponds		36139	0.83
			0.00

Grand Total Impervious Area (AC): 5.54

Surface Area to Drainage Area Ratio for Permanent Pool Sizing

Drainage Area to SCM

Impervious Area	Acres
Offsite Impervious Area	0.00
Onsite Impervious Area	5.54
Total Impervious Area	5.54
Total Drainage Area To SCM	9.97
Percent Impervious Area	56%

Required Surface Area of Permanent Pool

Average Depth (ft) =	4.0
SA/DA Ratio =	1.67
Required SA (ft2) =	7,253
SA as Shown (ft2) =	12,434

SA/DA Ratio from latest NCDENR BMP Manual

SA / DA Pond Volumes and Areas (Below Permanent / Normal Pool)

Elevation (ft)	Main Area (sf)	Forebay Area (sf)	Depth (ft)	Main Inc. Vol (cf)	Forebay Inc. Vol (cf)	Total Vol (cf)
256.0				Bottom of Sediment Storage		
257.0	7,898	1,129	0.0	Top of Sediment Storage		
258.0	8,755	1,456	1.0	8,327	1,293	9,619
259.0	9,637	1,809	2.0	9,196	1,633	20,448
260.0	10,544	2,187	3.0	10,091	1,998	32,536
261.0	11,477	2,590	4.0	11,011	2,389	45,935
262.0	12,434	3,018	5.0	11,956	2,804	60,695
263.0	0	0				
264.0	0	0				
265.0	0	0				
266.0	0	0				
Total			5.0	50,579	10,116	60,695
Verify the Forebay Volume Is Approximately (15% - 20%) of the Permanent Pool Volume.						**20%**

Water Quality and Quantity Volumes (Above Permanent / Normal Pool)

Elevation (ft)	Main Area (sf)	Forebay Area (sf)	Depth (ft)	Inc Total Vol (cf)	Accum' Total Vol (cf)	
262.0	12,434	3,018	0.00	Permanent Pool Elevation		Notes
263.0	19,207	-	1.00	15,821	15,821	
263.21	19,599	-	1.21	4,103	19,924	WQE / TPE
264.0	21,061	-	2.00	16,031	35,955	
265.0	22,971	-	3.00	22,016	57,971	
266.0	24,938	-	4.00	23,955	81,926	
267.0	26,962	-	5.00	25,950	107,876	
268.0	29,042	-	6.00	28,002	135,878	
269.0	0	-				
270.0	0	-				

Verify the Average Depth of Pool (D_{avg}) - Equation 3.

d_{avg} = [$V_{perm\ pool}$ - [0.5 x Depth $_{max\ over\ shelf}$ x Perimeter $_{perm\ pool}$ x Width $_{submerged\ part\ of\ shelf}$] / $A_{bottom\ of\ shelf}$

V_{perm} =	50,579	C.F. (Main Pond)
$A_{bottom\ shelf}$ =	12,434	S.F. (Main Pond)
Depth of Water $_{over\ shelf}$ =	0.00	FT
Perimeter $_{perm\ pool}$ =	485	L.F. (Main Pond)
Width $_{submerged\ part\ of\ shelf}$ =	0.0	FT
D_{avg} =	4.07	FT
Depth for SA/DA =	**4.00**	**FT (Round D_{av} down to nearest 0.5 ft)**

1.0" Water Quality Runoff Volume Calculation

Using the runoff volume calculations in the "Simple Method" as described by Schueler (1987)

Where: Rv = Runoff Coefficient, in/in

I = Percent Impervious	I=	55.6%
Rv = 0.05 + 0.009(I)	Rv =	0.551

1.0 inch runoff volume (Required)

Runoff volume, S=(Design rainfall) (Rv) (Drainage Area)

Design Rainfall =	1.0	inch
Drainage Area =	9.97	acres
Storage Required =	**19,924**	**cu. ft.**

Volume Storage For 1.0" Runoff Above Permanent Pool (Provided)

Depth	PPE SA (SF)	Top Temp Pool SA (SF)	Volume (CF)	Elevation
1.21	12,434	19,599	19,924	263.21

Size Water Quality Orifice for (2-5) Day Drawdown for 1" Runoff Volume	
$Q_{1"} = CdA(2gh)^{1/2}$	(Orifice Equation; Cd=0.60; h = Ho/3)
2.00	Orifice Diameter (inches)
1.13	Ho (Driving Head to Centroid of Orifice) (ft)
0.38	Ho / 3 (Per orifice equation recommendation in NCDEQ SWM Design Manual, Part B)
0.06	Q1.0" Drawdown Rate (cfs)
19,924	Water Quality Volume (V_{WQ})
V_{WQ}/(Q1" x 86,400)	Drawdown Time (days)
3.6	**Drawdown Time (days) (2 - 5 days)**

Pond / Riser Data & Elevations				
Pond Type	Wet Pond			
TSS Removal	85%			
Top of Pond / Berm	268.00 ft			
Secondary Spillway Width	30.00 ft			
Bottom of Secondary Spillway	266.50 ft			
Top of Riser	265.60 ft	(at least 1' Above TPE)		
Riser Type / Size	4x4 ft			
Top of Water Quality / Temp Pool Elev	263.21 ft	(1" Runoff)		
Top of Veg. Shelf	263.00 ft			
Permanent Pool Elevation (Normal Pool)	262.00 ft			
Water Quality Orifice Elevation & Size	262.00 ft			2.00 in
Secondary Orifice Elevation & Size (Rise & Span)	263.21 ft		6.00 inch	12.00 inch
Bottom of Veg. Shelf	262.00 ft		^ Rise	^ Span
Top of Sediment Storage / Pond Bottom	257.00 ft			
Bottom of Sediment Storage	256.00 ft	(Min 1 ft)		
Invert Out of Riser	262.00 ft			
Outlet Pipe Size	24.00 in	Diameter RCP		
Outlet Pipe Length & Slope	47.96 ft			0.97 %
Downstream Outlet Elevation	261.54 ft			
1 Yr Water Surface Elev / Peak Flow (CFS)	263.68 ft			1.22 CFS
2 Yr Water Surface Elev Peak Flow (CFS)	264.10 ft			2.06 CFS
10 Yr Water Surface Elev Peak Flow (CFS)	265.46 ft			3.57 CFS
25 Yr Water Surface Elev Peak Flow (CFS)	265.95 ft			14.48 CFS
100 Yr Water Surface Elev Peak Flow (CFS)	266.71 ft			36.12 CFS

3.2. WetPond #3

STRONGROCK ENGINEERING GROUP

Project: HOPPER ROLESVILLE MITCHELL MILL
Calculated By: TOM T
Date: 11/1/2024

Wet Pond Design Calculations

SCM 3

Pollutant / Nutrient Removal

Total Suspended Solids (TSS)	85%
Nitrogen	30%
Phosphorus	40%

Basin Characteristics

Post-Development Drainage Area

Area to Pond

Description	Acres
Impervious Lots	4.53
Impervious R/W	4.44
Managed Pervious	8.73
Impervious Other	0.97
Total to Pond (AC)	18.67
Pond Basin C	0.67

Estimated Impervious

Lots

Description	Qty (# of Lots)	Imp / Lot (SF)	Total Imp Area
BUA		197239	4.53
			0.00
			0.00
			0.00
			0.00
			0.00
Subtotal	**0**	**-**	**4.53**

Streets and SW

Description	Length (LF)	Imp (SF) / LF	Total Imp Area
Roads & Sidewalks		193430	4.44
			0.00
			0.00
			0.00
			0.00
			0.00
Subtotal			**4.44**

Other

Ponds		42287	0.97
			0.00

Grand Total Impervious Area (AC): 9.94

Surface Area to Drainage Area Ratio for Permanent Pool Sizing

Drainage Area to SCM

Impervious Area	Acres
Offsite Impervious Area	0.00
Onsite Impervious Area	9.94
Total Impervious Area	9.94
Total Drainage Area To SCM	18.67
Percent Impervious Area	53%

Required Surface Area of Permanent Pool

Average Depth (ft) =	4.0
SA/DA Ratio =	1.59
Required SA (ft2) =	12,931
SA as Shown (ft2) =	15,110

SA/DA Ratio from latest NCDENR BMP Manual

SA / DA Pond Volumes and Areas (Below Permanent / Normal Pool)

Elevation (ft)	Main Area (sf)	Forebay Area (sf)	Depth (ft)	Main Inc. Vol (cf)	Forebay Inc. Vol (cf)	Total Vol (cf)
234.0				Bottom of Sediment Storage		
235.0	10,376	0	0.0	Top of Sediment Storage		
236.0	11,271	1,283	1.0	10,824	642	11,465
237.0	12,191	1,700	2.0	11,731	1,492	24,688
238.0	13,138	2,199	3.0	12,665	1,950	39,302
239.0	14,111	2,775	4.0	13,625	2,487	55,413
240.0	15,110	3,432	5.0	14,611	3,104	73,127
241.0	0	0				
242.0	0	0				
243.0	0	0				
244.0	0	0				
Total			5.0	63,454	9,673	73,127
Verify the Forebay Volume Is Approximately (15% - 20%) of the Permanent Pool Volume.						**15%**

Water Quality and Quantity Volumes (Above Permanent / Normal Pool)

Elevation (ft)	Main Area (sf)	Forebay Area (sf)	Depth (ft)	Inc Total Vol (cf)	Accum' Total Vol (cf)	
240.0	15,110	3,432	0.00	Permanent Pool Elevation		Notes
241.0	22,573	-	1.00	18,842	18,842	
241.73	24,151	-	1.73	17,018	35,860	WQE / TPE
242.0	24,739	-	2.00	6,638	42,498	
243.0	26,997	-	3.00	25,868	68,366	
244.0	29,345	-	4.00	28,171	96,537	
245.0	31,764	-	5.00	30,555	127,092	
246.0	34,248	-	6.00	33,006	160,098	
247.0	36,725	-	7.00	35,487	195,584	
248.0	0	-				

Verify the Average Depth of Pool (D_{avg}) - Equation 3.

d_{avg} = [$V_{perm\ pool}$ - [0.5 x Depth $_{max\ over\ shelf}$ x Perimeter $_{perm\ pool}$ x Width $_{submerged\ part\ of\ shelf}$] / $A_{bottom\ of\ shelf}$

V_{perm} =	63,454	C.F. (Main Pond)
$A_{bottom\ shelf}$ =	15,110	S.F. (Main Pond)
Depth of Water $_{over\ shelf}$ =	0.00	FT
Perimeter $_{perm\ pool}$ =	525	L.F. (Main Pond)
Width $_{submerged\ part\ of\ shelf}$ =	0.0	FT
D_{avg} =	4.20	FT
Depth for SA/DA =	**4.00**	**FT (Round D_{av} down to nearest 0.5 ft)**

1.0" Water Quality Runoff Volume Calculation

Using the runoff volume calculations in the "Simple Method" as described by Schueler (1987)

Where: Rv = Runoff Coefficient, in/in

I = Percent Impervious	I=	53.2%
Rv = 0.05 + 0.009(I)	Rv =	0.529

1.0 inch runoff volume (Required)

Runoff volume, S=(Design rainfall) (Rv) (Drainage Area)

Design Rainfall =	1.0	inch
Drainage Area =	18.67	acres
Storage Required =	**35,860**	**cu. ft.**

Volume Storage For 1.0" Runoff Above Permanent Pool (Provided)

Depth	PPE SA (SF)	Top Temp Pool SA (SF)	Volume (CF)	Elevation
1.73	15,110	24,151	35,860	241.73

Size Water Quality Orifice for (2-5) Day Drawdown for 1" Runoff Volume	
$Q_{1"} = CdA(2gh)^{1/2}$	(Orifice Equation; Cd=0.60; h = Ho/3)
2.50	Orifice Diameter (inches)
1.62	Ho (Driving Head to Centroid of Orifice) (ft)
0.54	Ho / 3 (Per orifice equation recommendation in NCDEQ SWM Design Manual, Part B)
0.12	Q1.0" Drawdown Rate (cfs)
35,860	Water Quality Volume (V_{WQ})
V_{WQ}/(Q1" x 86,400)	Drawdown Time (days)
3.4	**Drawdown Time (days) (2 - 5 days)**

Pond / Riser Data & Elevations				
Pond Type	Wet Pond			
TSS Removal	85%			
Top of Pond / Berm	247.00 ft			
Secondary Spillway Width	100.00 ft			
Bottom of Secondary Spillway	245.50 ft			
Top of Riser	244.20 ft	(at least 1' Above TPE)		
Riser Type / Size	4x4 ft			
Top of Water Quality / Temp Pool Elev	241.73 ft	(1" Runoff)		
Top of Veg. Shelf	241.00 ft			
Permanent Pool Elevation (Normal Pool)	240.00 ft			
Water Quality Orifice Elevation & Size	240.00 ft		2.50	in
Secondary Orifice Elevation & Size (Rise & Span)	241.73 ft	24.00 inch	24.00 inch	
Bottom of Veg. Shelf	240.00 ft	^ Rise	^ Span	
Top of Sediment Storage / Pond Bottom	235.00 ft			
Bottom of Sediment Storage	234.00 ft	(Min 1 ft)		
Invert Out of Riser	240.00 ft			
Outlet Pipe Size	36.00 in	Diameter RCP		
Outlet Pipe Length & Slope	122.00 ft		1.64	%
Downstream Outlet Elevation	238.00 ft			
1 Yr Water Surface Elev / Peak Flow (CFS)	242.73 ft		5.67	CFS
2 Yr Water Surface Elev Peak Flow (CFS)	243.34 ft		11.92	CFS
10 Yr Water Surface Elev Peak Flow (CFS)	244.82 ft		45.35	CFS
25 Yr Water Surface Elev Peak Flow (CFS)	245.46 ft		64.20	CFS
100 Yr Water Surface Elev Peak Flow (CFS)	245.94 ft		146.94	CFS

3.3. Wet Pond #4

STRONGROCK ENGINEERING GROUP

Project: HOPPER ROLESVILLE MITCHELL MILL
Calculated By: TOM T
Date: 11/1/2024

Wet Pond Design Calculations

SCM 4

Pollutant / Nutrient Removal

Total Suspended Solids (TSS)	85%
Nitrogen	30%
Phosphorus	40%

Basin Characteristics

Post-Development Drainage Area		Estimated Impervious			
Area to Pond		Lots			
Description	Acres	Description	Qty (# of Lots)	Imp / Lot (SF)	Total Imp Area
Impervious Lots	2.90	BUA		126316	2.90
Impervious R/W	2.86				0.00
Managed Pervious	3.71				0.00
Impervious Other	0.79				0.00
					0.00
					0.00
		Subtotal	**0**	**-**	**2.90**
		Streets and SW			
		Description	Length (LF)	Imp (SF) / LF	Total Imp Area
		Roads & Sidewalks		124564	2.86
					0.00
					0.00
					0.00
					0.00
					0.00
		Subtotal			**2.86**
		Other			
		Ponds		34428	0.79
Total to Pond (AC)	10.26				0.00
Pond Basin C	0.73			**Grand Total Impervious Area (AC):**	**6.55**

Surface Area to Drainage Area Ratio for Permanent Pool Sizing

Drainage Area to SCM		Required Surface Area of Permanent Pool	
Impervious Area	Acres		
Offsite Impervious Area	0.00		
Onsite Impervious Area	6.55	Average Depth (ft) =	3.5
Total Impervious Area	6.55	SA/DA Ratio =	2.08
		Required SA (ft2) =	9,296
Total Drainage Area To SCM	10.26	SA as Shown (ft2) =	9,586
Percent Impervious Area	64%	*SA/DA Ratio from latest NCDENR BMP Manual*	

SA / DA Pond Volumes and Areas (Below Permanent / Normal Pool)

Elevation (ft)	Main Area (sf)	Forebay Area (sf)	Depth (ft)	Main Inc. Vol (cf)	Forebay Inc. Vol (cf)	Total Vol (cf)
234.0				Bottom of Sediment Storage		
235.0	5,418	736	0.0	Top of Sediment Storage		
236.0	6,202	973	1.0	5,810	855	6,665
237.0	7,010	1,235	2.0	6,606	1,104	14,375
238.0	7,843	1,521	3.0	7,427	1,378	23,179
239.0	8,702	1,833	4.0	8,273	1,677	33,129
240.0	9,586	2,170	5.0	9,144	2,002	44,274
241.0	0	0				
242.0	0	0				
243.0	0	0				
244.0	0	0				
Total			5.0	37,259	7,015	44,274
Verify the Forebay Volume Is Approximately (15% - 20%) of the Permanent Pool Volume.						**19%**

Water Quality and Quantity Volumes (Above Permanent / Normal Pool)

Elevation (ft)	Main Area (sf)	Forebay Area (sf)	Depth (ft)	Inc Total Vol (cf)	Accum' Total Vol (cf)	
240.0	9,586	2,170	0.00	Permanent Pool Elevation		Notes
241.0	15,252	-	1.00	12,419	12,419	
241.68	16,452	-	1.68	10,841	23,260	WQE / TPE
242.0	17,007	-	2.00	5,288	28,548	
243.0	18,818	-	3.00	17,913	46,461	
244.0	20,686	-	4.00	19,752	66,213	
245.0	22,610	-	5.00	21,648	87,861	
246.0	24,591	-	6.00	23,601	111,462	
247.0	0	-				
248.0	0	-				

Verify the Average Depth of Pool (D_{avg}) - Equation 3.

d_{avg} = [$V_{perm\ pool}$ - [0.5 x Depth $_{max\ over\ shelf}$ x Perimeter $_{perm\ pool}$ x Width $_{submerged\ part\ of\ shelf}$] / $A_{bottom\ of\ shelf}$

V_{perm} =	37,259	C.F. (Main Pond)
$A_{bottom\ shelf}$ =	9,586	S.F. (Main Pond)
Depth of Water $_{over\ shelf}$ =	0.00	FT
Perimeter $_{perm\ pool}$ =	448	L.F. (Main Pond)
Width $_{submerged\ part\ of\ shelf}$ =	0.0	FT
D_{avg} =	3.89	FT
Depth for SA/DA =	**3.50**	**FT (Round D_{av} down to nearest 0.5 ft)**

1.0" Water Quality Runoff Volume Calculation

Using the runoff volume calculations in the "Simple Method" as described by Schueler (1987)

Where: Rv = Runoff Coefficient, in/in

I = Percent Impervious	I=	63.8%
Rv = 0.05 + 0.009(I)	Rv =	0.625

1.0 inch runoff volume (Required)

Runoff volume, S=(Design rainfall) (Rv) (Drainage Area)

Design Rainfall =	1.0	inch
Drainage Area =	10.26	acres
Storage Required =	**23,260**	**cu. ft.**

Volume Storage For 1.0" Runoff Above Permanent Pool (Provided)

Depth	PPE SA (SF)	Top Temp Pool SA (SF)	Volume (CF)	Elevation
1.68	9,586	16,452	23,260	241.68

Size Water Quality Orifice for (2-5) Day Drawdown for 1" Runoff Volume	
$Q_{1"} = CdA(2gh)^{1/2}$	(Orifice Equation; Cd=0.60; h = Ho/3)
2.00	Orifice Diameter (inches)
1.60	Ho (Driving Head to Centroid of Orifice) (ft)
0.53	Ho / 3 (Per orifice equation recommendation in NCDEQ SWM Design Manual, Part B)
0.08	Q1.0" Drawdown Rate (cfs)
23,260	Water Quality Volume (V_{WQ})
V_{WQ}/(Q1" x 86,400)	Drawdown Time (days)
3.5	**Drawdown Time (days) (2 - 5 days)**

Pond / Riser Data & Elevations				
Pond Type	Wet Pond			
TSS Removal	85%			
Top of Pond / Berm	246.00 ft			
Secondary Spillway Width	30.00 ft			
Bottom of Secondary Spillway	244.50 ft			
Top of Riser	244.00 ft	(at least 1' Above TPE)		
Riser Type / Size	4x4 ft			
Top of Water Quality / Temp Pool Elev	241.68 ft	(1" Runoff)		
Top of Veg. Shelf	241.00 ft			
Permanent Pool Elevation (Normal Pool)	240.00 ft			
Water Quality Orifice Elevation & Size	240.00 ft		2.00	in
Secondary Orifice Elevation & Size (Rise & Span)	241.68 ft	12.00 inch	12.00 inch	
Bottom of Veg. Shelf	240.00 ft	^ Rise	^ Span	
Top of Sediment Storage / Pond Bottom	235.00 ft			
Bottom of Sediment Storage	234.00 ft	(Min 1 ft)		
Invert Out of Riser	240.00 ft			
Outlet Pipe Size	18.00 in	Diameter RCP		
Outlet Pipe Length & Slope	70.50 ft		2.13	%
Downstream Outlet Elevation	238.50 ft			
1 Yr Water Surface Elev / Peak Flow (CFS)	242.20 ft		1.16	CFS
2 Yr Water Surface Elev Peak Flow (CFS)	242.58 ft		2.56	CFS
10 Yr Water Surface Elev Peak Flow (CFS)	243.89 ft		5.12	CFS
25 Yr Water Surface Elev Peak Flow (CFS)	244.44 ft		15.72	CFS
100 Yr Water Surface Elev Peak Flow (CFS)	244.99 ft		52.19	CFS

3.4. Wet Pond #5

STRONGROCK ENGINEERING GROUP

Project: HOPPER ROLESVILLE MITCHELL MILL
Calculated By: TOM T
Date: 11/1/2024

Wet Pond Design Calculations

SCM 5

Pollutant / Nutrient Removal

Total Suspended Solids (TSS)	85%
Nitrogen	30%
Phosphorus	40%

Basin Characteristics

Post-Development Drainage Area

Area to Pond

Description	Acres
Impervious Lots	0.97
Impervious R/W	0.49
Managed Pervious	1.58
Impervious Other	0.41
Total to Pond (AC)	3.46
Pond Basin C	0.68

Estimated Impervious

Lots

Description	Qty (# of Lots)	Imp / Lot (SF)	Total Imp Area
BUA		42342	0.97
			0.00
			0.00
			0.00
			0.00
			0.00
Subtotal	**0**	**-**	**0.97**

Streets and SW

Description	Length (LF)	Imp (SF) / LF	Total Imp Area
Roads & Sidewalks		21409	0.49
			0.00
			0.00
			0.00
			0.00
			0.00
Subtotal			**0.49**

Other

Ponds		17957	0.41
			0.00

Grand Total Impervious Area (AC): 1.88

Surface Area to Drainage Area Ratio for Permanent Pool Sizing

Drainage Area to SCM

Impervious Area	Acres
Offsite Impervious Area	0.00
Onsite Impervious Area	1.88
Total Impervious Area	1.88
Total Drainage Area To SCM	3.46
Percent Impervious Area	54%

Required Surface Area of Permanent Pool

Average Depth (ft) =	3.0
SA/DA Ratio =	1.91
Required SA (ft2) =	2,879
SA as Shown (ft2) =	3,326

SA/DA Ratio from latest NCDENR BMP Manual

SA / DA Pond Volumes and Areas (Below Permanent / Normal Pool)

Elevation (ft)	Main Area (sf)	Forebay Area (sf)	Depth (ft)	Main Inc. Vol (cf)	Forebay Inc. Vol (cf)	Total Vol (cf)
243.0				Bottom of Sediment Storage		
244.0	806	0	0.0	Top of Sediment Storage		
245.0	1,260	92	1.0	1,033	46	1,079
246.0	1,739	220	2.0	1,500	156	2,735
247.0	2,243	373	3.0	1,991	297	5,022
248.0	2,772	551	4.0	2,508	462	7,992
249.0	3,326	754	5.0	3,049	653	11,693
250.0	0	0				
251.0	0	0				
252.0	0	0				
253.0	0	0				
Total			5.0	10,080	1,613	11,693
Verify the Forebay Volume Is Approximately (15% - 20%) of the Permanent Pool Volume.						**16%**

Water Quality and Quantity Volumes (Above Permanent / Normal Pool)

Elevation (ft)	Main Area (sf)	Forebay Area (sf)	Depth (ft)	Inc Total Vol (cf)	Accum' Total Vol (cf)	
249.0	3,326	754	0.00	Permanent Pool Elevation		Notes
250.0	6,359	-	1.00	4,843	4,843	
250.29	6,698	-	1.29	1,913	6,756	WQE / TPE
251.0	7,516	-	2.00	5,024	11,780	
252.0	8,729	-	3.00	8,123	19,903	
253.0	9,999	-	4.00	9,364	29,267	
254.0	11,326	-	5.00	10,663	39,930	
255.0	0	-				
256.0	0	-				
257.0	0	-				

Verify the Average Depth of Pool (D_{avg}) - Equation 3.

d_{avg} = [$V_{perm\ pool}$ - [0.5 x Depth $_{max\ over\ shelf}$ x Perimeter $_{perm\ pool}$ x Width $_{submerged\ part\ of\ shelf}$] / $A_{bottom\ of\ shelf}$

V_{perm} =	10,080	C.F. (Main Pond)
$A_{bottom\ shelf}$ =	3,326	S.F. (Main Pond)
Depth of Water $_{over\ shelf}$ =	0.00	FT
Perimeter $_{perm\ pool}$ =	283	L.F. (Main Pond)
Width $_{submerged\ part\ of\ shelf}$ =	0.0	FT
D_{avg} =	3.03	FT
Depth for SA/DA =	**3.00**	**FT (Round D_{av} down to nearest 0.5 ft)**

1.0" Water Quality Runoff Volume Calculation

Using the runoff volume calculations in the "Simple Method" as described by Schueler (1987)

Where: Rv = Runoff Coefficient, in/in

I = Percent Impervious	I=	54.2%
Rv = 0.05 + 0.009(I)	Rv =	0.538

1.0 inch runoff volume (Required)

Runoff volume, S=(Design rainfall) (Rv) (Drainage Area)

Design Rainfall =	1.0	inch
Drainage Area =	3.46	acres
Storage Required =	**6,756**	**cu. ft.**

Volume Storage For 1.0" Runoff Above Permanent Pool (Provided)

Depth	PPE SA (SF)	Top Temp Pool SA (SF)	Volume (CF)	Elevation
1.29	3,326	6,698	6,756	250.29

Size Water Quality Orifice for (2-5) Day Drawdown for 1" Runoff Volume	
$Q_{1"} = CdA(2gh)^{1/2}$	(Orifice Equation; Cd=0.60; h = Ho/3)
1.25	Orifice Diameter (inches)
1.24	Ho (Driving Head to Centroid of Orifice) (ft)
0.41	Ho / 3 (Per orifice equation recommendation in NCDEQ SWM Design Manual, Part B)
0.03	Q1.0" Drawdown Rate (cfs)
6,756	Water Quality Volume (V_{WQ})
V_{WQ}/(Q1" x 86,400)	Drawdown Time (days)
3.0	**Drawdown Time (days) (2 - 5 days)**

Pond / Riser Data & Elevations				
Pond Type	Wet Pond			
TSS Removal	85%			
Top of Pond / Berm	254.00 ft			
Secondary Spillway Width	30.00 ft			
Bottom of Secondary Spillway	252.50 ft			
Top of Riser	252.00 ft	(at least 1' Above TPE)		
Riser Type / Size	4x4 ft			
Top of Water Quality / Temp Pool Elev	250.29 ft	(1" Runoff)		
Top of Veg. Shelf	250.00 ft			
Permanent Pool Elevation (Normal Pool)	249.00 ft			
Water Quality Orifice Elevation & Size	249.00 ft		1.25	in
Secondary Orifice Elevation & Size (Rise & Span)	250.29 ft		12.00 inch	24.00 inch
Bottom of Veg. Shelf	249.00 ft		^ Rise	^ Span
Top of Sediment Storage / Pond Bottom	244.00 ft			
Bottom of Sediment Storage	243.00 ft	(Min 1 ft)		
Invert Out of Riser	246.50 ft			
Outlet Pipe Size	18.00 in	Diameter RCP		
Outlet Pipe Length & Slope	106.00 ft		6.93	%
Downstream Outlet Elevation	239.15 ft			
1 Yr Water Surface Elev / Peak Flow (CFS)	250.72 ft		1.96	CFS
2 Yr Water Surface Elev Peak Flow (CFS)	251.07 ft		4.73	CFS
10 Yr Water Surface Elev Peak Flow (CFS)	251.88 ft		10.13	CFS
25 Yr Water Surface Elev Peak Flow (CFS)	252.22 ft		16.41	CFS
100 Yr Water Surface Elev Peak Flow (CFS)	252.65 ft		24.41	CFS

3.5. Wet Pond #6

STRONGROCK ENGINEERING GROUP

Project: HOPPER ROLESVILLE MITCHELL MILL
Calculated By: TOM T
Date: 11/1/2024

Wet Pond Design Calculations

SCM 6

Pollutant / Nutrient Removal

Total Suspended Solids (TSS)	85%
Nitrogen	30%
Phosphorus	40%

Basin Characteristics

Post-Development Drainage Area

Area to Pond

Description	Acres
Impervious Lots	4.45
Impervious R/W	2.78
Managed Pervious	6.69
Impervious Other	0.66
Total to Pond (AC)	14.58
Pond Basin C	0.67

Estimated Impervious

Lots

Description	Qty (# of Lots)	Imp / Lot (SF)	Total Imp Area
BUA		193724	4.45
			0.00
			0.00
			0.00
			0.00
			0.00
Subtotal	**0**	**-**	**4.45**

Streets and SW

Description	Length (LF)	Imp (SF) / LF	Total Imp Area
Roads & Sidewalks		120973	2.78
			0.00
			0.00
			0.00
			0.00
			0.00
Subtotal			**2.78**

Other

Ponds		28783	0.66
			0.00

Grand Total Impervious Area (AC): 7.89

Surface Area to Drainage Area Ratio for Permanent Pool Sizing

Drainage Area to SCM

Impervious Area	Acres
Offsite Impervious Area	0.00
Onsite Impervious Area	7.89
Total Impervious Area	7.89
Total Drainage Area To SCM	14.58
Percent Impervious Area	54%

Required Surface Area of Permanent Pool

Average Depth (ft) =	3.5
SA/DA Ratio =	1.76
Required SA (ft2) =	11,177
SA as Shown (ft2) =	12,238

SA/DA Ratio from latest NCDENR BMP Manual

SA / DA Pond Volumes and Areas (Below Permanent / Normal Pool)

Elevation (ft)	Main Area (sf)	Forebay Area (sf)	Depth (ft)	Main Inc. Vol (cf)	Forebay Inc. Vol (cf)	Total Vol (cf)
231.0				Bottom of Sediment Storage		
232.0	6,933	810	0.0	Top of Sediment Storage		
233.0	7,944	1,131	1.0	7,439	971	8,409
234.0	8,980	1,476	2.0	8,462	1,304	18,175
235.0	10,041	1,847	3.0	9,511	1,662	29,347
236.0	11,127	2,244	4.0	10,584	2,046	41,976
237.0	12,238	2,665	5.0	11,683	2,455	56,113
238.0	0	0				
239.0	0	0				
240.0	0	0				
241.0	0	0				
Total			5.0	47,678	8,436	56,113
Verify the Forebay Volume Is Approximately (15% - 20%) of the Permanent Pool Volume.						**18%**

Water Quality and Quantity Volumes (Above Permanent / Normal Pool)

Elevation (ft)	Main Area (sf)	Forebay Area (sf)	Depth (ft)	Inc Total Vol (cf)	Accum' Total Vol (cf)	
237.0	12,238	2,665	0.00	Permanent Pool Elevation		Notes
238.0	19,186	-	1.00	15,712	15,712	
238.64	20,661	-	1.64	12,695	28,407	WQE / TPE
239.0	21,501	-	2.00	7,648	36,055	
240.0	23,872	-	3.00	22,687	58,742	
241.0	26,299	-	4.00	25,086	83,828	
242.0	28,783	-	5.00	27,541	111,369	
243.0	31,324	-	6.00	30,054	141,423	
244.0	33,921	-	7.00	32,623	174,045	
245.0	0	-				

Verify the Average Depth of Pool (D_{avg}) - Equation 3.

d_{avg} = [$V_{perm\ pool}$ - [0.5 x Depth $_{max\ over\ shelf}$ x Perimeter $_{perm\ pool}$ x Width $_{submerged\ part\ of\ shelf}$] / $A_{bottom\ of\ shelf}$

V_{perm} =	47,678	C.F. (Main Pond)
$A_{bottom\ shelf}$ =	12,238	S.F. (Main Pond)
Depth of Water $_{over\ shelf}$ =	0.00	FT
Perimeter $_{perm\ pool}$ =	562	L.F. (Main Pond)
Width $_{submerged\ part\ of\ shelf}$ =	0.0	FT
D_{avg} =	3.90	FT
Depth for SA/DA =	**3.50**	**FT (Round D_{av} down to nearest 0.5 ft)**

1.0" Water Quality Runoff Volume Calculation

Using the runoff volume calculations in the "Simple Method" as described by Schueler (1987)

Where: Rv = Runoff Coefficient, in/in

I = Percent Impervious	I=	54.1%
Rv = 0.05 + 0.009(I)	Rv =	0.537

1.0 inch runoff volume (Required)

Runoff volume, S=(Design rainfall) (Rv) (Drainage Area)

Design Rainfall =	1.0	inch
Drainage Area =	14.58	acres
Storage Required =	**28,407**	**cu. ft.**

Volume Storage For 1.0" Runoff Above Permanent Pool (Provided)

Depth	PPE SA (SF)	Top Temp Pool SA (SF)	Volume (CF)	Elevation
1.64	12,238	20,661	28,407	238.64

Size Water Quality Orifice for (2-5) Day Drawdown for 1" Runoff Volume	
$Q_{1"} = CdA(2gh)^{1/2}$	(Orifice Equation; Cd=0.60; h = Ho/3)
2.50	Orifice Diameter (inches)
1.53	Ho (Driving Head to Centroid of Orifice) (ft)
0.51	Ho / 3 (Per orifice equation recommendation in NCDEQ SWM Design Manual, Part B)
0.12	Q1.0" Drawdown Rate (cfs)
28,407	Water Quality Volume (V_{WQ})
V_{WQ}/(Q1" x 86,400)	Drawdown Time (days)
2.8	**Drawdown Time (days) (2 - 5 days)**

Pond / Riser Data & Elevations				
Pond Type	Wet Pond			
TSS Removal	85%			
Top of Pond / Berm	244.00 ft			
Secondary Spillway Width	40.00 ft			
Bottom of Secondary Spillway	242.50 ft			
Top of Riser	241.25 ft	(at least 1' Above TPE)		
Riser Type / Size	4x4 ft			
Top of Water Quality / Temp Pool Elev	238.64 ft	(1" Runoff)		
Top of Veg. Shelf	238.00 ft			
Permanent Pool Elevation (Normal Pool)	237.00 ft			
Water Quality Orifice Elevation & Size	237.00 ft		2.50	in
Secondary Orifice Elevation & Size (Rise & Span)	238.64 ft	12.00 inch	24.00 inch	
Bottom of Veg. Shelf	237.00 ft	^ Rise	^ Span	
Top of Sediment Storage / Pond Bottom	232.00 ft			
Bottom of Sediment Storage	231.00 ft	(Min 1 ft)		
Invert Out of Riser	237.00 ft			
Outlet Pipe Size	18.00 in	Diameter RCP		
Outlet Pipe Length & Slope	100.00 ft		0.50	%
Downstream Outlet Elevation	236.50 ft			
1 Yr Water Surface Elev / Peak Flow (CFS)	239.31 ft		3.92	CFS
2 Yr Water Surface Elev Peak Flow (CFS)	239.82 ft		8.06	CFS
10 Yr Water Surface Elev Peak Flow (CFS)	241.43 ft		12.72	CFS
25 Yr Water Surface Elev Peak Flow (CFS)	242.30 ft		16.11	CFS
100 Yr Water Surface Elev Peak Flow (CFS)	243.03 ft		57.31	CFS

3.6. Wet Pond #7

STRONGROCK ENGINEERING GROUP

Project: HOPPER ROLESVILLE MITCHELL MILL
Calculated By: TOM T
Date: 11/1/2024

Wet Pond Design Calculations

SCM 7

Pollutant / Nutrient Removal

Total Suspended Solids (TSS)	85%
Nitrogen	30%
Phosphorus	40%

Basin Characteristics

Post-Development Drainage Area

Area to Pond

Description	Acres
Impervious Lots	4.11
Impervious R/W	3.79
Managed Pervious	5.50
Impervious Other	0.82
Total to Pond (AC)	14.23
Pond Basin C	0.72

Estimated Impervious

Lots

Description	Qty (# of Lots)	Imp / Lot (SF)	Total Imp Area
BUA		178974	4.11
			0.00
			0.00
			0.00
			0.00
			0.00
Subtotal	**0**	**-**	**4.11**

Streets and SW

Description	Length (LF)	Imp (SF) / LF	Total Imp Area
Roads & Sidewalks		165281	3.79
			0.00
			0.00
			0.00
			0.00
			0.00
Subtotal			**3.79**

Other

Ponds		35790	0.82
			0.00

Grand Total Impervious Area (AC): 8.72

Surface Area to Drainage Area Ratio for Permanent Pool Sizing

Drainage Area to SCM

Impervious Area	Acres
Offsite Impervious Area	0.00
Onsite Impervious Area	8.72
Total Impervious Area	8.72
Total Drainage Area To SCM	14.23
Percent Impervious Area	61%

Required Surface Area of Permanent Pool

Average Depth (ft) =	4.0
SA/DA Ratio =	1.80
Required SA (ft2) =	11,157
SA as Shown (ft2) =	13,491

SA/DA Ratio from latest NCDENR BMP Manual

SA / DA Pond Volumes and Areas (Below Permanent / Normal Pool)

Elevation (ft)	Main Area (sf)	Forebay Area (sf)	Depth (ft)	Main Inc. Vol (cf)	Forebay Inc. Vol (cf)	Total Vol (cf)
233.0				Bottom of Sediment Storage		
234.0	8,664	1,243	0.0	Top of Sediment Storage		
235.0	9,579	1,529	1.0	9,122	1,386	10,508
236.0	10,519	1,840	2.0	10,049	1,685	22,241
237.0	11,485	2,176	3.0	11,002	2,008	35,251
238.0	12,476	2,537	4.0	11,981	2,357	49,588
239.0	13,491	2,923	5.0	12,984	2,730	65,302
240.0	0	0				
241.0	0	0				
242.0	0	0				
243.0	0	0				
Total			5.0	55,137	10,165	65,302
Verify the Forebay Volume Is Approximately (15% - 20%) of the Permanent Pool Volume.						**18%**

Water Quality and Quantity Volumes (Above Permanent / Normal Pool)

Elevation (ft)	Main Area (sf)	Forebay Area (sf)	Depth (ft)	Inc Total Vol (cf)	Accum' Total Vol (cf)	
239.0	13,491	2,923	0.00	Permanent Pool Elevation		Notes
240.0	20,314	-	1.00	16,903	16,903	
240.68	21,625	-	1.68	14,183	31,086	WQE / TPE
241.0	22,252	-	2.00	7,100	38,186	
242.0	24,248	-	3.00	23,250	61,436	
243.0	26,300	-	4.00	25,274	86,710	
244.0	28,408	-	5.00	27,354	114,064	
245.0	30,573	-	6.00	29,491	143,555	
246.0	32,794	-	7.00	31,684	175,238	
247.0	0	-				

Verify the Average Depth of Pool (D_{avg}) - Equation 3.

$d_{avg} = [V_{perm\ pool} - [0.5 \times Depth_{max\ over\ shelf} \times Perimeter_{perm\ pool} \times Width_{submerged\ part\ of\ shelf}] / A_{bottom\ of\ shelf}$

V_{perm} =	55,137	C.F. (Main Pond)
$A_{bottom\ shelf}$ =	13,491	S.F. (Main Pond)
Depth of Water $_{over\ shelf}$ =	0.00	FT
Perimeter $_{perm\ pool}$ =	514	L.F. (Main Pond)
Width $_{submerged\ part\ of\ shelf}$ =	0.0	FT
D_{avg} =	4.09	FT
Depth for SA/DA =	**4.00**	**FT (Round D_{av} down to nearest 0.5 ft)**

1.0" Water Quality Runoff Volume Calculation

Using the runoff volume calculations in the "Simple Method" as described by Schueler (1987)

Where: Rv = Runoff Coefficient, in/in

I = Percent Impervious	I=	61.3%
Rv = 0.05 + 0.009(I)	Rv =	0.602

1.0 inch runoff volume (Required)

Runoff volume, S=(Design rainfall) (Rv) (Drainage Area)

Design Rainfall =	1.0	inch
Drainage Area =	14.23	acres
Storage Required =	**31,086**	**cu. ft.**

Volume Storage For 1.0" Runoff Above Permanent Pool (Provided)

Depth	PPE SA (SF)	Top Temp Pool SA (SF)	Volume (CF)	Elevation
1.68	13,491	21,625	31,086	240.68

Size Water Quality Orifice for (2-5) Day Drawdown for 1" Runoff Volume	
$Q_{1"} = CdA(2gh)^{1/2}$	(Orifice Equation; Cd=0.60; h = Ho/3)
2.50	Orifice Diameter (inches)
1.57	Ho (Driving Head to Centroid of Orifice) (ft)
0.52	Ho / 3 (Per orifice equation recommendation in NCDEQ SWM Design Manual, Part B)
0.12	Q1.0" Drawdown Rate (cfs)
31,086	Water Quality Volume (V_{WQ})
V_{WQ}/(Q1" x 86,400)	Drawdown Time (days)
3.0	**Drawdown Time (days) (2 - 5 days)**

Pond / Riser Data & Elevations				
Pond Type	Wet Pond			
TSS Removal	85%			
Top of Pond / Berm	246.00 ft			
Secondary Spillway Width	30.00 ft			
Bottom of Secondary Spillway	244.50 ft			
Top of Riser	243.25 ft	(at least 1' Above TPE)		
Riser Type / Size	4x4 ft			
Top of Water Quality / Temp Pool Elev	240.68 ft	(1" Runoff)		
Top of Veg. Shelf	240.00 ft			
Permanent Pool Elevation (Normal Pool)	239.00 ft			
Water Quality Orifice Elevation & Size	239.00 ft		2.50	in
Secondary Orifice Elevation & Size (Rise & Span)	240.68 ft		12.00 inch	24.00 inch
Bottom of Veg. Shelf	239.00 ft		^ Rise	^ Span
Top of Sediment Storage / Pond Bottom	234.00 ft			
Bottom of Sediment Storage	233.00 ft	(Min 1 ft)		
Invert Out of Riser	239.00 ft			
Outlet Pipe Size	24.00 in	Diameter RCP		
Outlet Pipe Length & Slope	108.00 ft		3.29	%
Downstream Outlet Elevation	235.45 ft			
1 Yr Water Surface Elev / Peak Flow (CFS)	241.41 ft		4.46	CFS
2 Yr Water Surface Elev Peak Flow (CFS)	241.95 ft		8.64	CFS
10 Yr Water Surface Elev Peak Flow (CFS)	243.44 ft		18.29	CFS
25 Yr Water Surface Elev Peak Flow (CFS)	244.14 ft		30.19	CFS
100 Yr Water Surface Elev Peak Flow (CFS)	245.03 ft		63.71	CFS

3.7. Wet Pond #8

STRONGROCK ENGINEERING GROUP

Project: HOPPER ROLESVILLE MITCHELL MILL
Calculated By: TOM T
Date: 11/1/2024

Wet Pond Design Calculations

SCM 8

Pollutant / Nutrient Removal

Total Suspended Solids (TSS)	85%
Nitrogen	30%
Phosphorus	40%

Basin Characteristics

Post-Development Drainage Area

Area to Pond

Description	Acres
Impervious Lots	2.13
Impervious R/W	1.04
Managed Pervious	2.83
Impervious Other	0.33
Total to Pond (AC)	6.34
Pond Basin C	0.68

Estimated Impervious

Lots

Description	Qty (# of Lots)	Imp / Lot (SF)	Total Imp Area
BUA		92978	2.13
			0.00
			0.00
			0.00
			0.00
			0.00
Subtotal	**0**	**-**	**2.13**

Streets and SW

Description	Length (LF)	Imp (SF) / LF	Total Imp Area
Roads & Sidewalks		45447	1.04
			0.00
			0.00
			0.00
			0.00
			0.00
Subtotal			**1.04**

Other

Ponds		14234	0.33
			0.00

Grand Total Impervious Area (AC): 3.50

Surface Area to Drainage Area Ratio for Permanent Pool Sizing

Drainage Area to SCM

Impervious Area	Acres
Offsite Impervious Area	0.00
Onsite Impervious Area	3.50
Total Impervious Area	3.50
Total Drainage Area To SCM	6.34
Percent Impervious Area	55%

Required Surface Area of Permanent Pool

Average Depth (ft) =	3.5
SA/DA Ratio =	1.79
Required SA (ft2) =	4,942
SA as Shown (ft2) =	4,843

SA/DA Ratio from latest NCDENR BMP Manual

SA / DA Pond Volumes and Areas (Below Permanent / Normal Pool)

Elevation (ft)	Main Area (sf)	Forebay Area (sf)	Depth (ft)	Main Inc. Vol (cf)	Forebay Inc. Vol (cf)	Total Vol (cf)
234.0				Bottom of Sediment Storage		
235.0	2,275	167	0.0	Top of Sediment Storage		
236.0	2,738	324	1.0	2,507	246	2,752
237.0	3,227	509	2.0	2,983	417	6,151
238.0	3,740	719	3.0	3,484	614	10,249
239.0	4,279	955	4.0	4,010	837	15,095
240.0	4,843	1,215	5.0	4,561	1,085	20,741
241.0	0	0				
242.0	0	0				
243.0	0	0				
244.0	0	0				
Total			5.0	17,543	3,198	20,741
Verify the Forebay Volume Is Approximately (15% - 20%) of the Permanent Pool Volume.						**18%**

Water Quality and Quantity Volumes (Above Permanent / Normal Pool)

Elevation (ft)	Main Area (sf)	Forebay Area (sf)	Depth (ft)	Inc Total Vol (cf)	Accum' Total Vol (cf)	
240.0	4,843	1,215	0.00	Permanent Pool Elevation		Notes
241.0	8,343	-	1.00	6,593	6,593	
241.69	9,093	-	1.69	6,007	12,600	WQE / TPE
242.0	9,432	-	2.00	2,880	15,480	
243.0	10,578	-	3.00	10,005	25,485	
244.0	11,780	-	4.00	11,179	36,664	
245.0	13,039	-	5.00	12,410	49,074	
246.0	0	-				
247.0	0	-				
248.0	0	-				

Verify the Average Depth of Pool (D_{avg}) - Equation 3.

d_{avg} = [$V_{perm\ pool}$ - [0.5 x Depth $_{max\ over\ shelf}$ x Perimeter $_{perm\ pool}$ x Width $_{submerged\ part\ of\ shelf}$] / $A_{bottom\ of\ shelf}$

V_{perm} =	17,543	C.F. (Main Pond)
$A_{bottom\ shelf}$ =	4,843	S.F. (Main Pond)
Depth of Water $_{over\ shelf}$ =	0.00	FT
Perimeter $_{perm\ pool}$ =	288	L.F. (Main Pond)
Width $_{submerged\ part\ of\ shelf}$ =	0.0	FT
D_{avg} =	3.62	FT
Depth for SA/DA =	**3.50**	**FT (Round D_{av} down to nearest 0.5 ft)**

1.0" Water Quality Runoff Volume Calculation

Using the runoff volume calculations in the "Simple Method" as described by Schueler (1987)

Where: Rv = Runoff Coefficient, in/in

I = Percent Impervious	I=	55.3%
Rv = 0.05 + 0.009(I)	Rv =	0.548

1.0 inch runoff volume (Required)

Runoff volume, S=(Design rainfall) (Rv) (Drainage Area)

Design Rainfall =	1.0	inch
Drainage Area =	6.34	acres
Storage Required =	**12,600**	**cu. ft.**

Volume Storage For 1.0" Runoff Above Permanent Pool (Provided)

Depth	PPE SA (SF)	Top Temp Pool SA (SF)	Volume (CF)	Elevation
1.69	4,843	9,093	12,600	241.69

Size Water Quality Orifice for (2-5) Day Drawdown for 1" Runoff Volume	
$Q_{1"} = CdA(2gh)^{1/2}$	(Orifice Equation; Cd=0.60; h = Ho/3)
1.50	Orifice Diameter (inches)
1.63	Ho (Driving Head to Centroid of Orifice) (ft)
0.54	Ho / 3 (Per orifice equation recommendation in NCDEQ SWM Design Manual, Part B)
0.04	Q1.0" Drawdown Rate (cfs)
12,600	Water Quality Volume (V_{WQ})
V_{WQ}/(Q1" x 86,400)	Drawdown Time (days)
3.4	**Drawdown Time (days) (2 - 5 days)**

Pond / Riser Data & Elevations				
Pond Type	Wet Pond			
TSS Removal	85%			
Top of Pond / Berm	245.00 ft			
Secondary Spillway Width	30.00 ft			
Bottom of Secondary Spillway	243.50 ft			
Top of Riser	242.50 ft	(at least 1' Above TPE)		
Riser Type / Size	4x4 ft			
Top of Water Quality / Temp Pool Elev	241.69 ft	(1" Runoff)		
Top of Veg. Shelf	241.00 ft			
Permanent Pool Elevation (Normal Pool)	240.00 ft			
Water Quality Orifice Elevation & Size	240.00 ft		1.50	in
Secondary Orifice Elevation & Size (Rise & Span)	241.69 ft	8.00 inch	24.00 inch	
Bottom of Veg. Shelf	240.00 ft	^ Rise	^ Span	
Top of Sediment Storage / Pond Bottom	235.00 ft			
Bottom of Sediment Storage	234.00 ft	(Min 1 ft)		
Invert Out of Riser	237.00 ft			
Outlet Pipe Size	24.00 in	Diameter RCP		
Outlet Pipe Length & Slope	58.00 ft		5.17	%
Downstream Outlet Elevation	234.00 ft			
1 Yr Water Surface Elev / Peak Flow (CFS)	242.33 ft		3.53	CFS
2 Yr Water Surface Elev Peak Flow (CFS)	242.72 ft		10.85	CFS
10 Yr Water Surface Elev Peak Flow (CFS)	243.14 ft		31.67	CFS
25 Yr Water Surface Elev Peak Flow (CFS)	243.43 ft		34.49	CFS
100 Yr Water Surface Elev Peak Flow (CFS)	243.83 ft		50.78	CFS

4. Hydraulic Grade Line and Gutter Spread Analysis

4.1. 2 Year Gutter Spread Analysis

2-YEAR RETURN PERIOD

GUTTER SPREAD ANALYSIS

RESERVE @ MITCHELL MILL

5109 MITCHELL MILL ROAD, TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

PREPARED BY: TOM TAYLOR
STRONG ROCK ENGINEERING GROUP, PLLC | COMPANY LICENSE # P-2166
305 CHURCH AT NORTH HILLS STREET, SUITE 1110 RALEIGH, NC 27609 |
INFORMATION@STRONGROCKGROUP.COM

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TABLE OF CONTENTS

Narrative……3

Drainage Areas Map……4

The Table Of Gutter Spread, The Table Of Drainage Area

Stormwater Area A……9

Stormwater Area B ……12

Stormwater Area C……15

Stormwater Area D……19

Stormwater Area E……22

Stormwater Area F ……25

Stormwater Area G ……28

Stormwater Area H ……31

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STUDY DESCRIPTION.

This study utilized:

- Auto Desk Storm and Sanitary Analysis Program for analyzing and designing stormwater sewers.

Calculation requirements:

- For the Gutter Spread Analysis, the standard NCDOT intensity measurement is 4 in/ hr.
- Gutter Spread can be up to half a lane width.

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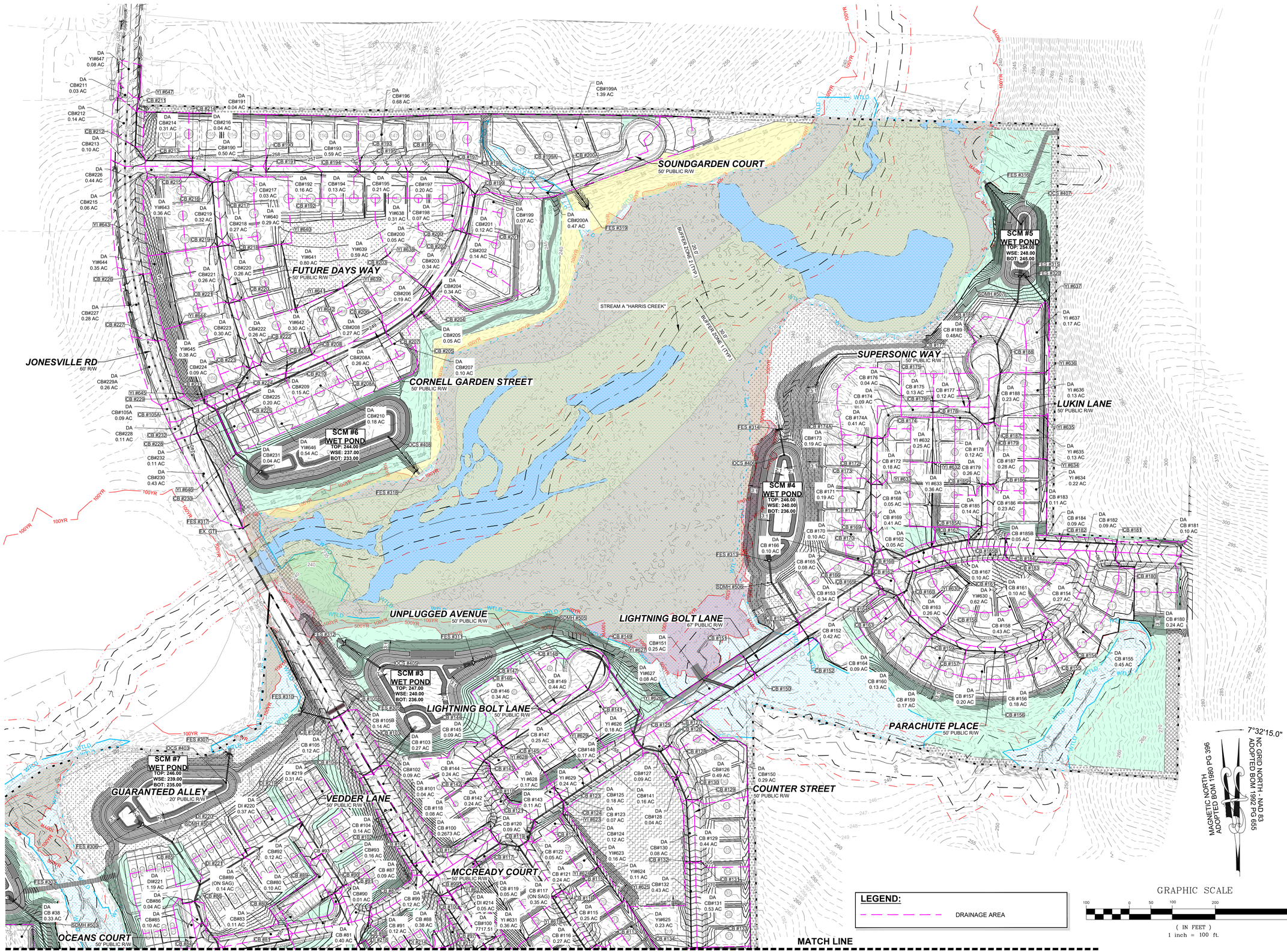
DRAINAGE MAP

PROGRESS PLOT DATE: 11/01/2024



No.	REVISIONS	DATE	BY
01	PRELIMINARY SUBDIVISION PLAT PSP-23-03	08/01/2023	SREG
02	TOWN OF ROLESVILLE PSP-23-05	12/05/2023	SREG
03	TOWN OF ROLESVILLE PSP V3-23-03	03/01/2024	SREG
04	TOWN OF ROLESVILLE PSP V4-23-03	06/04/2024	SREG
05	TOWN OF ROLESVILLE PSP V5-23-03	09/03/2024	SREG
06	TOWN OF ROLESVILLE PSP V6-23-03	11/01/2024	SREG

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036225 ENGINEER JOSHUA W. LAMBERT

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STRONGS ROCK PROJECT	PSP-23-03
NOT FOR CONSTRUCTION	
SCALE	AS SHOWN
DESIGNED BY	JWL
DRAWN BY	SRG
CHECKED BY	JWL

RESERVE @ MITCHELL MILL
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA
PRELIMINARY SUBDIVISION PLAT

THE DRAINAGE MAP
EXHIBIT - 01

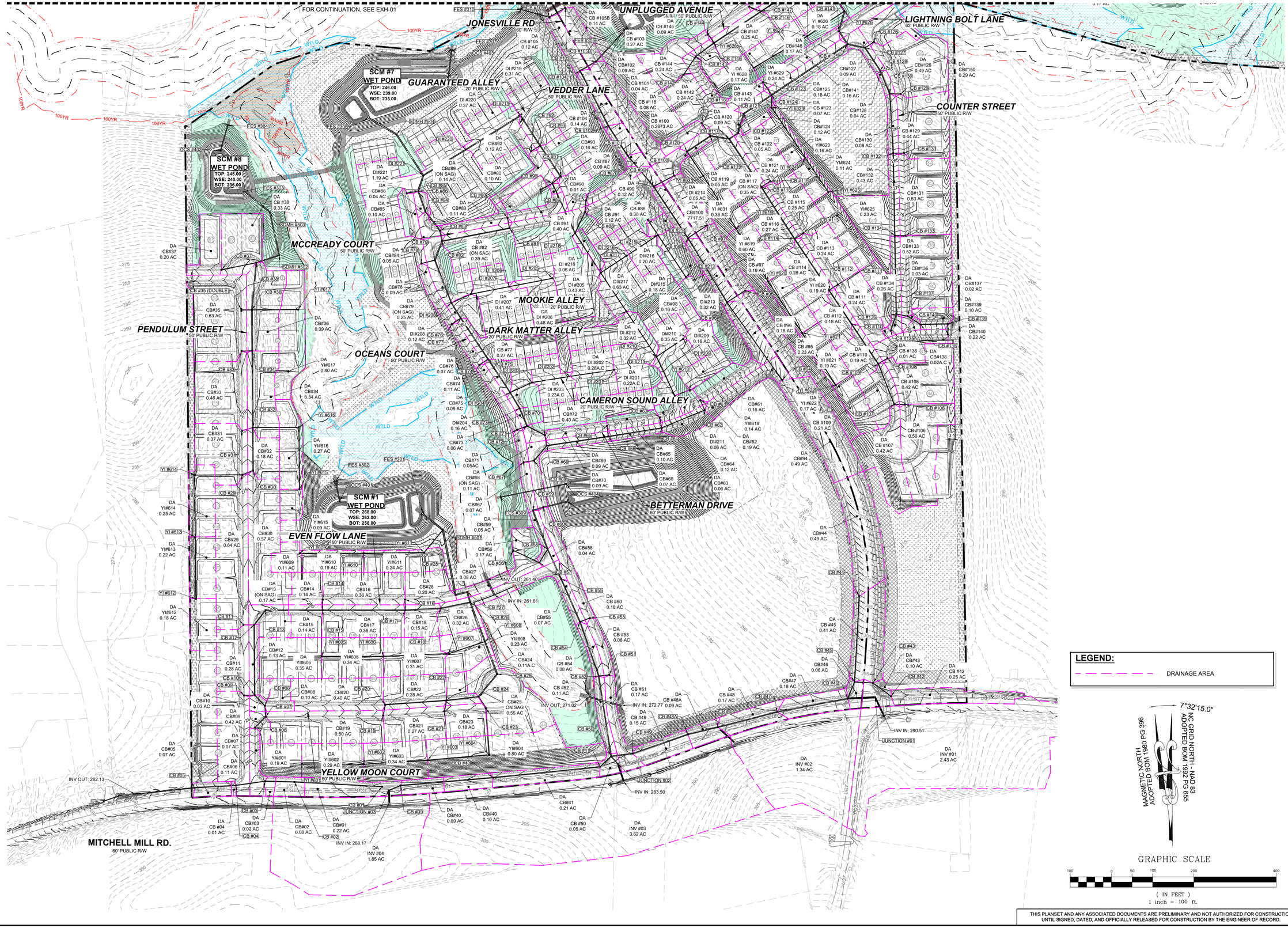
DRAWING SHEET
EX-01

01 OF 02

PROGRESS PLOT DATE: 11/01/2024

MATCH LINE

FOR CONTINUATION, SEE EXH-01



LEGEND:

DRAINAGE AREA

7°32'15.0"
MAGNETIC NORTH ADOPTED BOM 1980 PG 396
NC GRID NORTH - NAD 83 ADOPTED BOM 1992 PG 555

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

THIS PLANSET AND ANY ASSOCIATED DOCUMENTS ARE PRELIMINARY AND NOT AUTHORIZED FOR CONSTRUCTION UNTIL SIGNED, DATED, AND OFFICIALLY RELEASED FOR CONSTRUCTION BY THE ENGINEER OF RECORD.

No.	REVISIONS	DATE	BY
01	PRELIMINARY SUBDIVISION PLAT PSP-23-03	08/01/2023	SREG
02	TOWN OF ROLESVILLE PSP-23-05	12/05/2023	SREG
03	TOWN OF ROLESVILLE PSP V3-23-03	03/01/2024	SREG
04	TOWN OF ROLESVILLE PSP V4-23-03	06/04/2024	SREG
05	TOWN OF ROLESVILLE PSP V5-23-03	09/03/2024	SREG
06	TOWN OF ROLESVILLE PSP V6-23-03	11/01/2024	SREG

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036225 ENGINEER JOSHUA W. LAMBERT

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STRONG ROCK PROJECT	PSP-23-03
	NOT FOR CONSTRUCTION
SCALE	AS SHOWN
DESIGNED BY	JWL
DRAWN BY	SRG
CHECKED BY	JWL

305 CHURCH AT NORTH HILLS STREET, SUITE 1110 RALEIGH, NC 27609

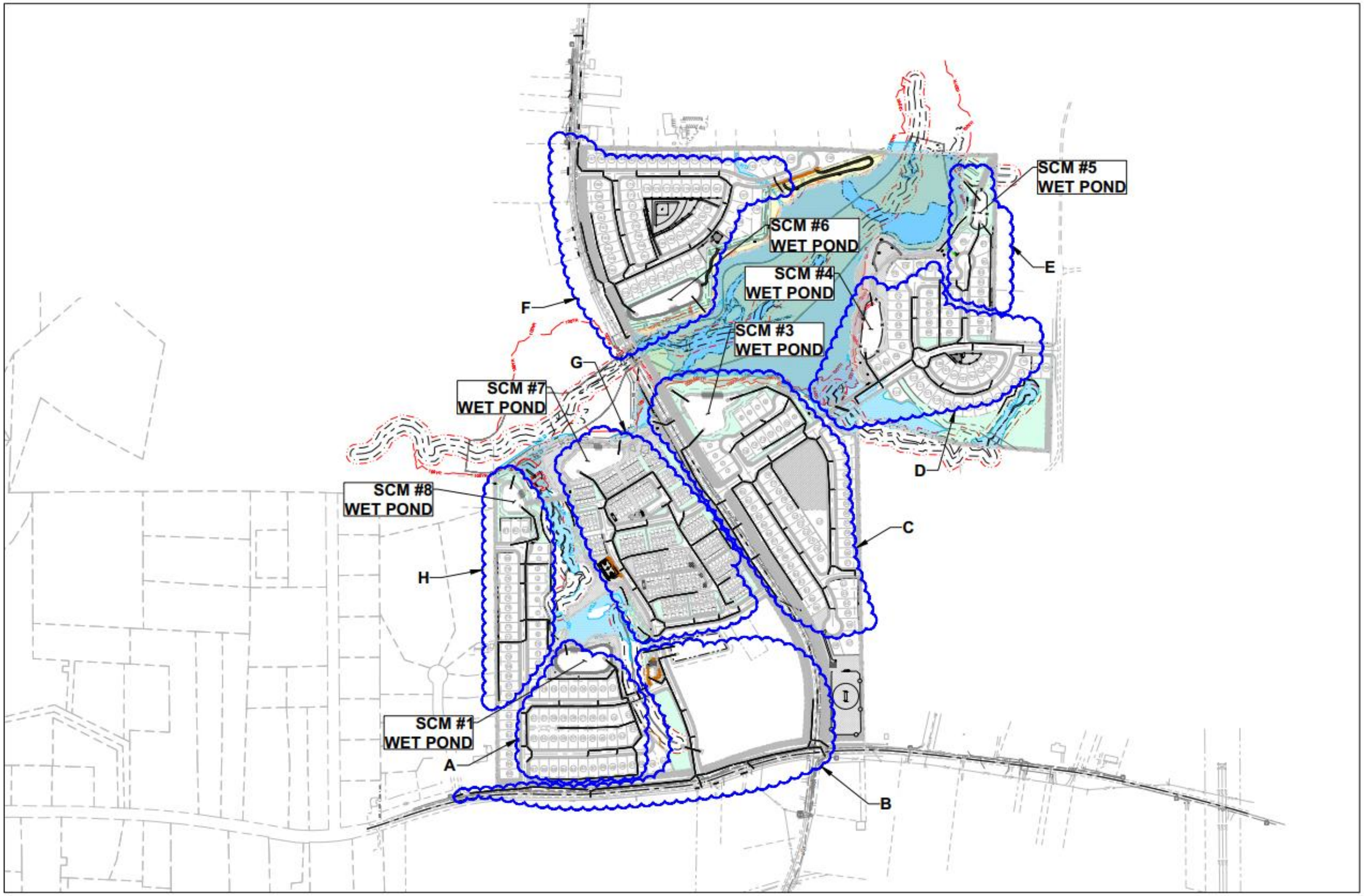
RESERVE @ MITCHELL MILL
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA
PRELIMINARY SUBDIVISION PLAT
THE DRAINAGE MAP
EXHIBIT - 02

DRAWING SHEET

EX-02

02 OF 02

THE TABLE OF GUTTER SPREAD, THE TABLE OF DRAINAGE AREA


SCM #5
WET POND
SCM #6
WET POND
SCM #4
WET POND
SCM #3
WET POND
SCM #7
WET POND
SCM #8
WET POND
SCM #1
WET POND
E
F
G
D
C
H
A
B

S T O R M W A T E R AREA " A "

2-YEAR RETURN PERIOD FOR GUTTER SPREAD

PLAN VIEW

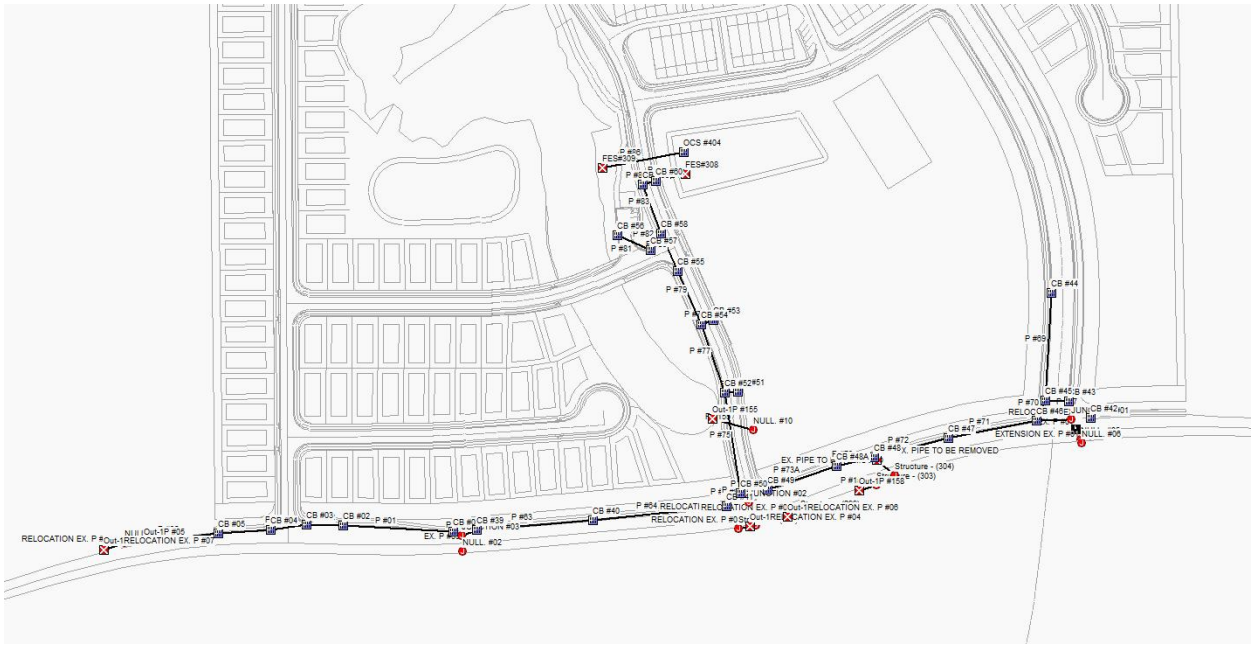
DRAINAGE AREA

SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
1	Sub-CB#06	0.11	CB #06	0.8300	0.33	0.28	0.37	4.000	0 00:05:00
2	Sub-CB#07	0.07	CB #07	0.4900	0.33	0.16	0.14	4.000	0 00:05:00
3	Sub-CB#08	0.10	CB #08	0.4900	0.33	0.16	0.20	4.000	0 00:05:00
4	Sub-CB#09	0.42	CB #09	0.5400	0.33	0.18	0.91	4.000	0 00:05:00
5	Sub-CB#10	0.03	CB #10	0.8300	0.33	0.28	0.10	4.000	0 00:05:00
6	Sub-CB#11	0.28	CB #11	0.5400	0.33	0.18	0.61	4.000	0 00:05:00
7	Sub-CB#12	0.13	CB #12	0.4900	0.33	0.16	0.26	4.000	0 00:05:00
8	Sub-CB#13	0.17	CB #13	0.5400	0.33	0.18	0.37	4.000	0 00:05:00
9	Sub-CB#14	0.14	CB #14	0.5400	0.33	0.18	0.30	4.000	0 00:05:00
10	Sub-CB#15	0.14	CB #15	0.5400	0.33	0.18	0.30	4.000	0 00:05:00
11	Sub-CB#16	0.36	CB #16	0.5900	0.33	0.20	0.85	4.000	0 00:05:00
12	Sub-CB#17	0.36	CB #17	0.5900	0.33	0.20	0.85	4.000	0 00:05:00
13	Sub-CB#18	0.15	CB #18	0.5400	0.33	0.18	0.32	4.000	0 00:05:00
14	Sub-CB#19	0.50	CB #19	0.5400	0.33	0.18	1.08	4.000	0 00:05:00
15	Sub-CB#20	0.40	CB #20	0.5400	0.33	0.18	0.86	4.000	0 00:05:00
16	Sub-CB#21	0.27	CB #21	0.5900	0.33	0.20	0.64	4.000	0 00:05:00
17	Sub-CB#22	0.28	CB #22	0.5900	0.33	0.20	0.66	4.000	0 00:05:00
18	Sub-CB#23	0.18	CB #23	0.5900	0.33	0.20	0.43	4.000	0 00:05:00
19	Sub-CB#24	0.11	CB #24	0.5900	0.33	0.20	0.26	4.000	0 00:05:00
20	Sub-CB#25	0.55	CB #25	0.5900	0.33	0.20	1.30	4.000	0 00:05:00
21	Sub-CB#26	0.32	CB #26	0.5400	0.33	0.18	0.69	4.000	0 00:05:00
22	Sub-CB#27	0.08	CB #27	0.8300	0.33	0.28	0.27	4.000	0 00:05:00
23	Sub-CB#28	0.20	CB #28	0.5900	0.33	0.20	0.47	4.000	0 00:05:00

MODEL INPUT																MODEL OUTPUT											
SN	Element ID	Inlet Location	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Ponded Area (ft^2)	Grate Clogging Factor (%)	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (inches)	Surface Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Total Peak Flow (cfs)	Max Gutter Spread during Peak Flow (ft)	Allowable Spread (ft)	Check	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Maximum Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-inches)	Total Time Flooded (minutes)
1	CB #06	On Grade	281.29	285.75	281.29	0.00	N/A	0.00	0.0596	0.0208	0.0130	0.0600	2.00	1.4400	0.36	0.36	0.00	100.00	0.36	1.65	8.00	YES	285.84	0.10	0 00:05	0.00	0.00
2	CB #07	On Grade	278.94	283.70	278.94	0.00	N/A	0.00	0.0056	0.0208	0.0130	0.0600	2.00	1.4400	0.14	0.14	0.00	100.00	0.14	1.78	8.00	YES	283.81	0.11	0 00:05	0.00	0.00
3	CB #08	On Grade	278.46	283.31	278.46	0.00	N/A	0.00	0.0056	0.0208	0.0130	0.0600	2.00	1.4400	0.20	0.02	0.18	10.22	0.20	2.03	8.00	YES	283.36	0.04	0 00:05	0.00	0.00
4	CB #09	On Grade	277.58	282.52	277.58	0.00	N/A	0.00	0.0596	0.0208	0.0130	0.0600	2.00	1.4400	0.91	0.01	0.90	1.13	0.91	2.31	8.00	YES	282.57	0.05	0 00:05	0.00	0.00
5	CB #10	On Grade	277.14	282.49	277.14	0.00	N/A	0.00	0.0596	0.0208	0.0130	0.0600	2.00	1.4400	0.10	0.11	0.00	100.00	0.11	1.05	8.00	YES	282.55	0.06	0 00:05	0.00	0.00
6	CB #11	On Grade	275.76	280.30	275.76	0.00	N/A	0.00	0.0100	0.0208	0.0130	0.0600	2.00	1.4400	0.60	0.58	0.04	93.95	0.61	4.13	8.00	YES	280.46	0.16	0 00:05	0.00	0.00
7	CB #12	On Grade	275.19	280.32	275.19	0.00	N/A	0.00	0.0100	0.0208	0.0130	0.0600	2.00	1.4400	0.25	0.02	0.24	6.35	0.25	2.01	8.00	YES	280.36	0.04	0 00:05	0.00	0.00
8	CB #13	On Grade	274.49	279.80	274.49	0.00	N/A	0.00	0.0073	0.0208	0.0130	0.0600	2.00	1.4400	0.37	0.02	0.35	6.69	0.37	2.46	8.00	YES	279.85	0.05	0 00:06	0.00	0.00
9	CB #14	On Grade	274.71	279.19	274.71	0.00	N/A	0.00	0.0185	0.0208	0.0130	0.0600	2.00	1.4400	0.30	0.30	0.00	100.00	0.30	1.91	8.00	YES	279.30	0.11	0 00:05	0.00	0.00
10	CB #15	On Grade	273.60	279.18	273.60	0.00	N/A	0.00	0.0185	0.0208	0.0130	0.0600	2.00	1.4400	0.30	0.30	0.00	100.00	0.30	1.92	8.00	YES	279.30	0.12	0 00:06	0.00	0.00
11	CB #16	On Grade	270.89	275.48	270.89	0.00	N/A	0.00	0.0185	0.0208	0.0130	0.0600	2.00	1.4400	0.85	0.79	0.06	92.72	0.85	4.21	8.00	YES	275.65	0.17	0 00:05	0.00	0.00
12	CB #17	On Grade	269.85	275.46	269.85	0.00	N/A	0.00	0.0185	0.0208	0.0130	0.0600	2.00	1.4400	0.85	0.79	0.06	92.73	0.85	4.21	8.00	YES	275.63	0.17	0 00:06	0.00	0.00
13	CB #18	On Grade	268.40	273.89	268.40	0.00	N/A	0.00	0.0185	0.0208	0.0130	0.0600	2.00	1.4400	0.32	0.34	0.00	100.00	0.34	2.00	8.00	YES	274.01	0.12	0 00:06	0.00	0.00
14	CB #19	On Grade	273.92	278.35	273.92	0.00	N/A	0.00	0.0251	0.0208	0.0130	0.0600	2.00	1.4400	1.08	0.99	0.10	90.91	1.09	4.44	8.00	YES	278.52	0.17	0 00:05	0.00	0.00
15	CB #20	On Grade	273.56	278.19	273.56	0.00	N/A	0.00	0.0251	0.0208	0.0130	0.0600	2.00	1.4400	0.86	0.82	0.05	94.69	0.86	3.83	8.00	YES	278.35	0.16	0 00:05	0.00	0.00
16	CB #21	On Grade	270.54	275.00	270.54	0.00	N/A	0.00	0.0165	0.0208	0.0130	0.0600	2.00	1.4400	0.64	0.69	0.04	94.44	0.73	3.93	8.00	YES	275.16	0.16	0 00:05	0.00	0.00
17	CB #22	On Grade	269.93	274.88	269.93	0.00	N/A	0.00	0.0165	0.0208	0.0130	0.0600	2.00	1.4400	0.66	0.64	0.03	95.56	0.67	3.73	8.00	YES	275.03	0.16	0 00:05	0.00	0.00
18	CB #23	On Grade	267.73	273.62	267.73	0.00	N/A	0.00	0.0165	0.0208	0.0130	0.0600	2.00	1.4400	0.42	0.02	0.43	3.64	0.45	2.26	8.00	YES	273.66	0.05	0 00:05	0.00	0.00
19	CB #24	On Grade	266.91	273.37	266.91	0.00	N/A	0.00	0.0165	0.0208	0.0130	0.0600	2.00	1.4400	0.26	0.26	0.00	100.00	0.26	1.86	8.00	YES	273.48	0.11	0 00:05	0.00	0.00
20	CB #25	On Sag	265.90	272.30	265.90	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	1.30	N/A	N/A	N/A	1.30	6.62	8.00	YES	272.52	0.22	0 00:05	0.00	0.00
21	CB #26	On Sag	264.57	273.31	264.57	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.69	N/A	N/A	N/A	0.69	2.71	8.00	YES	273.45	0.13	0 00:06	0.00	0.00
22	CB #27	On Sag	264.24	273.30	264.24	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.27	N/A	N/A	N/A	0.27	1.90	8.00	YES	273.42	0.12	0 00:06	0.00	0.00
23	CB #28	On Grade	263.90	273.41	263.90	0.00	N/A	0.00	0.0185	0.0208	0.0130	0.0600	2.00	1.4400	0.47	0.02	0.46	3.30	0.47	2.26	8.00	YES	273.46	0.05	0 00:06	0.00	0.00

S T O R M W A T E R AREA “ B ”

2-YEAR RETURN PERIOD FOR GUTTER SPREAD



PLAN VIEW

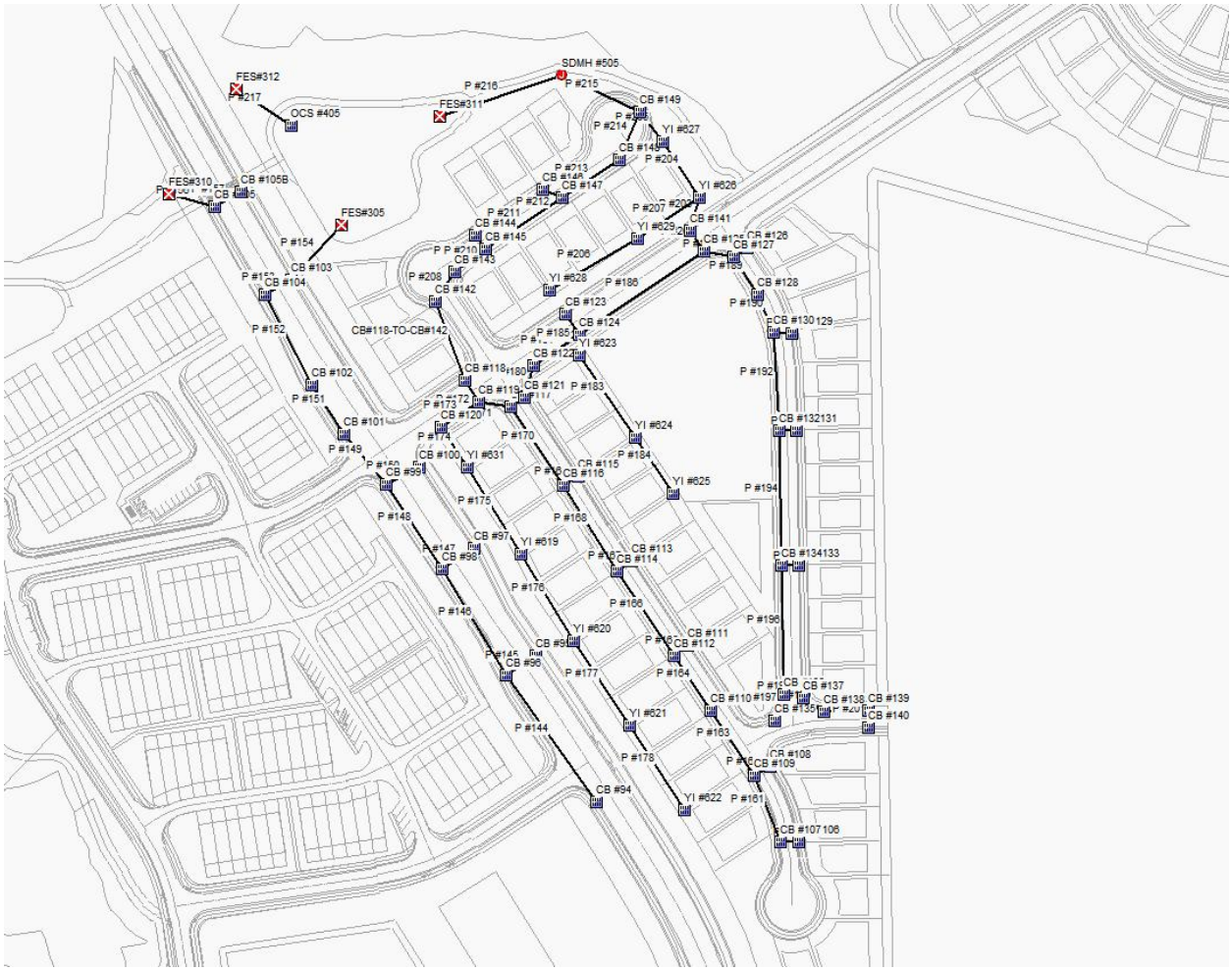
DRAINAGE AREA

SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
1	Sub-CB#01	0.22	CB #01	0.8300	0.33	0.28	0.73	4.000	0 00:05:00
2	Sub-CB#02	0.08	CB #02	0.8300	0.33	0.28	0.27	4.000	0 00:05:00
3	Sub-CB#03	0.02	CB #03	0.8300	0.33	0.28	0.07	4.000	0 00:05:00
4	Sub-CB#04	0.01	CB #04	0.8300	0.33	0.28	0.03	4.000	0 00:05:00
5	Sub-CB#05	0.07	CB #05	0.8300	0.33	0.28	0.23	4.000	0 00:05:00
6	Sub-CB#39	0.09	CB #39	0.8300	0.33	0.28	0.30	4.000	0 00:05:00
7	Sub-CB#40	0.10	CB #40	0.8300	0.33	0.28	0.33	4.000	0 00:05:00
8	Sub-CB#41	0.21	CB #41	0.8300	0.33	0.28	0.70	4.000	0 00:05:00
9	Sub-CB#42	0.25	CB #42	0.8300	0.33	0.28	0.83	4.000	0 00:05:00
10	Sub-CB#43	0.10	CB #43	0.8300	0.33	0.28	0.33	4.000	0 00:05:00
11	Sub-CB#44	0.49	CB #44	0.8300	0.33	0.28	1.63	4.000	0 00:05:00
12	Sub-CB#45	0.41	CB #45	0.8300	0.33	0.28	1.36	4.000	0 00:05:00
13	Sub-CB#46	0.06	CB #46	0.8300	0.33	0.28	0.20	4.000	0 00:05:00
14	Sub-CB#47	0.18	CB #47	0.8300	0.33	0.28	0.60	4.000	0 00:05:00
15	Sub-CB#48	0.17	CB #48	0.8300	0.33	0.28	0.56	4.000	0 00:05:00
16	Sub-CB#48A	0.09	CB #48A	0.8300	0.33	0.28	0.30	4.000	0 00:05:00
17	Sub-CB#49	0.15	CB #49	0.8300	0.33	0.28	0.50	4.000	0 00:05:00
18	Sub-CB#50	0.05	CB #50	0.8300	0.33	0.28	0.17	4.000	0 00:05:00
19	Sub-CB#51	0.17	CB #51	0.8300	0.33	0.28	0.56	4.000	0 00:05:00
20	Sub-CB#52	0.11	CB #52	0.8300	0.33	0.28	0.37	4.000	0 00:05:00
21	Sub-CB#53	0.08	CB #53	0.8300	0.33	0.28	0.27	4.000	0 00:05:00
22	Sub-CB#54	0.08	CB #54	0.8300	0.33	0.28	0.27	4.000	0 00:05:00
23	Sub-CB#55	0.07	CB #55	0.8300	0.33	0.28	0.23	4.000	0 00:05:00
24	Sub-CB#56	0.17	CB #56	0.7900	0.33	0.26	0.54	4.000	0 00:05:00
25	Sub-CB#57	0.01	CB #57	0.7000	0.33	0.23	0.03	4.000	0 00:05:00
26	Sub-CB#58	0.04	CB #58	0.8300	0.33	0.28	0.13	4.000	0 00:05:00
27	Sub-CB#59	0.05	CB #59	0.8300	0.33	0.28	0.17	4.000	0 00:05:00
28	Sub-CB#60	0.18	CB #60	0.8300	0.33	0.28	0.60	4.000	0 00:05:00

MODEL INPUT																MODEL OUTPUT										
SN	Element ID	Inlet Location	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Ponded Area (ft^2)	Grate Clogging Factor (%)	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (inches)	Surface Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Total Peak Flow (cfs)	Max Gutter Spread during Peak Flow (ft)	Allowable Spread (ft)	Check	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Maximum Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-inches)	Total Time Flooded (minutes)
1	CB #01	On Sag	287.77	290.53	287.77	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.73	N/A	N/A	N/A	0.73	2.58	8.00	YES	290.66	0.13	0 00:05	0.00	0.00
2	CB #02	On Sag	286.51	292.17	286.51	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.27	N/A	N/A	N/A	0.27	3.23	8.00	YES	292.31	0.15	0 00:06	0.00	0.00
3	CB #03	On Grade	285.95	292.06	285.95	0.00	N/A	0.00	0.0200	0.0208	0.0130	0.0600	2.00	1.4400	0.07	0.07	0.00	100.00	0.07	1.07	8.00	YES	292.12	0.06	0 00:06	0.00	0.00
4	CB #04	On Sag	285.40	290.70	285.40	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.03	N/A	N/A	N/A	0.03	1.23	8.00	YES	290.81	0.10	0 00:07	0.00	0.00
5	CB #05	On Grade	284.69	288.14	284.69	0.00	N/A	0.00	0.0107	0.0208	0.0130	0.0600	2.00	1.4400	0.23	0.23	0.00	100.00	0.23	1.93	8.00	YES	288.25	0.12	0 00:07	0.00	0.00
6	CB #39	On Sag	286.44	290.67	286.44	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.30	N/A	N/A	N/A	0.30	3.50	8.00	YES	290.82	0.15	0 00:06	0.00	0.00
7	CB #40	On Grade	283.83	288.98	283.83	0.00	N/A	0.00	0.0168	0.0208	0.0130	0.0600	2.00	1.4400	0.33	0.01	0.32	4.06	0.33	2.01	8.00	YES	289.03	0.04	0 00:06	0.00	0.00
8	CB #41	On Grade	281.02	285.23	281.02	0.00	N/A	0.00	0.0092	0.0208	0.0130	0.0600	2.00	1.4400	0.70	0.64	0.06	91.61	0.70	4.57	8.00	YES	285.40	0.17	0 00:05	0.00	0.00
9	CB #42	On Sag	289.66	293.98	289.66	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.83	N/A	N/A	N/A	0.83	3.14	8.00	YES	294.12	0.14	0 00:05	0.00	0.00
10	CB #43	On Grade	289.14	294.14	289.14	0.00	N/A	0.00	0.0400	0.0208	0.0130	0.0600	2.00	1.4400	0.33	0.33	0.00	100.00	0.33	1.72	8.00	YES	294.24	0.10	0 00:05	0.00	0.00
11	CB #44	On Grade	300.49	305.72	300.49	0.00	N/A	0.00	0.0748	0.0208	0.0130	0.0600	2.00	1.4400	1.62	1.51	0.12	92.85	1.62	4.03	8.00	YES	305.88	0.16	0 00:05	0.00	0.00
12	CB #45	On Grade	288.12	293.43	288.12	0.00	N/A	0.00	0.0295	0.0208	0.0130	0.0600	2.00	1.4400	1.36	1.24	0.18	87.25	1.43	4.94	8.00	YES	293.61	0.18	0 00:05	0.00	0.00
13	CB #46	On Grade	287.17	292.83	287.17	0.00	N/A	0.00	0.0120	0.0208	0.0130	0.0600	2.00	1.4400	0.20	0.24	0.00	100.00	0.24	1.90	8.00	YES	292.95	0.11	0 00:05	0.00	0.00
14	CB #47	On Grade	285.25	289.80	285.25	0.00	N/A	0.00	0.0124	0.0208	0.0130	0.0600	2.00	1.4400	0.60	0.57	0.03	95.38	0.60	3.81	8.00	YES	289.95	0.16	0 00:06	0.00	0.00
15	CB #48	On Grade	282.79	287.46	282.79	0.00	N/A	0.00	0.0146	0.0208	0.0130	0.0600	2.00	1.4400	0.56	0.55	0.02	96.92	0.57	3.46	8.00	YES	287.61	0.15	0 00:06	0.00	0.00
16	CB #48A	On Grade	281.46	286.03	281.46	0.00	N/A	0.00	0.0200	0.0208	0.0130	0.0600	2.00	1.4400	0.30	0.30	0.00	100.00	0.30	1.88	8.00	YES	286.15	0.11	0 00:06	0.00	0.00
17	CB #49	On Grade	280.55	284.97	280.55	0.00	N/A	0.00	0.0026	0.0208	0.0130	0.0600	2.00	1.4400	0.50	0.45	0.04	91.34	0.50	5.40	8.00	YES	285.16	0.19	0 00:06	0.00	0.00
18	CB #50	On Grade	279.23	284.44	279.23	0.00	N/A	0.00	0.0208	0.0208	0.0130	0.0600	2.00	1.4400	0.17	0.23	0.00	100.00	0.23	1.69	8.00	YES	284.54	0.10	0 00:07	0.00	0.00
19	CB #51	On Grade	275.08	280.37	275.08	0.00	N/A	0.00	0.0208	0.0208	0.0130	0.0600	2.00	1.4400	0.56	0.02	0.59	2.75	0.60	2.43	8.00	YES	280.42	0.05	0 00:05	0.00	0.00
20	CB #52	On Grade	273.99	280.35	273.99	0.00	N/A	0.00	0.0208	0.0208	0.0130	0.0600	2.00	1.4400	0.36	0.01	0.35	3.41	0.36	2.01	8.00	YES	280.39	0.04	0 00:07	0.00	0.00
21	CB #53	On Grade	272.44	277.39	272.44	0.00	N/A	0.00	0.0208	0.0208	0.0130	0.0600	2.00	1.4400	0.27	0.27	0.00	100.00	0.27	1.80	8.00	YES	277.50	0.11	0 00:05	0.00	0.00
22	CB #54	On Grade	271.00	277.37	271.00	0.00	N/A	0.00	0.0208	0.0208	0.0130	0.0600	2.00	1.4400	0.27	0.27	0.00	100.00	0.27	1.78	8.00	YES	277.48	0.11	0 00:07	0.00	0.00
23	CB #55	On Grade	269.67	275.12	269.67	0.00	N/A	0.00	0.0105	0.0208	0.0130	0.0600	2.00	1.4400	0.23	0.23	0.00	100.00	0.23	1.93	8.00	YES	275.24	0.12	0 00:07	0.00	0.00
24	CB #56	On Sag	267.04	269.95	267.04	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.54	N/A	N/A	N/A	0.54	2.00	8.00	YES	270.07	0.12	0 00:05	0.00	0.00
25	CB #57	On Sag	266.44	274.21	266.44	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.03	N/A	N/A	N/A	0.03	0.80	8.00	YES	274.31	0.10	0 00:07	0.00	0.00
26	CB #58	On Grade	266.05	274.18	266.05	0.00	N/A	0.00	0.0105	0.0208	0.0130	0.0600	2.00	1.4400	0.13	0.13	0.00	100.00	0.13	1.56	8.00	YES	274.28	0.09	0 00:07	0.00	0.00
27	CB #59	On Grade	265.35	273.23	265.35	0.00	N/A	0.00	0.0105	0.0208	0.0130	0.0600	2.00	1.4400	0.17	0.17	0.00	100.00	0.17	1.70	8.00	YES	273.33	0.10	0 00:07	0.00	0.00
28	CB #60	On Grade	265.02	273.20	265.02	0.00	N/A	0.00	0.0105	0.0208	0.0130	0.0600	2.00	1.4400	0.60	0.56	0.03	94.50	0.60	4.01	8.00	YES	273.36	0.16	0 00:07	0.00	0.00

S T O R M W A T E R AREA " C "

2-YEAR RETURN PERIOD FOR GUTTER SPREAD



PLAN VIEW

DRAINAGE AREA

SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
1	Sub-CB#100	0.18	CB #100	0.8300	0.33	0.28	0.60	4.000	0 00:05:00
2	Sub-CB#101	0.04	CB #101	0.8300	0.33	0.28	0.13	4.000	0 00:05:00
3	Sub-CB#102	0.09	CB #102	0.8300	0.33	0.28	0.30	4.000	0 00:05:00
4	Sub-CB#103	0.27	CB #103	0.8300	0.33	0.28	0.90	4.000	0 00:05:00
5	Sub-CB#104	0.14	CB #104	0.8300	0.33	0.28	0.47	4.000	0 00:05:00
6	Sub-CB#105	0.12	CB #105	0.8300	0.33	0.28	0.40	4.000	0 00:05:00
7	Sub-CB#105B	0.14	CB #105B	0.8300	0.33	0.28	0.47	4.000	0 00:05:00
8	Sub-CB#106	0.50	CB #106	0.6900	0.33	0.23	1.38	4.000	0 00:05:00
9	Sub-CB#107	0.42	CB #107	0.5500	0.33	0.18	0.92	4.000	0 00:05:00
10	Sub-CB#108	0.42	CB #108	0.6900	0.33	0.23	1.16	4.000	0 00:05:00
11	Sub-CB#109	0.21	CB #109	0.5000	0.33	0.17	0.42	4.000	0 00:05:00
12	Sub-CB#110	0.19	CB #110	0.5400	0.33	0.18	0.41	4.000	0 00:05:00
13	Sub-CB#111	0.24	CB #111	0.5900	0.33	0.20	0.57	4.000	0 00:05:00
14	Sub-CB#112	0.18	CB #112	0.5400	0.33	0.18	0.39	4.000	0 00:05:00
15	Sub-CB#113	0.24	CB #113	0.5400	0.33	0.18	0.52	4.000	0 00:05:00
16	Sub-CB#114	0.28	CB #114	0.5400	0.33	0.18	0.61	4.000	0 00:05:00
17	Sub-CB#115	0.25	CB #115	0.5400	0.33	0.18	0.54	4.000	0 00:05:00
18	Sub-CB#116	0.27	CB #116	0.5400	0.33	0.18	0.58	4.000	0 00:05:00
19	Sub-CB#117	0.35	CB #117	0.5900	0.33	0.20	0.83	4.000	0 00:05:00
20	Sub-CB#118	0.08	CB #118	0.8300	0.33	0.28	0.27	4.000	0 00:05:00
21	Sub-CB#119	0.05	CB #119	0.8300	0.33	0.28	0.17	4.000	0 00:05:00
22	Sub-CB#120	0.09	CB #120	0.8300	0.33	0.28	0.30	4.000	0 00:05:00
23	Sub-CB#121	0.24	CB #121	0.5400	0.33	0.18	0.52	4.000	0 00:05:00
24	Sub-CB#122	0.05	CB #122	0.8300	0.33	0.28	0.17	4.000	0 00:05:00
25	Sub-CB#123	0.07	CB #123	0.8300	0.33	0.28	0.23	4.000	0 00:05:00
26	Sub-CB#124	0.12	CB #124	0.5900	0.33	0.20	0.28	4.000	0 00:05:00

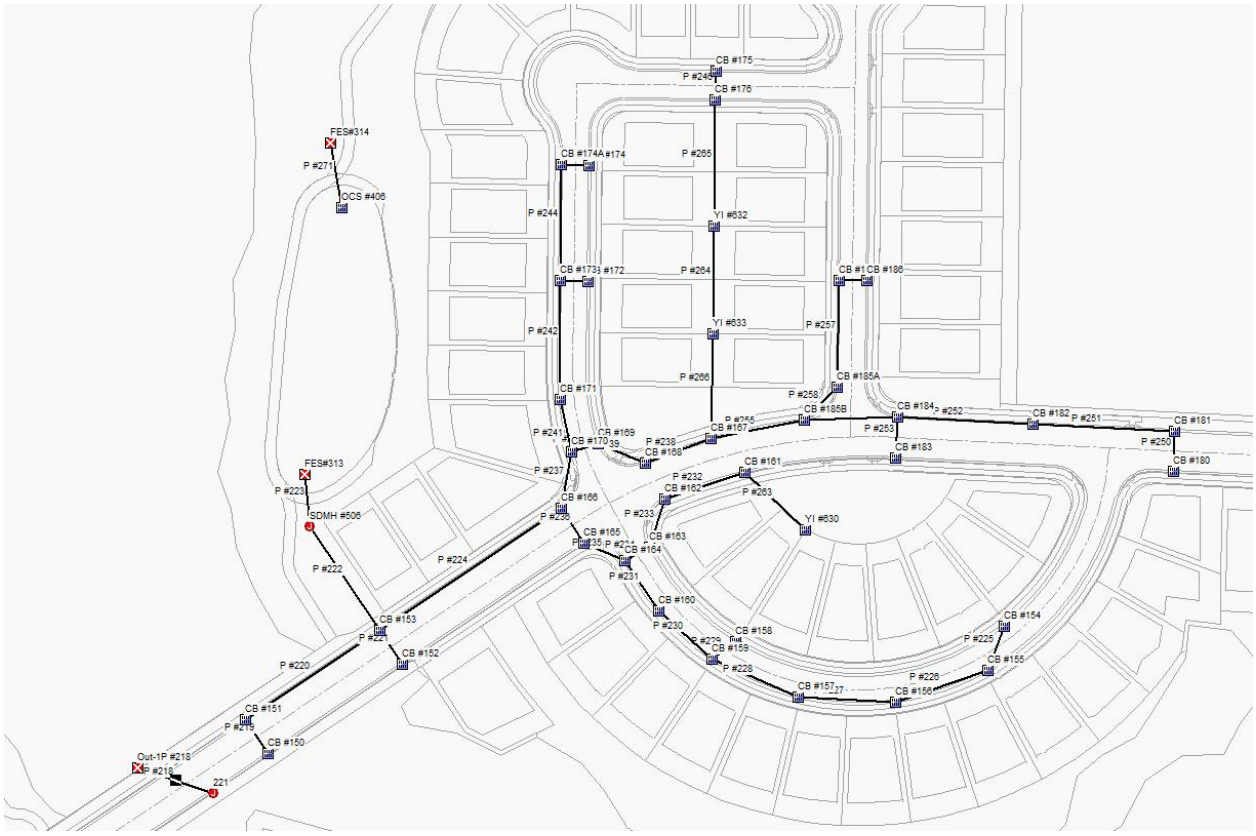
DRAINAGE AREA

SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
27	Sub-CB#125	0.18	CB #125	0.8300	0.33	0.28	0.60	4.000	0 00:05:00
28	Sub-CB#126	0.49	CB #126	0.6400	0.33	0.21	1.25	4.000	0 00:05:00
29	Sub-CB#127	0.09	CB #127	0.8300	0.33	0.28	0.30	4.000	0 00:05:00
30	Sub-CB#128	0.04	CB #128	0.8300	0.33	0.28	0.13	4.000	0 00:05:00
31	Sub-CB#129	0.44	CB #129	0.6900	0.33	0.23	1.21	4.000	0 00:05:00
32	Sub-CB#130	0.08	CB #130	0.8300	0.33	0.28	0.27	4.000	0 00:05:00
33	Sub-CB#131	0.53	CB #131	0.7400	0.33	0.25	1.57	4.000	0 00:05:00
34	Sub-CB#132	0.43	CB #132	0.7900	0.33	0.26	1.36	4.000	0 00:05:00
35	Sub-CB#133	0.52	CB #133	0.6900	0.33	0.23	1.44	4.000	0 00:05:00
36	Sub-CB#134	0.26	CB #134	0.5900	0.33	0.20	0.61	4.000	0 00:05:00
37	Sub-CB#135	0.01	CB #135	0.8300	0.33	0.28	0.03	4.000	0 00:05:00
38	Sub-CB#136	0.03	CB #136	0.8300	0.33	0.28	0.10	4.000	0 00:05:00
39	Sub-CB#137	0.02	CB #137	0.8300	0.33	0.28	0.07	4.000	0 00:05:00
40	Sub-CB#138	0.02	CB #138	0.8300	0.33	0.28	0.07	4.000	0 00:05:00
41	Sub-CB#139	0.10	CB #139	0.5900	0.33	0.20	0.24	4.000	0 00:05:00
42	Sub-CB#140	0.22	CB #140	0.5900	0.33	0.20	0.52	4.000	0 00:05:00
43	Sub-CB#141	0.16	CB #141	0.8300	0.33	0.28	0.53	4.000	0 00:05:00
44	Sub-CB#142	0.24	CB #142	0.5900	0.33	0.20	0.57	4.000	0 00:05:00
45	Sub-CB#143	0.11	CB #143	0.8300	0.33	0.28	0.37	4.000	0 00:05:00
46	Sub-CB#144	0.24	CB #144	0.6400	0.33	0.21	0.61	4.000	0 00:05:00
47	Sub-CB#145	0.09	CB #145	0.5900	0.33	0.20	0.21	4.000	0 00:05:00
48	Sub-CB#146	0.34	CB #146	0.7900	0.33	0.26	1.07	4.000	0 00:05:00
49	Sub-CB#147	0.25	CB #147	0.5900	0.33	0.20	0.59	4.000	0 00:05:00
50	Sub-CB#148	0.17	CB #148	0.5900	0.33	0.20	0.40	4.000	0 00:05:00
51	Sub-CB#149	0.44	CB #149	0.6900	0.33	0.23	1.21	4.000	0 00:05:00
52	Sub-CB#94	0.49	CB #94	0.8300	0.33	0.28	1.63	4.000	0 00:05:00
53	Sub-CB#95	0.23	CB #95	0.8300	0.33	0.28	0.76	4.000	0 00:05:00
54	Sub-CB#96	0.18	CB #96	0.8300	0.33	0.28	0.60	4.000	0 00:05:00
55	Sub-CB#97	0.19	CB #97	0.8300	0.33	0.28	0.63	4.000	0 00:05:00
56	Sub-CB#98	0.16	CB #98	0.8300	0.33	0.28	0.53	4.000	0 00:05:00
57	Sub-CB#99	0.12	CB #99	0.8300	0.33	0.28	0.40	4.000	0 00:05:00

MODEL INPUT																MODEL OUTPUT											
SN	Element ID	Inlet Location	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Ponded Area (ft²)	Grate Clogging Factor (%)	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (inches)	Surface Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Total Peak Flow (cfs)	Max Gutter Spread during Peak Flow (ft)	Allowable Spread (ft)	Check	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Maximum Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-inches)	Total Time Flooded (minutes)
1	CB #100	On Grade	271.95	276.38	271.95	0.00	N/A	0.00	0.0562	0.0208	0.0130	0.0600	2.00	1.4400	0.60	0.01	0.59	1.43	0.60	2.00	8.00	YES	276.43	0.04	0 00:05	0.00	0.00
2	CB #101	On Grade	265.10	270.88	265.10	0.00	N/A	0.00	0.0554	0.0208	0.0130	0.0600	2.00	1.4400	0.13	0.13	0.00	100.00	0.13	1.15	8.00	YES	270.95	0.07	0 00:05	0.00	0.00
3	CB #102	On Grade	259.12	266.43	259.12	0.00	N/A	0.00	0.0520	0.0208	0.0130	0.0600	2.00	1.4400	0.30	0.30	0.00	100.00	0.30	1.57	8.00	YES	266.52	0.09	0 00:06	0.00	0.00
4	CB #103	On Grade	247.75	258.56	247.75	0.00	N/A	0.00	0.0510	0.0208	0.0130	0.0600	2.00	1.4400	0.89	0.01	0.88	1.28	0.89	2.38	8.00	YES	258.61	0.05	0 00:06	0.00	0.00
5	CB #104	On Grade	251.21	259.32	251.21	0.00	N/A	0.00	0.0510	0.0208	0.0130	0.0600	2.00	1.4400	0.46	0.46	0.00	100.00	0.46	1.86	8.00	YES	259.43	0.11	0 00:06	0.00	0.00
6	CB #105	On Grade	242.73	250.80	242.73	0.00	N/A	0.00	0.0445	0.0208	0.0130	0.0600	2.00	1.4400	0.40	0.40	0.00	100.00	0.40	1.80	8.00	YES	250.90	0.11	0 00:05	0.00	0.00
7	CB #105B	On Grade	246.24	250.83	246.24	0.00	N/A	0.00	0.0445	0.0208	0.0130	0.0600	2.00	1.4400	0.46	0.47	0.00	100.00	0.47	1.91	8.00	YES	250.94	0.11	0 00:05	0.00	0.00
8	CB #106	On Grade	302.74	307.18	302.74	0.00	N/A	0.00	0.0496	0.0208	0.0130	0.0600	2.00	1.4400	1.38	1.27	0.11	92.34	1.38	4.14	8.00	YES	307.34	0.16	0 00:05	0.00	0.00
9	CB #107	On Grade	302.36	307.00	302.36	0.00	N/A	0.00	0.0496	0.0208	0.0130	0.0600	2.00	1.4400	0.92	0.01	0.91	1.29	0.92	2.42	8.00	YES	307.05	0.05	0 00:05	0.00	0.00
10	CB #108	On Grade	296.91	301.29	296.91	0.00	N/A	0.00	0.0496	0.0208	0.0130	0.0600	2.00	1.4400	1.16	1.18	0.08	93.73	1.26	3.93	8.00	YES	301.45	0.16	0 00:05	0.00	0.00
11	CB #109	On Grade	296.48	301.42	296.48	0.00	N/A	0.00	0.0496	0.0208	0.0130	0.0600	2.00	1.4400	0.42	0.42	0.00	100.00	0.42	1.80	8.00	YES	301.52	0.11	0 00:05	0.00	0.00
12	CB #110	On Grade	291.23	296.15	291.23	0.00	N/A	0.00	0.0293	0.0208	0.0130	0.0600	2.00	1.4400	0.41	0.41	0.00	100.00	0.41	1.97	8.00	YES	296.27	0.12	0 00:05	0.00	0.00
13	CB #111	On Grade	288.57	293.25	288.57	0.00	N/A	0.00	0.0293	0.0208	0.0130	0.0600	2.00	1.4400	0.57	0.01	0.55	2.25	0.57	2.22	8.00	YES	293.30	0.05	0 00:05	0.00	0.00
14	CB #112	On Grade	288.24	293.25	288.24	0.00	N/A	0.00	0.0293	0.0208	0.0130	0.0600	2.00	1.4400	0.39	0.39	0.00	100.00	0.39	1.93	8.00	YES	293.37	0.12	0 00:05	0.00	0.00
15	CB #113	On Grade	282.61	287.04	282.61	0.00	N/A	0.00	0.0790	0.0208	0.0130	0.0600	2.00	1.4400	0.52	0.52	0.00	100.00	0.52	1.78	8.00	YES	287.15	0.11	0 00:05	0.00	0.00
16	CB #114	On Grade	281.98	287.02	281.98	0.00	N/A	0.00	0.0790	0.0208	0.0130	0.0600	2.00	1.4400	0.60	0.60	0.00	100.00	0.60	1.88	8.00	YES	287.13	0.11	0 00:05	0.00	0.00
17	CB #115	On Grade	271.06	275.36	271.06	0.00	N/A	0.00	0.0790	0.0208	0.0130	0.0600	2.00	1.4400	0.54	0.54	0.00	100.00	0.54	1.81	8.00	YES	275.47	0.11	0 00:05	0.00	0.00
18	CB #116	On Grade	268.89	275.40	268.89	0.00	N/A	0.00	0.0790	0.0208	0.0130	0.0600	2.00	1.4400	0.58	0.58	0.00	100.00	0.58	1.87	8.00	YES	275.51	0.11	0 00:05	0.00	0.00
19	CB #117	On Sag	262.75	269.36	262.75	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.82	N/A	N/A	N/A	0.82	2.92	8.00	YES	269.50	0.14	0 00:06	0.00	0.00
20	CB #118	On Grade	266.54	270.95	266.54	0.00	N/A	0.00	0.0473	0.0208	0.0130	0.0600	2.00	1.4400	0.27	0.27	0.00	100.00	0.27	1.53	8.00	YES	271.05	0.09	0 00:05	0.00	0.00
21	CB #119	On Grade	264.70	270.97	264.70	0.00	N/A	0.00	0.0473	0.0208	0.0130	0.0600	2.00	1.4400	0.17	0.17	0.00	100.00	0.17	1.28	8.00	YES	271.05	0.08	0 00:06	0.00	0.00
22	CB #120	On Grade	265.52	272.51	265.52	0.00	N/A	0.00	0.0126	0.0208	0.0130	0.0600	2.00	1.4400	0.30	0.02	0.28	5.13	0.30	2.04	8.00	YES	272.56	0.04	0 00:06	0.00	0.00
23	CB #121	On Grade	262.25	269.03	262.25	0.00	N/A	0.00	0.0215	0.0208	0.0130	0.0600	2.00	1.4400	0.52	0.02	0.50	2.91	0.52	2.28	8.00	YES	269.08	0.05	0 00:06	0.00	0.00
24	CB #122	On Grade	259.43	266.52	259.43	0.00	N/A	0.00	0.0473	0.0208	0.0130	0.0600	2.00	1.4400	0.17	0.17	0.00	100.00	0.17	1.28	8.00	YES	266.60	0.08	0 00:06	0.00	0.00
25	CB #123	On Grade	258.29	262.73	258.29	0.00	N/A	0.00	0.0473	0.0208	0.0130	0.0600	2.00	1.4400	0.23	0.23	0.00	100.00	0.23	1.45	8.00	YES	262.82	0.09	0 00:05	0.00	0.00
26	CB #124	On Grade	255.97	262.72	255.97	0.00	N/A	0.00	0.0473	0.0208	0.0130	0.0600	2.00	1.4400	0.28	0.28	0.00	100.00	0.28	1.57	8.00	YES	262.81	0.09	0 00:06	0.00	0.00
27	CB #125	On Grade	245.61	252.95	245.61	0.00	N/A	0.00	0.0058	0.0208	0.0130	0.0600	2.00	1.1400	0.60	0.55	0.05	91.38	0.60	4.81	8.00	YES	253.13	0.18	0 00:06	0.00	0.00
28	CB #126	On Grade	248.69	252.92	248.69	0.00	N/A	0.00	0.0268	0.0208	0.0130	0.0600	2.00	1.4400	1.25	1.20	0.18	87.03	1.38	4.99	8.00	YES	253.10	0.18	0 00:05	0.00	0.00
29	CB #127	On Sag	247.38	252.92	247.38	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.30	N/A	N/A	N/A	0.30	1.98	8.00	YES	253.04	0.12	0 00:05	0.00	0.00
30	CB #128	On Grade	249.22	254.72	249.22	0.00	N/A	0.00	0.0268	0.0208	0.0130	0.0600	2.00	1.4400	0.13	0.13	0.00	100.00	0.13	1.31	8.00	YES	254.80	0.08	0 00:05	0.00	0.00
31	CB #129	On Grade	252.12	256.63	252.12	0.00	N/A	0.00	0.0268	0.0208	0.0130	0.0600	2.00	1.4400	1.21	1.16	0.16	88.17	1.31	4.82	8.00	YES	256.80	0.18	0 00:05	0.00	0.00
32	CB #130	On Grade	250.74	256.44	250.74	0.00	N/A	0.00	0.0268	0.0208	0.0130	0.0600	2.00	1.4400	0.27	0.28	0.00	100.00	0.28	1.73	8.00	YES	256.54	0.10	0 00:05	0.00	0.00
33	CB #131	On Grade	259.42	263.54	259.42	0.00	N/A	0.00	0.0756	0.0208	0.0130	0.0600	2.00	1.4400	1.57	1.52	0.12	92.63	1.64	4.07	8.00	YES	263.70	0.16	0 00:05	0.00	0.00
34	CB #132	On Grade	258.13	263.55	258.13	0.00	N/A	0.00	0.0756	0.0208	0.0130	0.0600	2.00	1.4400	1.36	1.30	0.06	95.59	1.36	3.59	8.00	YES	263.70	0.15	0 00:05	0.00	0.00
35	CB #133	On Grade	274.92	278.67	274.92	0.00	N/A	0.00	0.0756	0.0208	0.0130	0.0600	2.00	1.4400	1.43	1.36	0.07	94.80	1.43	3.73	8.00	YES	278.83	0.16	0 00:05	0.00	0.00
36	CB #134	On Grade	273.19	278.63	273.19	0.00	N/A	0.00	0.0756	0.0208	0.0130	0.0600	2.00	1.4400	0.61	0.61	0.00	100.00	0.61	1.92	8.00	YES	278.75	0.12	0 00:05	0.00	0.00
37	CB #135	On Grade	285.38	297.12	285.38	0.00	N/A	0.00	0.0433	0.0208	0.0130	0.0600	2.00	1.4400	0.03	0.03	0.00	100.00	0.03	0.71	8.00	YES	297.16	0.04	0 00:05	0.00	0.00
38	CB #136	On Grade	281.82	293.50	281.82	0.00	N/A	0.00	0.0756	0.0208	0.0130	0.0600	2.00	1.4400	0.10	0.10	0.00	100.00	0.10	0.97	8.00	YES	293.56	0.06	0 00:06	0.00	0.00
39	CB #137	On Grade	282.16	293.68	282.16	0.00	N/A	0.00	0.0756	0.0208	0.0130	0.0600	2.00	1.4400	0.07	0.07	0.00	100.00	0.07	0.83	8.00	YES	293.73	0.05	0 00:06	0.00	0.00
40	CB #138	On Grade	282.55	292.75	282.55	0.00	N/A	0.00	0.0742	0.0208	0.0130	0.0600	2.00	1.4400	0.07	0.07	0.00	100.00	0.07	0.83	8.00	YES	292.80	0.05	0 00:05	0.00	0.00
41	CB #139	On Grade	283.08	287.84	283.08	0.00	N/A	0.00	0.0742	0.0208	0.0130	0.0600	2.00	1.4400	0.24	0.24	0.00	100.00	0.24	1.34	8.00	YES	287.92	0.08	0 00:05	0.00	0.00
42	CB #140	On Grade	283.41	287.84	283.41	0.00	N/A	0.00	0.0742	0.0208	0.0130	0.0600	2.00	1.4400	0.52	0.57	0.00	100.00	0.57	1.87	8.00	YES	287.95	0.11	0 00:05	0.00	0.00
43	CB #141	On Grade	245.22	252.93	245.22	0.00	N/A	0.00	0.0058	0.0208	0.0130	0.0600	2.00	1.4400	0.53	0.49	0.04	93.20	0.53	4.46	8.00	YES	253.10	0.17	0 00:06	0.00	0.00
44	CB #142	On Grade	255.38	260.08	255.38	0.00	N/A	0.00	0.0781	0.0208	0.0130	0.0600	2.00	1.4400	0.57	0.57	0.00	100.00	0.57	1.85	8.00	YES	260.19	0.11	0 00:05	0.00	0.00
45	CB #143	On Grade	249.94	255.56	249.94	0.00	N/A	0.00	0.0781	0.0208	0.0130	0.0600	2.00	1.4400	0.36	0.36	0.00	100.00	0.36	1.57	8.00	YES	255.65	0.09	0 00:05	0.00	0.00
46	CB #144	On Grade	248.13	252.81	248.13	0.00	N/A	0.00	0.0066	0.0208	0.0130	0.0600	2.00	1.4400	0.61	0.56	0.05	91.74	0.61	4.68	8.00	YES	252.99	0.18	0 00:05	0.00	0.00
47	CB #145	On Grade	247.62	252.79	247.62	0.00	N/A	0.00	0.0066	0.0208	0.0130	0.0600	2.00	1.4400	0.21	0.02	0.19	8.95	0.21	2.03	8.00	YES	252.83	0.04	0 00:05	0.00	0.00
48	CB #146	On Grade	246.51	251.23	246.51	0.00	N/A	0.00	0.0066	0.0208	0.0130	0.0600	2.00	1.4400	1.07	0.92	0.21	81.68	1.12	6.45	8.00	YES	251.45	0.21	0 00:05	0.00	0.00
49	CB #147	On Grade	245.42	251.11	245.42	0.00	N/A	0.00	0.0066	0.0208	0.0130	0.0600	2.00	1.4400	0.59	0.55	0.05	92.29	0.59	4.57	8.00	YES	251.29	0.17	0 00:05	0.00	0.00
50	CB #148	On Grade	244.71	250.41	244.71	0.00	N/A	0.00	0.0066	0.0208	0.0130	0.0600	2.00	1.4400	0.40	0.40	0.01	96.78	0.41	3.64	8.00	YES	250.56	0.15	0 00:06	0.00	0.00
51	CB #149	On Sag	242.15	249.97	242.15	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	1.21	N/A	N/A	N/A	1.40	3.50	8.00	YES	250.12	0.15	0 00:06	0.00	0.00
52	CB #94	On Grade	308.82	313.67	308.82	0.00	N/A	0.00	0.0560	0.0208	0.0130	0.0600	2.00	1.4400	1.62	1.47	0.16	90.22	1.62	4.44	8.00	YES	313.84	0.17	0 00:05	0.00	0.00
53	CB #95	On Grade	294.25	298.71	294.25	0.00	N/A	0.00	0.0773	0.0208	0.0130	0.0600	2.00	1.4400	0.76	0.01	0.75	1.04	0.76	2.07	8.00	YES	298.75	0.04	0 00:05	0.00	0.00
54	CB #96	On Grade	293.53	298.22	293.53	0.00	N/A	0.00	0.0773	0.0208	0.0130	0.0600	2.00	1.4400	0.60	0.65	0.00	100.00	0.65	1.95	8.00	YES	298.33	0.12	0 00:05	0.00	0.00
55	CB #97	On Grade	280.74	285.02	280.74	0.00	N/A	0.00	0.0645	0.0208	0.0130	0.0600	2.00	1.4400	0.63	0.63	0.00	100.00	0.63	2.00	8.00	YES	285.14	0.12	0 00:05	0.00	0.00
56	CB #98	On Grade	279.82	285.14	279.82	0.00	N/A	0.00	0.0645	0.0208	0.0130	0.0600	2.00	1.4400	0.53	0.53	0.00	100.00	0.53	1.87	8.00	YES	285.25	0.11	0 00:05	0.00	0.00
57	CB #99	On Grade	270.79	275.93	270.79	0.00	N/A	0.00	0.0562	0.0208	0.0130	0.0600	2.00	1.4400	0.40	0.40	0.00	100.00	0.40	1.72	8.00	YES	276.04	0.10	0 00:05	0.00	0.00

S T O R M W A T E R AREA " D "

2-YEAR RETURN PERIOD FOR GUTTER SPREAD



PLAN VIEW

DRAINAGE AREA

SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
1	Sub-CB#150	0.29	CB #150	0.5900	0.33	0.20	0.68	4.000	0 00:05:00
2	Sub-CB#151	0.25	CB #151	0.8300	0.33	0.28	0.83	4.000	0 00:05:00
3	Sub-CB#152	0.42	CB #152	0.5500	0.33	0.18	0.92	4.000	0 00:05:00
4	Sub-CB#153	0.34	CB #153	0.5400	0.33	0.18	0.73	4.000	0 00:05:00
5	Sub-CB#154	0.27	CB #154	0.5900	0.33	0.20	0.64	4.000	0 00:05:00
6	Sub-CB#155	0.45	CB #155	0.5400	0.33	0.18	0.97	4.000	0 00:05:00
7	Sub-CB#156	0.18	CB #156	0.5400	0.33	0.18	0.39	4.000	0 00:05:00
8	Sub-CB#157	0.20	CB #157	0.5400	0.33	0.18	0.43	4.000	0 00:05:00
9	Sub-CB#158	0.43	CB #158	0.5900	0.33	0.20	1.02	4.000	0 00:05:00
10	Sub-CB#159	0.17	CB #159	0.5900	0.33	0.20	0.40	4.000	0 00:05:00
11	Sub-CB#160	0.13	CB #160	0.5400	0.33	0.18	0.28	4.000	0 00:05:00
12	Sub-CB#161	0.10	CB #161	0.8300	0.33	0.28	0.33	4.000	0 00:05:00
13	Sub-CB#162	0.05	CB #162	0.8300	0.33	0.28	0.17	4.000	0 00:05:00
14	Sub-CB#163	0.26	CB #163	0.5900	0.33	0.20	0.61	4.000	0 00:05:00
15	Sub-CB#164	0.09	CB #164	0.5900	0.33	0.20	0.21	4.000	0 00:05:00
16	Sub-CB#165	0.08	CB #165	0.4900	0.33	0.16	0.16	4.000	0 00:05:00
17	Sub-CB#166	0.10	CB #166	0.5900	0.33	0.20	0.24	4.000	0 00:05:00
18	Sub-CB#167	0.14	CB #167	0.7900	0.33	0.26	0.44	4.000	0 00:05:00
19	Sub-CB#168	0.05	CB #168	0.8300	0.33	0.28	0.17	4.000	0 00:05:00
20	Sub-CB#169	0.41	CB #169	0.5000	0.33	0.17	0.82	4.000	0 00:05:00
21	Sub-CB#170	0.10	CB #170	0.4900	0.33	0.16	0.20	4.000	0 00:05:00
22	Sub-CB#171	0.19	CB #171	0.5400	0.33	0.18	0.41	4.000	0 00:05:00
23	Sub-CB#172	0.18	CB #172	0.5400	0.33	0.18	0.39	4.000	0 00:05:00
24	Sub-CB#173	0.19	CB #173	0.5400	0.33	0.18	0.41	4.000	0 00:05:00
25	Sub-CB#174	0.09	CB #174	0.4900	0.33	0.16	0.18	4.000	0 00:05:00
26	Sub-CB#174A	0.41	CB #174A	0.5900	0.33	0.20	0.97	4.000	0 00:05:00
27	Sub-CB#175	0.41	CB #175	0.5900	0.33	0.20	0.97	4.000	0 00:05:00
28	Sub-CB#176	0.04	CB #176	0.8300	0.33	0.28	0.13	4.000	0 00:05:00
29	Sub-CB#180	0.24	CB #180	0.5900	0.33	0.20	0.57	4.000	0 00:05:00
30	Sub-CB#181	0.10	CB #181	0.8300	0.33	0.28	0.33	4.000	0 00:05:00
31	Sub-CB#182	0.09	CB #182	0.8300	0.33	0.28	0.30	4.000	0 00:05:00
32	Sub-CB#183	0.09	CB #183	0.8300	0.33	0.28	0.30	4.000	0 00:05:00
33	Sub-CB#184	0.09	CB #184	0.8300	0.33	0.28	0.30	4.000	0 00:05:00
34	Sub-CB#185	0.14	CB #185	0.5400	0.33	0.18	0.30	4.000	0 00:05:00
35	Sub-CB#185A	0.01	CB #185A	0.7000	0.33	0.23	0.03	4.000	0 00:05:00
36	Sub-CB#185B	0.05	CB #185B	0.8300	0.33	0.28	0.17	4.000	0 00:05:00
37	Sub-CB#186	0.23	CB #186	0.5400	0.33	0.18	0.50	4.000	0 00:05:00

MODEL INPUT																MODEL OUTPUT											
SN	Element ID	Inlet Location	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Ponded Area (ft²)	Grate Clogging Factor (%)	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (inches)	Surface Peak Flow (cfs	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Total Peak Flow (cfs)	Max Gutter Spread during Peak Flow (ft)	Allowable Spread (ft)	Check	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Maximum Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-inches)	Total Time Flooded (minutes)
1	CB #150	On Grade	246.31	250.75	246.31	0.00	N/A	0.00	0.0058	0.0208	0.0130	0.0600	2.00	1.4400	0.68	0.61	0.07	89.46	0.68	5.17	8.00	YES	250.93	0.19	0 00:05	0.00	0.00
2	CB #151	On Grade	245.92	250.75	245.92	0.00	N/A	0.00	0.0058	0.0208	0.0130	0.0600	2.00	1.4400	0.83	0.72	0.11	86.34	0.83	5.74	8.00	YES	250.95	0.20	0 00:05	0.00	0.00
3	CB #152	On Sag	245.24	249.93	245.24	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.92	N/A	N/A	N/A	0.99	5.39	8.00	YES	250.12	0.19	0 00:06	0.00	0.00
4	CB #153	On Sag	243.02	249.93	243.02	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.73	N/A	N/A	N/A	0.79	2.86	8.00	YES	250.06	0.14	0 00:06	0.00	0.00
5	CB #154	On Grade	263.02	267.45	263.02	0.00	N/A	0.00	0.0607	0.0208	0.0130	0.0600	2.00	1.4400	0.64	0.01	0.63	1.33	0.64	2.03	8.00	YES	267.50	0.04	0 00:05	0.00	0.00
6	CB #155	On Grade	260.83	265.33	260.83	0.00	N/A	0.00	0.0607	0.0208	0.0130	0.0600	2.00	1.4400	0.97	0.01	0.96	1.10	0.97	2.38	8.00	YES	265.38	0.05	0 00:05	0.00	0.00
7	CB #156	On Grade	257.32	261.93	257.32	0.00	N/A	0.00	0.0193	0.0280	0.0130	0.0600	2.00	1.4400	0.39	0.03	0.36	7.65	0.39	2.09	8.00	YES	261.99	0.06	0 00:05	0.00	0.00
8	CB #157	On Grade	255.52	260.25	255.52	0.00	N/A	0.00	0.0193	0.0208	0.0130	0.0600	2.00	1.4400	0.43	0.01	0.42	3.36	0.43	2.17	8.00	YES	260.30	0.05	0 00:05	0.00	0.00
9	CB #158	On Grade	254.24	258.82	254.24	0.00	N/A	0.00	0.0193	0.0208	0.0130	0.0600	2.00	1.4400	1.01	0.91	0.10	90.29	1.01	4.58	8.00	YES	259.00	0.17	0 00:05	0.00	0.00
10	CB #159	On Grade	253.80	258.66	253.80	0.00	N/A	0.00	0.0193	0.0208	0.0130	0.0600	2.00	1.4400	0.40	0.01	0.39	3.44	0.40	2.11	8.00	YES	258.70	0.04	0 00:05	0.00	0.00
11	CB #160	On Grade	251.98	257.43	251.98	0.00	N/A	0.00	0.0193	0.0208	0.0130	0.0600	2.00	1.4400	0.28	0.28	0.00	100.00	0.28	1.84	8.00	YES	257.54	0.11	0 00:05	0.00	0.00
12	CB #161	On Grade	253.23	260.87	253.23	0.00	N/A	0.00	0.0798	0.0208	0.0130	0.0600	2.00	1.4400	0.33	0.33	0.00	100.00	0.33	1.51	8.00	YES	260.96	0.09	0 00:05	0.00	0.00
13	CB #162	On Grade	252.37	257.27	252.37	0.00	N/A	0.00	0.0300	0.0208	0.0130	0.0600	2.00	1.4400	0.17	0.17	0.00	100.00	0.17	1.40	8.00	YES	257.36	0.08	0 00:05	0.00	0.00
14	CB #163	On Sag	251.39	256.10	251.39	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.61	N/A	N/A	N/A	0.71	2.74	8.00	YES	256.23	0.14	0 00:05	0.00	0.00
15	CB #164	On Grade	250.78	256.38	250.78	0.00	N/A	0.00	0.0193	0.0208	0.0130	0.0600	2.00	1.4400	0.21	0.21	0.00	100.00	0.21	1.67	8.00	YES	256.48	0.10	0 00:05	0.00	0.00
16	CB #165	On Grade	248.69	254.77	248.69	0.00	N/A	0.00	0.0300	0.0208	0.0130	0.0600	2.00	1.4400	0.16	0.16	0.00	100.00	0.16	1.36	8.00	YES	254.85	0.08	0 00:06	0.00	0.00
17	CB #166	On Grade	248.06	254.75	248.06	0.00	N/A	0.00	0.0300	0.0208	0.0130	0.0600	2.00	1.4400	0.24	0.24	0.00	100.00	0.24	1.59	8.00	YES	254.85	0.10	0 00:06	0.00	0.00
18	CB #167	On Grade	253.47	259.74	253.47	0.00	N/A	0.00	0.0300	0.0208	0.0130	0.0600	2.00	1.4400	0.44	0.01	0.43	2.46	0.44	2.01	8.00	YES	259.78	0.04	0 00:06	0.00	0.00
19	CB #168	On Grade	252.51	257.31	252.51	0.00	N/A	0.00	0.0300	0.0208	0.0130	0.0600	2.00	1.4400	0.17	0.17	0.00	100.00	0.17	1.40	8.00	YES	257.39	0.08	0 00:06	0.00	0.00
20	CB #169	On Sag	251.72	256.65	251.72	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.82	N/A	N/A	N/A	0.82	2.91	8.00	YES	256.79	0.14	0 00:06	0.00	0.00
21	CB #170	On Grade	251.39	256.66	251.39	0.00	N/A	0.00	0.0247	0.0208	0.0130	0.0600	2.00	1.4400	0.20	0.20	0.00	100.00	0.20	1.54	8.00	YES	256.75	0.09	0 00:06	0.00	0.00
22	CB #171	On Grade	252.72	257.82	252.72	0.00	N/A	0.00	0.0247	0.0208	0.0130	0.0600	2.00	1.4400	0.41	0.01	0.40	2.91	0.41	2.03	8.00	YES	257.86	0.04	0 00:05	0.00	0.00
23	CB #172	On Grade	256.01	260.49	256.01	0.00	N/A	0.00	0.0247	0.0208	0.0130	0.0600	2.00	1.4400	0.39	0.39	0.00	100.00	0.39	1.99	8.00	YES	260.61	0.12	0 00:05	0.00	0.00
24	CB #173	On Grade	255.46	260.49	255.46	0.00	N/A	0.00	0.0247	0.0208	0.0130	0.0600	2.00	1.4400	0.41	0.01	0.43	2.82	0.45	2.10	8.00	YES	260.53	0.04	0 00:05	0.00	0.00
25	CB #174	On Grade	258.69	263.14	258.69	0.00	N/A	0.00	0.0247	0.0208	0.0130	0.0600	2.00	1.4400	0.18	0.18	0.00	100.00	0.18	1.49	8.00	YES	263.23	0.09	0 00:05	0.00	0.00
26	CB #174A	On Grade	258.29	263.14	258.29	0.00	N/A	0.00	0.0247	0.0208	0.0130	0.0600	2.00	1.4400	0.97	0.90	0.07	92.88	0.97	4.13	8.00	YES	263.30	0.16	0 00:05	0.00	0.00
27	CB #175	On Grade	258.56	263.00	258.56	0.00	N/A	0.00	0.0080	0.0208	0.0130	0.0600	2.00	1.4400	0.97	0.82	0.14	85.29	0.97	5.69	8.00	YES	263.20	0.20	0 00:05	0.00	0.00
28	CB #176	On Grade	258.23	263.00	258.23	0.00	N/A	0.00	0.0080	0.0208	0.0130	0.0600	2.00	1.4400	0.13	0.13	0.00	100.00	0.13	1.64	8.00	YES	263.10	0.10	0 00:05	0.00	0.00
29	CB #180	On Grade	277.52	281.96	277.52	0.00	N/A	0.00	0.0516	0.0208	0.0130	0.0600	2.00	1.4400	0.57	0.57	0.00	100.00	0.57	2.00	8.00	YES	282.07	0.12	0 00:05	0.00	0.00
30	CB #181	On Grade	276.75	281.95	276.75	0.00	N/A	0.00	0.0516	0.0208	0.0130	0.0600	2.00	1.4400	0.33	0.33	0.00	100.00	0.33	1.64	8.00	YES	282.05	0.10	0 00:05	0.00	0.00
31	CB #182	On Grade	271.10	276.64	271.10	0.00	N/A	0.00	0.0221	0.0208	0.0130	0.0600	2.00	1.4400	0.30	0.30	0.00	100.00	0.30	1.84	8.00	YES	276.75	0.11	0 00:05	0.00	0.00
32	CB #183	On Grade	267.23	271.66	267.23	0.00	N/A	0.00	0.0798	0.0208	0.0130	0.0600	2.00	1.4400	0.30	0.30	0.00	100.00	0.30	1.45	8.00	YES	271.75	0.09	0 00:05	0.00	0.00
33	CB #184	On Grade	264.96	271.67	264.96	0.00	N/A	0.00	0.0798	0.0208	0.0130	0.0600	2.00	1.4400	0.30	0.30	0.00	100.00	0.30	1.45	8.00	YES	271.75	0.09	0 00:05	0.00	0.00
34	CB #185	On Grade	259.04	263.81	259.04	0.00	N/A	0.00	0.0094	0.0208	0.0130	0.0600	2.00	1.4400	0.30	0.02	0.28	6.21	0.30	2.18	8.00	YES	263.86	0.05	0 00:05	0.00	0.00
35	CB #185A	On Sag	258.35	267.02	258.35	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.03	N/A	N/A	N/A	0.03	1.20	8.00	YES	267.13	0.10	0 00:06	0.00	0.00
36	CB #185B	On Grade	257.93	265.10	257.93	0.00	N/A	0.00	0.0798	0.0208	0.0130	0.0600	2.00	1.4400	0.17	0.17	0.00	100.00	0.17	1.16	8.00	YES	265.17	0.07	0 00:05	0.00	0.00
37	CB #186	On Grade	259.37	263.81	259.37	0.00	N/A	0.00	0.0094	0.0208	0.0130	0.0600	2.00	1.4400	0.50	0.48	0.02	96.26	0.50	3.68	8.00	YES	263.96	0.15	0 00:05	0.00	0.00

S T O R M W A T E R AREA " E "

2-YEAR RETURN PERIOD FOR GUTTER SPREAD

PLAN VIEW

DRAINAGE AREA

SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
1	Sub-CB#177	0.12	CB #177	0.4900	0.33	0.16	0.24	4.000	0 00:05:00
2	Sub-CB#178	0.12	CB #178	0.4900	0.33	0.16	0.24	4.000	0 00:05:00
3	Sub-CB#179	0.26	CB #179	0.5400	0.33	0.18	0.56	4.000	0 00:05:00
4	Sub-CB#187	0.28	CB #187	0.5400	0.33	0.18	0.61	4.000	0 00:05:00
5	Sub-CB#188	0.23	CB #188	0.5400	0.33	0.18	0.50	4.000	0 00:05:00
6	Sub-CB#189	0.48	CB #189	0.5400	0.33	0.18	1.04	4.000	0 00:05:00

MODEL INPUT																MODEL OUTPUT											
SN	Element ID	Inlet Location	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Ponded Area (ft^2)	Grate Clogging Factor (%)	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (inches)	Surface Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Total Peak Flow (cfs)	Max Gutter Spread during Peak Flow (ft)	Allowable Spread (ft)	Check	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Maximum Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-inches)	Total Time Flooded (minutes)
1	CB #177	On Grade	257.89	262.33	257.89	0.00	N/A	0.00	0.0080	0.0208	0.0130	0.0600	2.00	1.4400	0.23	0.02	0.35	6.30	0.37	2.42	8.00	YES	262.38	0.05	0 00:05	0.00	0.00
2	CB #178	On Sag	257.56	262.33	257.56	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.23	N/A	N/A	N/A	0.26	1.90	8.00	YES	262.45	0.12	0 00:05	0.00	0.00
3	CB #179	On Grade	257.16	262.38	257.16	0.00	N/A	0.00	0.0094	0.0208	0.0130	0.0600	2.00	1.4400	0.56	0.54	0.03	94.37	0.58	4.07	8.00	YES	262.55	0.16	0 00:05	0.00	0.00
4	CB #187	On Grade	256.83	262.30	256.83	0.00	N/A	0.00	0.0094	0.0208	0.0130	0.0600	2.00	1.4400	0.60	0.57	0.04	93.60	0.61	4.21	8.00	YES	262.47	0.17	0 00:05	0.00	0.00
5	CB #188	On Grade	255.34	261.03	255.34	0.00	N/A	0.00	0.0129	0.0208	0.0130	0.0600	2.00	1.4400	0.50	0.02	0.48	4.04	0.50	2.48	8.00	YES	261.08	0.05	0 00:05	0.00	0.00
6	CB #189	On Sag	254.37	260.40	254.37	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	1.04	N/A	N/A	N/A	1.05	5.64	8.00	YES	260.60	0.20	0 00:06	0.00	0.00

S T O R M W A T E R AREA " F "

2-YEAR RETURN PERIOD FOR GUTTER SPREAD

PLAN VIEW

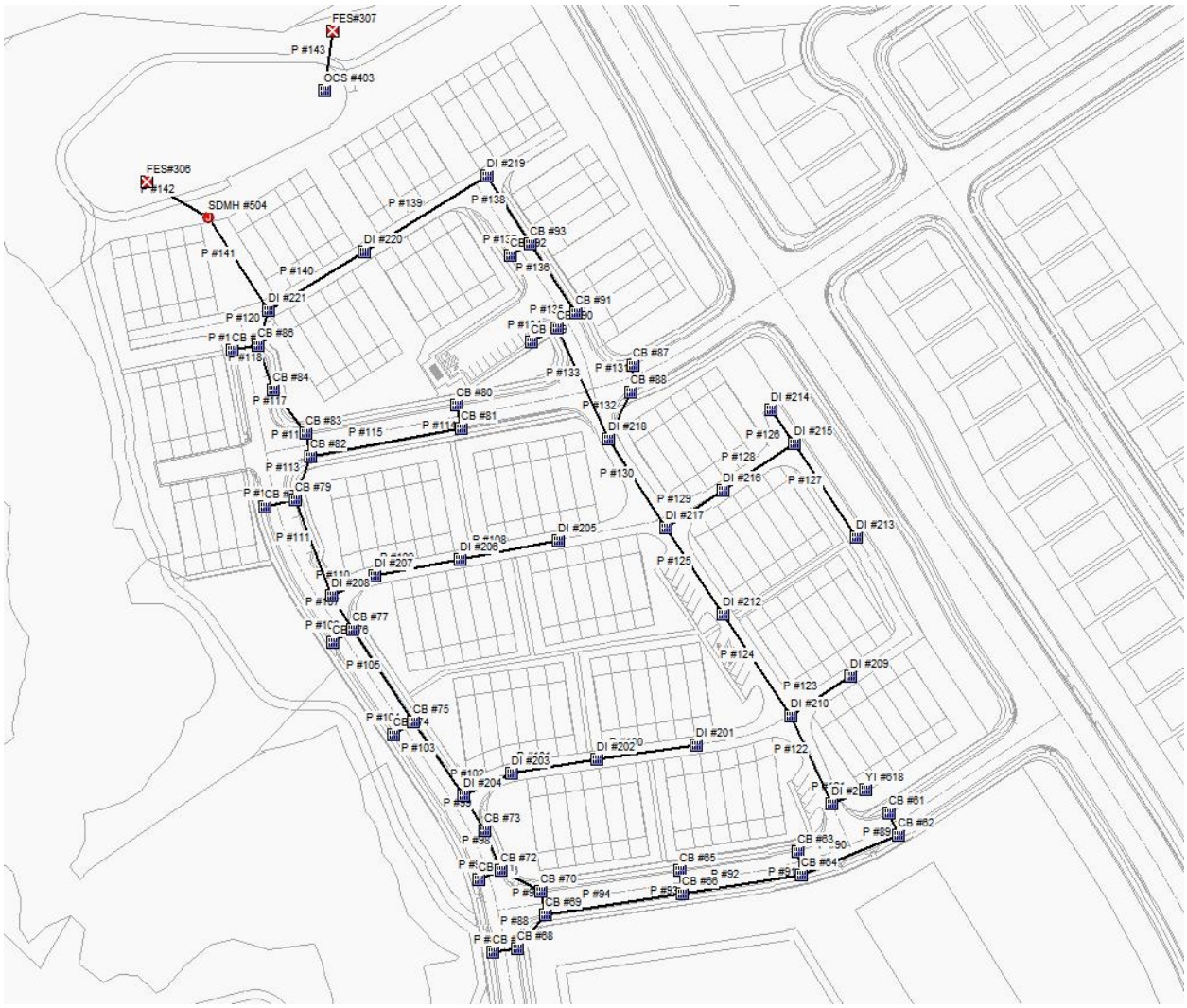
DRAINAGE AREA

SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
1	Sub-CB#105A	0.09	CB #105A	0.8300	0.33	0.28	0.30	4.000	0 00:05:00
2	Sub-CB#190	0.50	CB #190	0.6900	0.33	0.23	1.38	4.000	0 00:05:00
3	Sub-CB#191	0.04	CB #191	0.8300	0.33	0.28	0.13	4.000	0 00:05:00
4	Sub-CB#192	0.16	CB #192	0.5400	0.33	0.18	0.35	4.000	0 00:05:00
5	Sub-CB#193	0.59	CB #193	0.7900	0.33	0.26	1.86	4.000	0 00:05:00
6	Sub-CB#194	0.13	CB #194	0.5400	0.33	0.18	0.28	4.000	0 00:05:00
7	Sub-CB#195	0.21	CB #195	0.5400	0.33	0.18	0.45	4.000	0 00:05:00
8	Sub-CB#196	0.68	CB #196	0.6900	0.33	0.23	1.88	4.000	0 00:05:00
9	Sub-CB#197	0.20	CB #197	0.5400	0.33	0.18	0.43	4.000	0 00:05:00
10	Sub-CB#198	0.07	CB #198	0.4900	0.33	0.16	0.14	4.000	0 00:05:00
11	Sub-CB#199	0.07	CB #199	0.4900	0.33	0.16	0.14	4.000	0 00:05:00
12	Sub-CB#199A	1.39	CB #199A	0.6900	0.33	0.23	3.84	4.000	0 00:05:00
13	Sub-CB#200	0.05	CB #200	0.4900	0.33	0.16	0.10	4.000	0 00:05:00
14	Sub-CB#200A	0.47	CB #200A	0.5900	0.33	0.20	1.11	4.000	0 00:05:00
15	Sub-CB#201	0.12	CB #201	0.4900	0.33	0.16	0.24	4.000	0 00:05:00
16	Sub-CB#202	0.14	CB #202	0.4900	0.33	0.16	0.27	4.000	0 00:05:00
17	Sub-CB#203	0.34	CB #203	0.5500	0.33	0.18	0.75	4.000	0 00:05:00
18	Sub-CB#204	0.34	CB #204	0.6900	0.33	0.23	0.94	4.000	0 00:05:00
19	Sub-CB#205	0.05	CB #205	0.8300	0.33	0.28	0.17	4.000	0 00:05:00
20	Sub-CB#206	0.19	CB #206	0.5900	0.33	0.20	0.45	4.000	0 00:05:00
21	Sub-CB#207	0.10	CB #207	0.4400	0.33	0.15	0.18	4.000	0 00:05:00
22	Sub-CB#208	0.27	CB #208	0.5400	0.33	0.18	0.58	4.000	0 00:05:00
23	Sub-CB#208A	0.26	CB #208A	0.5400	0.33	0.18	0.56	4.000	0 00:05:00
24	Sub-CB#209	0.15	CB #209	0.4900	0.33	0.16	0.29	4.000	0 00:05:00
25	Sub-CB#210	0.18	CB #210	0.5400	0.33	0.18	0.39	4.000	0 00:05:00
26	Sub-CB#211	0.03	CB #211	0.8300	0.33	0.28	0.10	4.000	0 00:05:00
27	Sub-CB#212	0.14	CB #212	0.8300	0.33	0.28	0.47	4.000	0 00:05:00
28	Sub-CB#213	0.10	CB #213	0.8300	0.33	0.28	0.33	4.000	0 00:05:00
29	Sub-CB#214	0.31	CB #214	0.6900	0.33	0.23	0.86	4.000	0 00:05:00
30	Sub-CB#215	0.06	CB #215	0.8300	0.33	0.28	0.20	4.000	0 00:05:00
31	Sub-CB#216	0.04	CB #216	0.8300	0.33	0.28	0.13	4.000	0 00:05:00
32	Sub-CB#217	0.03	CB #217	0.8300	0.33	0.28	0.10	4.000	0 00:05:00
33	Sub-CB#218	0.27	CB #218	0.5400	0.33	0.18	0.58	4.000	0 00:05:00
34	Sub-CB#219	0.32	CB #219	0.5900	0.33	0.20	0.76	4.000	0 00:05:00
35	Sub-CB#220	0.26	CB #220	0.5400	0.33	0.18	0.56	4.000	0 00:05:00
36	Sub-CB#221	0.26	CB #221	0.5400	0.33	0.18	0.56	4.000	0 00:05:00
37	Sub-CB#222	0.26	CB #222	0.5400	0.33	0.18	0.56	4.000	0 00:05:00
38	Sub-CB#223	0.30	CB #223	0.5400	0.33	0.18	0.65	4.000	0 00:05:00
39	Sub-CB#224	0.09	CB #224	0.4300	0.33	0.14	0.16	4.000	0 00:05:00
40	Sub-CB#225	0.20	CB #225	0.5400	0.33	0.18	0.43	4.000	0 00:05:00
41	Sub-CB#226	0.44	CB #226	0.8300	0.33	0.28	1.46	4.000	0 00:05:00
42	Sub-CB#227	0.28	CB #227	0.8300	0.33	0.28	0.93	4.000	0 00:05:00
43	Sub-CB#228	0.11	CB #228	0.7800	0.33	0.26	0.34	4.000	0 00:05:00
44	Sub-CB#229	0.26	CB #229	0.8300	0.33	0.28	0.86	4.000	0 00:05:00
45	Sub-CB#230	0.43	CB #230	0.7800	0.33	0.26	1.34	4.000	0 00:05:00
46	Sub-CB#231	0.04	CB #231	0.8300	0.33	0.28	0.13	4.000	0 00:05:00
47	Sub-CB#232	0.11	CB #232	0.5900	0.33	0.20	0.26	4.000	0 00:05:00

MODEL INPUT																MODEL OUTPUT											
SN	Element ID	Inlet Location	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Ponded Area (ft^2)	Grate Clogging Factor (%)	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (inches)	Surface Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Total Peak Flow (cfs)	Max Gutter Spread during Peak Flow (ft)	Allowable Spread (ft)	Check	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Maximum Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-inches)	Total Time Flooded (minutes)
1	CB #105A	On Sag	236.92	241.11	236.92	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.30	N/A	N/A	N/A	0.34	0.03	8.00	YES	241.19	0.08	0 00:06	0.00	0.00
2	CB #190	On Grade	253.33	257.52	253.33	0.00	N/A	0.00	0.0070	0.0208	0.0130	0.0600	2.00	1.4400	1.38	1.14	0.35	76.79	1.49	7.27	8.00	YES	257.75	0.23	0 00:05	0.00	0.00
3	CB #191	On Grade	253.00	257.60	253.00	0.00	N/A	0.00	0.0070	0.0208	0.0130	0.0600	2.00	1.4400	0.13	0.13	0.00	100.00	0.13	1.69	8.00	YES	257.70	0.10	0 00:05	0.00	0.00
4	CB #192	On Grade	252.16	256.62	252.16	0.00	N/A	0.00	0.0070	0.0208	0.0130	0.0600	2.00	1.4400	0.35	0.02	0.32	7.07	0.35	2.42	8.00	YES	256.67	0.05	0 00:06	0.00	0.00
5	CB #193	On Grade	251.24	255.68	251.24	0.00	N/A	0.00	0.0361	0.0208	0.0130	0.0600	2.00	1.4400	1.86	1.74	0.42	80.40	2.16	5.85	8.00	YES	255.88	0.20	0 00:05	0.00	0.00
6	CB #194	On Grade	250.71	255.68	250.71	0.00	N/A	0.00	0.0070	0.0208	0.0130	0.0600	2.00	1.4400	0.28	0.02	0.27	7.62	0.29	2.26	8.00	YES	255.72	0.05	0 00:05	0.00	0.00
7	CB #195	On Grade	247.19	252.10	247.19	0.00	N/A	0.00	0.0361	0.0208	0.0130	0.0600	2.00	1.4400	0.45	0.46	0.00	100.00	0.46	1.97	8.00	YES	252.22	0.12	0 00:05	0.00	0.00
8	CB #196	On Sag	245.90	250.34	245.90	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	1.87	N/A	N/A	N/A	2.17	3.85	8.00	YES	250.50	0.16	0 00:05	0.00	0.00
9	CB #197	On Sag	245.28	250.34	245.28	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.43	N/A	N/A	N/A	0.43	0.71	8.00	YES	250.43	0.09	0 00:05	0.00	0.00
10	CB #198	On Grade	244.86	250.70	244.86	0.00	N/A	0.00	0.0071	0.0208	0.0130	0.0600	2.00	1.4400	0.14	0.14	0.00	100.00	0.14	1.70	8.00	YES	250.80	0.10	0 00:06	0.00	0.00
11	CB #199	On Grade	244.41	250.71	244.41	0.00	N/A	0.00	0.0071	0.0208	0.0130	0.0600	2.00	1.4400	0.14	0.14	0.00	100.00	0.14	1.70	8.00	YES	250.81	0.10	0 00:06	0.00	0.00
12	CB #199A	On Sag	239.39	244.42	239.39	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	3.83	N/A	N/A	N/A	3.83	4.61	8.00	YES	244.60	0.17	0 00:05	0.00	0.00
13	CB #200	On Grade	247.51	250.73	247.51	0.00	N/A	0.00	0.0054	0.0208	0.0130	0.0600	2.00	1.4400	0.10	0.10	0.00	100.00	0.10	1.58	8.00	YES	250.83	0.10	0 00:05	0.00	0.00
14	CB #200A	On Sag	239.06	244.42	239.06	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	1.11	N/A	N/A	N/A	1.11	3.36	8.00	YES	244.57	0.15	0 00:05	0.00	0.00
15	CB #201	On Grade	243.75	250.73	243.75	0.00	N/A	0.00	0.0054	0.0208	0.0130	0.0600	2.00	1.4400	0.23	0.02	0.21	9.64	0.23	2.19	8.00	YES	250.78	0.05	0 00:06	0.00	0.00
16	CB #202	On Grade	243.13	250.29	243.13	0.00	N/A	0.00	0.0054	0.0208	0.0130	0.0600	2.00	1.4400	0.27	0.03	0.25	9.09	0.28	2.34	8.00	YES	250.34	0.05	0 00:06	0.00	0.00
17	CB #203	On Grade	244.04	249.87	244.04	0.00	N/A	0.00	0.0054	0.0208	0.0130	0.0600	2.00	1.4400	0.75	0.66	0.09	87.69	0.75	5.54	8.00	YES	250.07	0.19	0 00:05	0.00	0.00
18	CB #204	On Grade	242.51	249.86	242.51	0.00	N/A	0.00	0.0054	0.0208	0.0130	0.0600	2.00	1.4400	0.94	0.79	0.15	83.95	0.94	6.24	8.00	YES	250.07	0.21	0 00:07	0.00	0.00
19	CB #205	On Grade	242.01	249.53	242.01	0.00	N/A	0.00	0.0054	0.0208	0.0130	0.0600	2.00	1.4400	0.17	0.02	0.24	9.14	0.27	2.30	8.00	YES	249.58	0.05	0 00:07	0.00	0.00
20	CB #206	On Grade	243.86	249.15	243.86	0.00	N/A	0.00	0.0054	0.0208	0.0130	0.0600	2.00	1.4400	0.45	0.50	0.04	92.72	0.54	4.58	8.00	YES	249.33	0.17	0 00:05	0.00	0.00
21	CB #207	On Grade	241.42	249.12	241.42	0.00	N/A	0.00	0.0054	0.0208	0.0130	0.0600	2.00	1.4400	0.18	0.18	0.00	100.00	0.18	1.97	8.00	YES	249.24	0.12	0 00:07	0.00	0.00
22	CB #208	On Grade	241.00	248.17	241.00	0.00	N/A	0.00	0.0054	0.0280	0.0130	0.0600	2.00	1.4400	0.58	0.57	0.04	93.07	0.61	4.28	8.00	YES	248.36	0.18	0 00:06	0.00	0.00
23	CB #208A	On Grade	240.44	248.29	240.44	0.00	N/A	0.00	0.0054	0.0208	0.0130	0.0600	2.00	1.4400	0.56	0.52	0.04	92.14	0.56	4.70	8.00	YES	248.46	0.18	0 00:07	0.00	0.00
24	CB #209	On Sag	240.48	247.82	240.48	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.29	N/A	N/A	N/A	0.31	2.01	8.00	YES	247.94	0.12	0 00:06	0.00	0.00
25	CB #210	On Grade	239.74	247.76	239.74	0.00	N/A	0.00	0.0054	0.0208	0.0130	0.0600	2.00	1.4400	0.39	0.39	0.02	96.24	0.40	3.83	8.00	YES	247.92	0.16	0 00:07	0.00	0.00
26	CB #211	On Grade	261.63	266.07	261.63	0.00	N/A	0.00	0.0469	0.0208	0.0130	0.0600	2.00	1.4400	0.10	0.10	0.00	100.00	0.10	1.06	8.00	YES	266.13	0.06	0 00:05	0.00	0.00
27	CB #212	On Grade	257.48	262.12	257.48	0.00	N/A	0.00	0.0466	0.0208	0.0130	0.0600	2.00	1.4400	0.46	0.46	0.00	100.00	0.46	1.88	8.00	YES	262.23	0.11	0 00:05	0.00	0.00
28	CB #213	On Grade	255.05	259.94	255.05	0.00	N/A	0.00	0.0070	0.0208	0.0130	0.0600	2.00	1.4400	0.33	0.02	0.31	7.18	0.33	2.38	8.00	YES	259.99	0.05	0 00:05	0.00	0.00
29	CB #214	On Grade	253.38	258.71	253.38	0.00	N/A	0.00	0.0070	0.0208	0.0130	0.0600	2.00	1.4400	0.85	0.75	0.12	86.46	0.86	5.59	8.00	YES	258.90	0.19	0 00:05	0.00	0.00
30	CB #215	On Grade	253.05	258.68	253.05	0.00	N/A	0.00	0.0070	0.0208	0.0130	0.0600	2.00	1.4400	0.20	0.20	0.00	100.00	0.20	1.96	8.00	YES	258.80	0.12	0 00:05	0.00	0.00
31	CB #216	On Grade	252.52	257.61	252.52	0.00	N/A	0.00	0.0209	0.0208	0.0130	0.0600	2.00	1.4400	0.13	0.14	0.00	100.00	0.14	1.38	8.00	YES	257.69	0.08	0 00:06	0.00	0.00
32	CB #217	On Grade	253.14	257.50	253.14	0.00	N/A	0.00	0.0209	0.0208	0.0130	0.0600	2.00	1.4400	0.10	0.10	0.00	100.00	0.10	1.24	8.00	YES	257.57	0.07	0 00:05	0.00	0.00
33	CB #218	On Grade	249.46	254.42	249.46	0.00	N/A	0.00	0.0209	0.0208	0.0130	0.0600	2.00	1.4400	0.58	0.02	0.57	2.77	0.58	2.39	8.00	YES	254.47	0.05	0 00:05	0.00	0.00
34	CB #219	On Grade	248.30	254.40	248.30	0.00	N/A	0.00	0.0209	0.0208	0.0130	0.0600	2.00	1.4400	0.75	0.72	0.03	95.37	0.75	3.73	8.00	YES	254.56	0.16	0 00:05	0.00	0.00
35	CB #220	On Grade	245.35	251.62	245.35	0.00	N/A	0.00	0.0209	0.0208	0.0130	0.0600	2.00	1.4400	0.56	0.02	0.55	2.83	0.57	2.37	8.00	YES	251.67	0.05	0 00:05	0.00	0.00
36	CB #221	On Grade	244.37	251.61	244.37	0.00	N/A	0.00	0.0209	0.0208	0.0130	0.0600	2.00	1.4400	0.56	0.02	0.55	2.84	0.57	2.37	8.00	YES	251.66	0.05	0 00:06	0.00	0.00
37	CB #222	On Grade	243.56	248.57	243.56	0.00	N/A	0.00	0.0209	0.0208	0.0130	0.0600	2.00	1.4400	0.56	0.02	0.55	2.84	0.57	2.37	8.00	YES	248.62	0.05	0 00:05	0.00	0.00
38	CB #223	On Grade	242.40	248.10	242.40	0.00	N/A	0.00	0.0209	0.0208	0.0130	0.0600	2.00	1.4400	0.65	0.02	0.63	2.64	0.65	2.48	8.00	YES	248.15	0.05	0 00:06	0.00	0.00
39	CB #224	On Grade	240.23	246.27	240.23	0.00	N/A	0.00	0.0492	0.0208	0.0130	0.0600	2.00	1.4400	0.15	0.16	0.00	100.00	0.16	1.26	8.00	YES	246.35	0.08	0 00:06	0.00	0.00
40	CB #225	On Grade	238.90	246.24	238.90	0.00	N/A	0.00	0.0492	0.0208	0.0130	0.0600	2.00	1.4400	0.43	0.44	0.00	100.00	0.44	1.83	8.00	YES	246.35	0.11	0 00:07	0.00	0.00
41	CB #226	On Grade	245.74	248.99	245.74	0.00	N/A	0.00	0.0385	0.0208	0.0130	0.0600	2.00	1.4400	1.46	1.30	0.16	88.93	1.46	4.66	8.00	YES	249.17	0.18	0 00:05	0.00	0.00
42	CB #227	On Grade	240.55	244.35	240.55	0.00	N/A	0.00	0.0270	0.0208	0.0130	0.0600	2.00	1.4400	0.93	0.92	0.07	92.99	0.99	4.11	8.00	YES	244.51	0.16	0 00:05	0.00	0.00
43	CB #228	On Grade	236.42	239.80	236.42	0.00	N/A	0.00	0.0297	0.0208	0.0130	0.0600	2.00	1.4400	0.34	0.34	0.00	100.00	0.34	1.84	8.00	YES	239.91	0.11	0 00:06	0.00	0.00
44	CB #229	On Grade	237.32	241.23	237.32	0.00	N/A	0.00	0.0159	0.0208	0.0130	0.0600	2.00	1.4400	0.86	0.79	0.07	91.44	0.87	4.44	8.00	YES	241.41	0.17	0 00:05	0.00	0.00
45	CB #230	On Sag	235.68	238.41	235.68	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	1.34	N/A	N/A	N/A	1.34	3.47	8.00	YES	238.57	0.15	0 00:06	0.00	0.00
46	CB #231	On Grade	238.46	242.69	238.46	0.00	N/A	0.00	0.0492	0.0208	0.0130	0.0600	2.00	1.4400	0.13	0.13	0.00	100.00	0.13	1.17	8.00	YES	242.76	0.07	0 00:07	0.00	0.00
47	CB #232	On Grade	238.10	243.54	238.10	0.00	N/A	0.00	0.0492	0.0208	0.0130	0.0600	2.00	1.4400	0.26	0.26	0.00	100.00	0.26	1.50	8.00	YES	243.63	0.09	0 00:07	0.00	0.00

S T O R M W A T E R AREA " G "

2-YEAR RETURN PERIOD FOR GUTTER SPREAD



PLAN VIEW

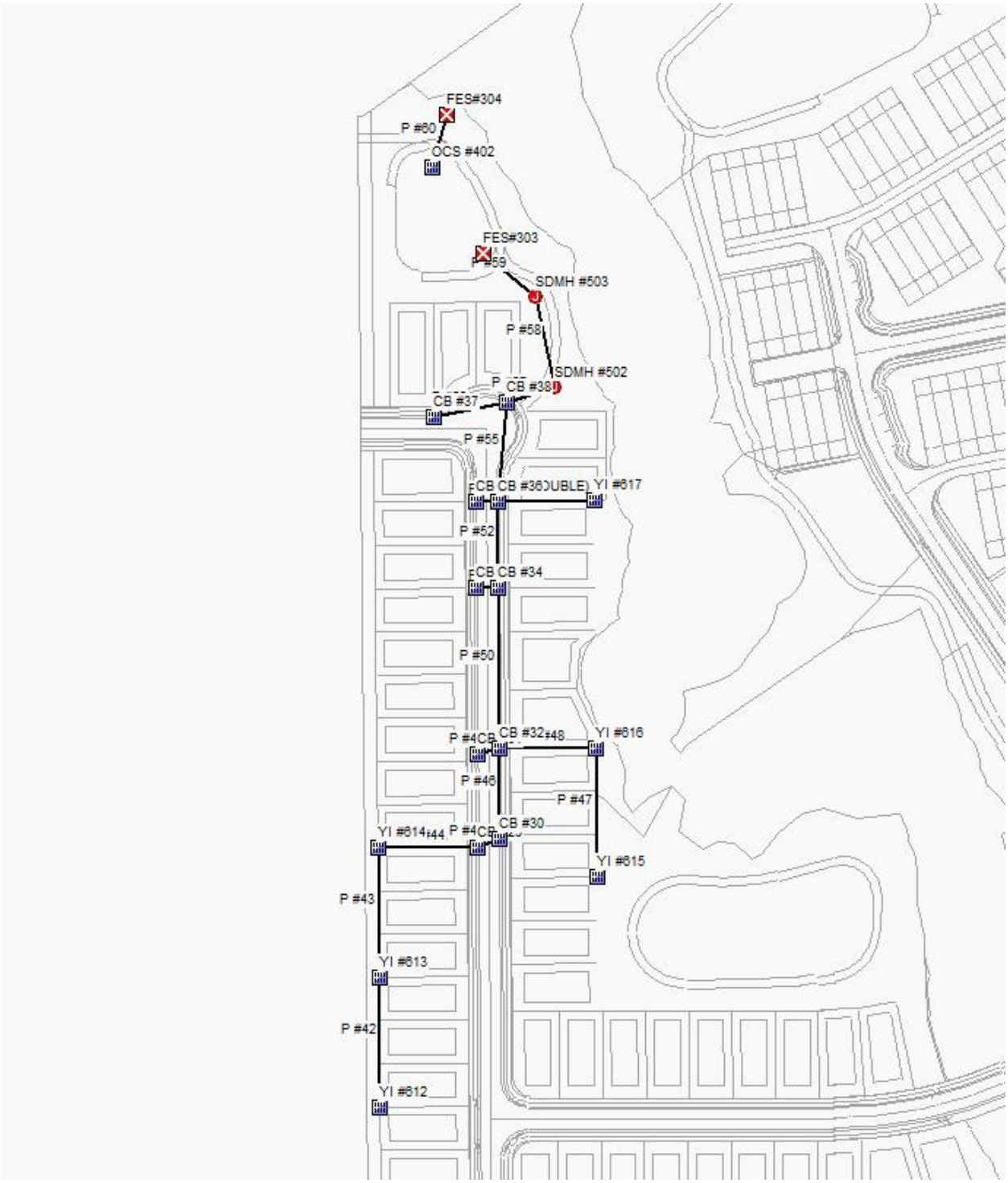
DRAINAGE AREA

SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
1	Sub-CB#61	0.16	CB #61	0.8300	0.33	0.28	0.53	4.000	0 00:05:00
2	Sub-CB#62	0.19	CB #62	0.8300	0.33	0.28	0.63	4.000	0 00:05:00
3	Sub-CB#63	0.06	CB #63	0.8300	0.33	0.28	0.20	4.000	0 00:05:00
4	Sub-CB#64	0.12	CB #64	0.7800	0.33	0.26	0.37	4.000	0 00:05:00
5	Sub-CB#65	0.10	CB #65	0.8300	0.33	0.28	0.33	4.000	0 00:05:00
6	Sub-CB#66	0.07	CB #66	0.8300	0.33	0.28	0.23	4.000	0 00:05:00
7	Sub-CB#67	0.07	CB #67	0.8300	0.33	0.28	0.23	4.000	0 00:05:00
8	Sub-CB#68	0.11	CB #68	0.8300	0.33	0.28	0.37	4.000	0 00:05:00
9	Sub-CB#69	0.09	CB #69	0.8300	0.33	0.28	0.30	4.000	0 00:05:00
10	Sub-CB#70	0.09	CB #70	0.8300	0.33	0.28	0.30	4.000	0 00:05:00
11	Sub-CB#71	0.05	CB #71	0.8300	0.33	0.28	0.17	4.000	0 00:05:00
12	Sub-CB#72	0.40	CB #72	0.5900	0.33	0.20	0.94	4.000	0 00:05:00
13	Sub-CB#73	0.06	CB #73	0.8300	0.33	0.28	0.20	4.000	0 00:05:00
14	Sub-CB#74	0.11	CB #74	0.8300	0.33	0.28	0.37	4.000	0 00:05:00
15	Sub-CB#75	0.08	CB #75	0.8300	0.33	0.28	0.27	4.000	0 00:05:00
16	Sub-CB#76	0.07	CB #76	0.8300	0.33	0.28	0.23	4.000	0 00:05:00
17	Sub-CB#77	0.27	CB #77	0.5900	0.33	0.20	0.64	4.000	0 00:05:00
18	Sub-CB#78	0.09	CB #78	0.8300	0.33	0.28	0.30	4.000	0 00:05:00
19	Sub-CB#79	0.25	CB #79	0.5900	0.33	0.20	0.59	4.000	0 00:05:00
20	Sub-CB#80	0.10	CB #80	0.8300	0.33	0.28	0.33	4.000	0 00:05:00
21	Sub-CB#81	0.40	CB #81	0.5900	0.33	0.20	0.94	4.000	0 00:05:00
22	Sub-CB#82	0.39	CB #82	0.5900	0.33	0.20	0.92	4.000	0 00:05:00
23	Sub-CB#83	0.11	CB #83	0.8300	0.33	0.28	0.37	4.000	0 00:05:00
24	Sub-CB#84	0.05	CB #84	0.8300	0.33	0.28	0.17	4.000	0 00:05:00
25	Sub-CB#85	0.10	CB #85	0.8300	0.33	0.28	0.33	4.000	0 00:05:00
26	Sub-CB#86	0.04	CB #86	0.8300	0.33	0.28	0.13	4.000	0 00:05:00
27	Sub-CB#87	0.09	CB #87	0.8300	0.33	0.28	0.30	4.000	0 00:05:00
28	Sub-CB#88	0.38	CB #88	0.5900	0.33	0.20	0.90	4.000	0 00:05:00
29	Sub-CB#89	0.14	CB #89	0.8300	0.33	0.28	0.47	4.000	0 00:05:00
30	Sub-CB#90	0.01	CB #90	0.8300	0.33	0.28	0.03	4.000	0 00:05:00
31	Sub-CB#91	0.12	CB #91	0.5900	0.33	0.20	0.28	4.000	0 00:05:00
32	Sub-CB#92	0.12	CB #92	0.8300	0.33	0.28	0.40	4.000	0 00:05:00
33	Sub-CB#93	0.16	CB #93	0.5400	0.33	0.18	0.35	4.000	0 00:05:00

MODEL INPUT																MODEL OUTPUT										
SN	Element ID	Inlet Location	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Ponded Area (ft^2)	Grate Clogging Factor (%)	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (inches)	Surface Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Total Peak Flow (cfs)	Max Gutter Spread during Peak Flow (ft)	Allowable Spread (ft)	Check	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Maximum Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-inches)	Total Time Flooded (minutes)
1	CB #61	On Grade	291.99	296.43	291.99	0.00	N/A	0.00	0.0747	0.0208	0.0130	0.0600	2.00	1.4400	0.53	0.53	0.00	100.00	0.53	1.82	8.00	YES	296.54	0.11	0 00:05	0.00	0.00
2	CB #62	On Grade	291.18	296.14	291.18	0.00	N/A	0.00	0.0747	0.0208	0.0130	0.0600	2.00	1.4400	0.63	0.63	0.00	100.00	0.63	1.94	8.00	YES	296.26	0.12	0 00:05	0.00	0.00
3	CB #63	On Grade	283.66	288.09	283.66	0.00	N/A	0.00	0.0747	0.0208	0.0130	0.0600	2.00	1.4400	0.20	0.20	0.00	100.00	0.20	1.26	8.00	YES	288.17	0.08	0 00:05	0.00	0.00
4	CB #64	On Grade	283.13	287.96	283.13	0.00	N/A	0.00	0.0747	0.0208	0.0130	0.0600	2.00	1.4400	0.37	0.37	0.00	100.00	0.37	1.59	8.00	YES	288.05	0.10	0 00:05	0.00	0.00
5	CB #65	On Grade	274.09	278.58	274.09	0.00	N/A	0.00	0.0747	0.0208	0.0130	0.0600	2.00	1.4400	0.33	0.33	0.00	100.00	0.33	1.52	8.00	YES	278.68	0.09	0 00:05	0.00	0.00
6	CB #66	On Grade	273.15	278.50	273.15	0.00	N/A	0.00	0.0747	0.0208	0.0130	0.0600	2.00	1.4400	0.23	0.23	0.00	100.00	0.23	1.34	8.00	YES	278.58	0.08	0 00:05	0.00	0.00
7	CB #67	On Grade	268.28	271.99	268.28	0.00	N/A	0.00	0.0105	0.0208	0.0130	0.0600	2.00	1.4400	0.23	0.24	0.00	100.00	0.24	1.94	8.00	YES	272.10	0.12	0 00:05	0.00	0.00
8	CB #68	On Sag	267.35	271.99	267.35	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.36	N/A	N/A	N/A	0.40	0.47	8.00	YES	272.08	0.09	0 00:06	0.00	0.00
9	CB #69	On Grade	266.91	272.74	266.91	0.00	N/A	0.00	0.0248	0.0208	0.0130	0.0600	2.00	1.4400	0.30	0.30	0.00	100.00	0.30	1.81	8.00	YES	272.84	0.11	0 00:05	0.00	0.00
10	CB #70	On Grade	266.58	272.71	266.58	0.00	N/A	0.00	0.0248	0.0208	0.0130	0.0600	2.00	1.4400	0.30	0.30	0.00	100.00	0.30	1.81	8.00	YES	272.82	0.11	0 00:06	0.00	0.00
11	CB #71	On Grade	266.68	271.12	266.68	0.00	N/A	0.00	0.0105	0.0208	0.0130	0.0600	2.00	1.4400	0.17	0.17	0.00	100.00	0.17	1.72	8.00	YES	271.22	0.10	0 00:05	0.00	0.00
12	CB #72	On Grade	265.69	271.40	265.69	0.00	N/A	0.00	0.0105	0.0208	0.0130	0.0600	2.00	1.4400	0.94	0.82	0.12	87.38	0.94	5.21	8.00	YES	271.58	0.19	0 00:06	0.00	0.00
13	CB #73	On Sag	265.12	270.61	265.12	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.20	N/A	N/A	N/A	0.31	3.61	8.00	YES	270.76	0.15	0 00:06	0.00	0.00
14	CB #74	On Grade	261.91	266.44	261.91	0.00	N/A	0.00	0.0634	0.0208	0.0130	0.0600	2.00	1.4400	0.36	0.37	0.00	100.00	0.37	1.64	8.00	YES	266.54	0.10	0 00:05	0.00	0.00
15	CB #75	On Grade	260.99	266.44	260.99	0.00	N/A	0.00	0.0634	0.0208	0.0130	0.0600	2.00	1.4400	0.27	0.27	0.00	100.00	0.27	1.45	8.00	YES	266.53	0.09	0 00:06	0.00	0.00
16	CB #76	On Grade	254.46	258.87	254.46	0.00	N/A	0.00	0.0634	0.0208	0.0130	0.0600	2.00	1.4400	0.23	0.23	0.00	100.00	0.23	1.38	8.00	YES	258.96	0.08	0 00:05	0.00	0.00
17	CB #77	On Grade	253.44	258.98	253.44	0.00	N/A	0.00	0.0634	0.0208	0.0130	0.0600	2.00	1.4400	0.64	0.01	0.63	1.28	0.64	2.01	8.00	YES	259.02	0.04	0 00:06	0.00	0.00
18	CB #78	On Grade	246.80	251.32	246.80	0.00	N/A	0.00	0.0208	0.0208	0.0130	0.0600	2.00	1.4400	0.30	0.30	0.00	100.00	0.30	1.87	8.00	YES	251.43	0.11	0 00:05	0.00	0.00
19	CB #79	On Sag	245.02	251.30	245.02	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.59	N/A	N/A	N/A	0.59	1.74	8.00	YES	251.41	0.11	0 00:06	0.00	0.00
20	CB #80	On Grade	250.87	255.33	250.87	0.00	N/A	0.00	0.0234	0.0208	0.0130	0.0600	2.00	1.4400	0.33	0.33	0.00	100.00	0.33	1.90	8.00	YES	255.44	0.11	0 00:05	0.00	0.00
21	CB #81	On Grade	250.54	255.32	250.54	0.00	N/A	0.00	0.0234	0.0208	0.0130	0.0600	2.00	1.4400	0.94	0.88	0.07	92.91	0.94	4.13	8.00	YES	255.48	0.16	0 00:05	0.00	0.00
22	CB #82	On Grade	244.57	251.40	244.57	0.00	N/A	0.00	0.0234	0.0208	0.0130	0.0600	2.00	1.4400	0.92	0.87	0.07	92.94	0.94	4.13	8.00	YES	251.56	0.16	0 00:06	0.00	0.00
23	CB #83	On Grade	244.24	251.39	244.24	0.00	N/A	0.00	0.0234	0.0208	0.0130	0.0600	2.00	1.4400	0.36	0.36	0.00	100.00	0.36	1.97	8.00	YES	251.51	0.12	0 00:06	0.00	0.00
24	CB #84	On Grade	242.39	248.77	242.39	0.00	N/A	0.00	0.0208	0.0208	0.0130	0.0600	2.00	1.4400	0.17	0.17	0.00	100.00	0.17	1.49	8.00	YES	248.86	0.09	0 00:06	0.00	0.00
25	CB #85	On Grade	243.66	248.12	243.66	0.00	N/A	0.00	0.0208	0.0208	0.0130	0.0600	2.00	1.4400	0.33	0.33	0.00	100.00	0.33	1.94	8.00	YES	248.24	0.12	0 00:05	0.00	0.00
26	CB #86	On Sag	241.61	248.01	241.61	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.13	N/A	N/A	N/A	0.13	2.04	8.00	YES	248.13	0.12	0 00:06	0.00	0.00
27	CB #87	On Grade	260.31	265.02	260.31	0.00	N/A	0.00	0.0554	0.0208	0.0130	0.0600	2.00	1.4400	0.30	0.30	0.00	100.00	0.30	1.55	8.00	YES	265.12	0.09	0 00:05	0.00	0.00
28	CB #88	On Grade	259.25	264.47	259.25	0.00	N/A	0.00	0.0554	0.0208	0.0130	0.0600	2.00	1.4400	0.90	0.01	0.88	1.21	0.90	2.34	8.00	YES	264.51	0.05	0 00:05	0.00	0.00
29	CB #89	On Sag	252.76	257.05	252.76	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.46	N/A	N/A	N/A	0.46	1.47	8.00	YES	257.16	0.11	0 00:05	0.00	0.00
30	CB #90	On Grade	251.70	259.01	251.70	0.00	N/A	0.00	0.0402	0.0208	0.0130	0.0600	2.00	1.4400	0.03	0.03	0.00	100.00	0.03	0.72	8.00	YES	259.05	0.04	0 00:05	0.00	0.00
31	CB #91	On Grade	251.37	258.88	251.37	0.00	N/A	0.00	0.0402	0.0208	0.0130	0.0600	2.00	1.4400	0.28	0.28	0.00	100.00	0.28	1.62	8.00	YES	258.98	0.10	0 00:06	0.00	0.00
32	CB #92	On Grade	250.82	255.26	250.82	0.00	N/A	0.00	0.0402	0.0208	0.0130	0.0600	2.00	1.4400	0.40	0.40	0.00	100.00	0.40	1.84	8.00	YES	255.37	0.11	0 00:05	0.00	0.00
33	CB #93	On Grade	249.73	255.31	249.73	0.00	N/A	0.00	0.0402	0.0208	0.0130	0.0600	2.00	1.4400	0.35	0.35	0.00	100.00	0.35	1.74	8.00	YES	255.41	0.10	0 00:06	0.00	0.00

S T O R M W A T E R AREA " H "

2-YEAR RETURN PERIOD FOR GUTTER SPREAD



PLAN VIEW

DRAINAGE AREA

SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
1	Sub-CB#29	0.64	CB #29	0.5400	0.33	0.18	1.38	4.000	0 00:05:00
2	Sub-CB#30	0.57	CB #30	0.5900	0.33	0.20	1.35	4.000	0 00:05:00
3	Sub-CB#31	0.37	CB #31	0.6400	0.33	0.21	0.95	4.000	0 00:05:00
4	Sub-CB#32	0.18	CB #32	0.5400	0.33	0.18	0.39	4.000	0 00:05:00
5	Sub-CB#33	0.46	CB #33	0.6900	0.33	0.23	1.27	4.000	0 00:05:00
6	Sub-CB#34	0.34	CB #34	0.5400	0.33	0.18	0.73	4.000	0 00:05:00
7	Sub-CB#35(DOUBLE)	0.63	CB #35 (DOUBLE)	0.6900	0.33	0.23	1.74	4.000	0 00:05:00
8	Sub-CB#36	0.39	CB #36	0.5900	0.33	0.20	0.92	4.000	0 00:05:00
9	Sub-CB#37	0.20	CB #37	0.7900	0.33	0.26	0.63	4.000	0 00:05:00
10	Sub-CB#38	0.33	CB #38	0.7900	0.33	0.26	1.04	4.000	0 00:05:00

MODEL INPUT																MODEL OUTPUT											
SN	Element ID	Inlet Location	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Ponded Area (ft^2)	Grate Clogging Factor (%)	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (inches)	Surface Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Peak Flow (cfs)	Max Gutter Spread during Peak Flow (ft)	Allowable Spread (ft)	Check	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Maximum Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-inches)	Total Time Flooded (minutes)
1	CB #29	On Grade	268.40	273.77	268.40	0.00	N/A	0.00	0.0503	0.0208	0.0130	0.0600	2.00	1.4400	1.38	1.27	0.11	92.37	1.38	4.13	8.00	YES	273.93	0.16	0 00:05	0.00	0.00
2	CB #30	On Grade	268.06	273.48	268.06	0.00	N/A	0.00	0.0503	0.0208	0.0130	0.0600	2.00	1.4400	1.34	1.24	0.10	92.59	1.34	4.10	8.00	YES	273.64	0.16	0 00:05	0.00	0.00
3	CB #31	On Grade	266.15	270.77	266.15	0.00	N/A	0.00	0.0561	0.0208	0.0130	0.0600	2.00	1.4400	0.95	0.01	0.93	1.17	0.95	2.38	8.00	YES	270.82	0.05	0 00:05	0.00	0.00
4	CB #32	On Grade	264.94	270.59	264.94	0.00	N/A	0.00	0.0503	0.0208	0.0130	0.0600	2.00	1.4400	0.39	0.42	0.00	100.00	0.42	1.79	8.00	YES	270.69	0.11	0 00:05	0.00	0.00
5	CB #33	On Grade	264.25	268.69	264.25	0.00	N/A	0.00	0.0561	0.0208	0.0130	0.0600	2.00	1.4400	1.27	1.21	0.07	94.32	1.28	3.82	8.00	YES	268.85	0.16	0 00:05	0.00	0.00
6	CB #34	On Grade	262.76	268.69	262.76	0.00	N/A	0.00	0.0503	0.0208	0.0130	0.0600	2.00	1.4400	0.73	0.01	0.72	1.41	0.73	2.21	8.00	YES	268.73	0.05	0 00:05	0.00	0.00
7	CB #35 (DOUBLE)	On Sag	263.68	268.12	263.68	0.00	12.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	1.74	N/A	N/A	N/A	1.74	6.30	8.00	YES	268.33	0.21	0 00:05	0.00	0.00
8	CB #36	On Sag	262.06	268.12	262.06	0.00	6.00	0.00	N/A	0.0208	0.0130	0.0600	2.00	1.4400	0.92	N/A	N/A	N/A	0.93	5.11	8.00	YES	268.31	0.18	0 00:06	0.00	0.00
9	CB #37	On Grade	265.92	271.15	265.92	0.00	N/A	0.00	0.0443	0.0208	0.0130	0.0600	2.00	1.4400	0.63	0.01	0.62	1.64	0.63	2.14	8.00	YES	271.19	0.04	0 00:05	0.00	0.00
10	CB #38	On Grade	260.50	269.71	260.50	0.00	N/A	0.00	0.0503	0.0208	0.0130	0.0600	2.00	1.4400	1.04	1.00	0.04	96.44	1.04	3.45	8.00	YES	269.86	0.15	0 00:06	0.00	0.00

4.2. 10 Year Storm Pipe Analysis & HGL Reports

10-YEAR RETURN PERIOD

STORM PIPE ANALYSIS

RESERVE @ MITCHELL MILL

5109 MITCHELL MILL ROAD, TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

PREPARED BY: TOM TAYLOR
STRONG ROCK ENGINEERING GROUP, PLLC | COMPANY LICENSE # P-2166
305 CHURCH AT NORTH HILLS STREET, SUITE 1110 RALEIGH, NC 27609 |
INFORMATION@STRONGROCKGROUP.COM

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TABLE OF CONTENTS

Narrative……3

Model Inputs & Model Outputs

Drainage Map……..4

Rainfall Data, The Table Report & Profile HGL Outputs ……..7

Stormwater Area A……..……11

Stormwater Area B ……..…19

Stormwater Area C..…… 28

Stormwater Area D..……..…..43

Stormwater Area E……..……..……..53

Stormwater Area F ……..58

Stormwater Area G ……..72

Stormwater Area H ……..87

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STUDY DESCRIPTION.

This study utilized:

- Auto Desk Storm and Sanitary Analysis Program for analyzing and designing stormwater sewers.

Calculation requirements:

- Auto Desk Storm and Sanitary Analysis Program for analyzing and designing stormwater sewers.
- The program used to model the storm sewer system utilizes the rational method for the quantity of stormwater input.

The results of the storm sewer analysis shows that the 10-year event stays within the pipe and the 25-year event does not top the structures.

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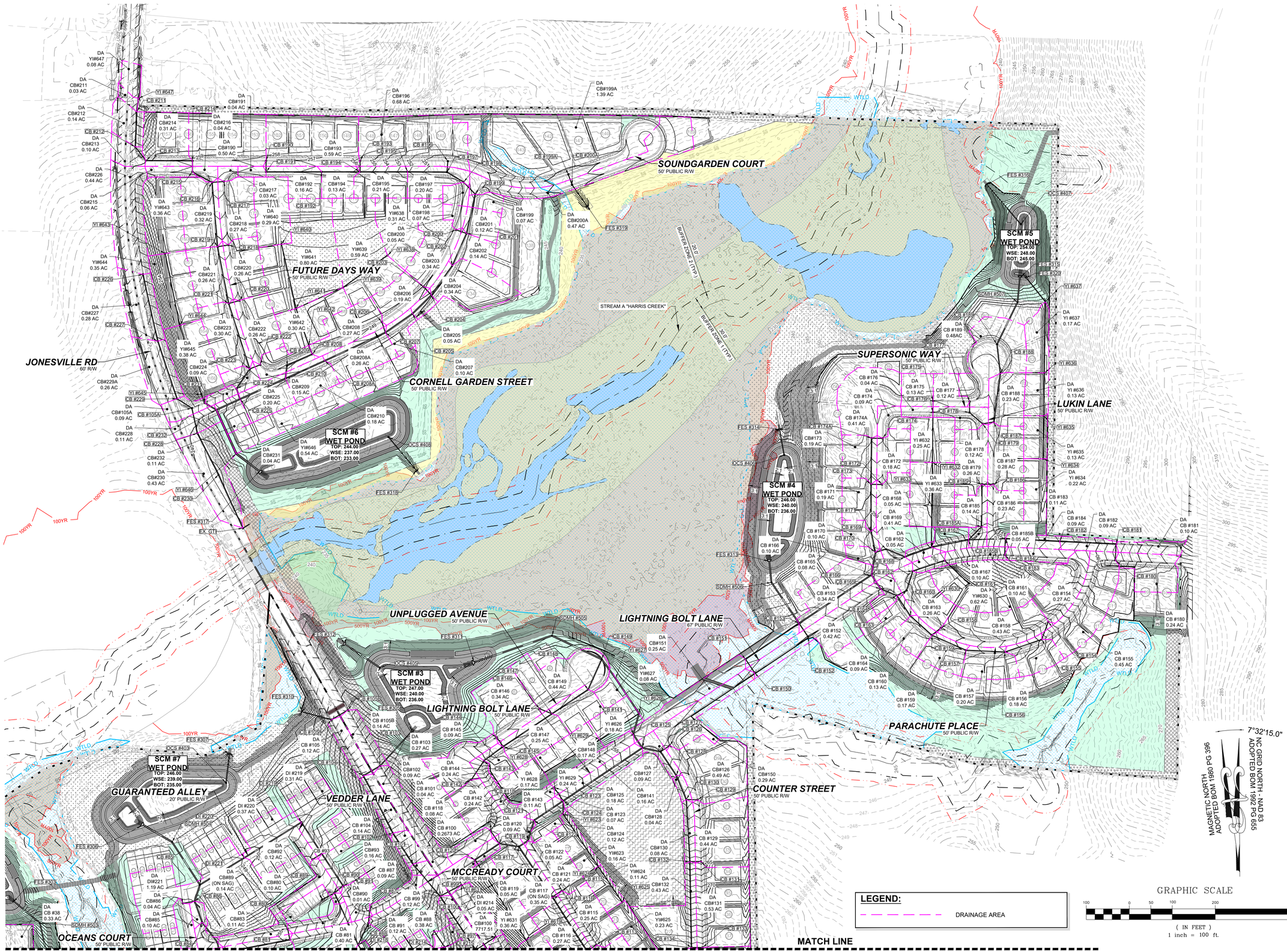
DRAINAGE MAP

PROGRESS PLOT DATE: 11/01/2024



No.	REVISIONS	DATE	BY
01	PRELIMINARY SUBDIVISION PLAT PSP-23-03	08/01/2023	SREG
02	TOWN OF ROLESVILLE PSP-23-05	12/05/2023	SREG
03	TOWN OF ROLESVILLE PSP V3-23-03	03/01/2024	SREG
04	TOWN OF ROLESVILLE PSP V4-23-03	06/04/2024	SREG
05	TOWN OF ROLESVILLE PSP V5-23-03	09/03/2024	SREG
06	TOWN OF ROLESVILLE PSP V6-23-03	11/01/2024	SREG

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036225 ENGINEER JOSHUA W. LAMBERT

STRONGROCK

ENGINEERING GROUP

STRONG ROCK ENGINEERING GROUP, PLLC | COMPANY LICENSE # P-2166
305 CHURCH AT NORTH HILLS STREET, SUITE 1110 RALEIGH, NC 27609 | INFORMATION@STRONGROCKGROUP.COM

STRONG ROCK PROJECT	PSP-23-03
NOT FOR CONSTRUCTION	
SCALE	AS SHOWN
DESIGNED BY	JWL
DRAWN BY	SRG
CHECKED BY	JWL

RESERVE @ MITCHELL MILL
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

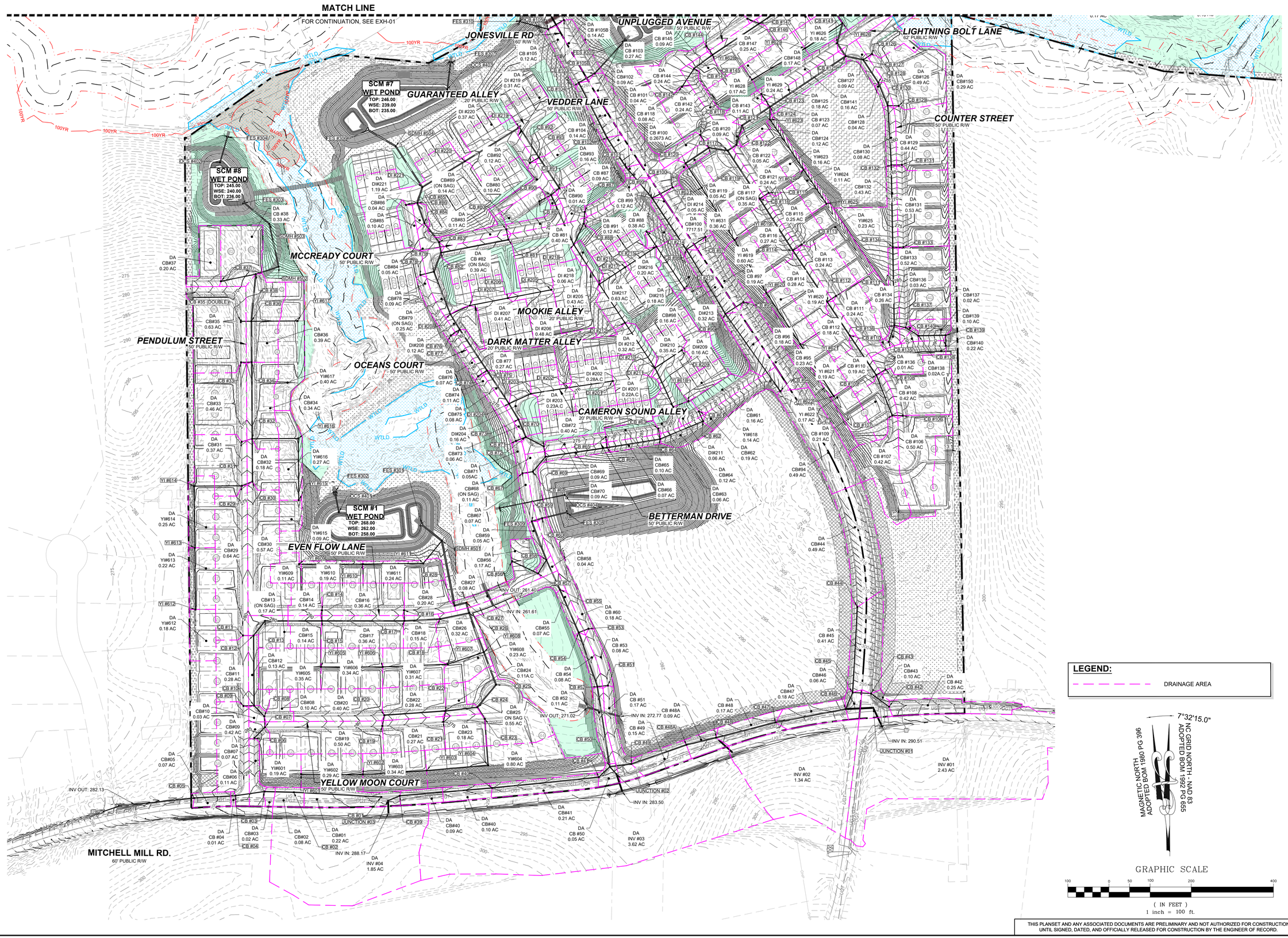
PRELIMINARY SUBDIVISION PLAT

THE DRAINAGE MAP
EXHIBIT - 01

DRAWING SHEET
EX-01

01 OF 02

PROGRESS PLOT DATE: 11/01/2024



LEGEND:

DRAINAGE AREA

7°32'15.0"
MAGNETIC NORTH ADOPTED BOM 1980 PG 396
NC GRID NORTH - NAD 83 ADOPTED BOM 1992 PG 555

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

THIS PLANSET AND ANY ASSOCIATED DOCUMENTS ARE PRELIMINARY AND NOT AUTHORIZED FOR CONSTRUCTION UNTIL SIGNED, DATED, AND OFFICIALLY RELEASED FOR CONSTRUCTION BY THE ENGINEER OF RECORD.

No.	REVISIONS	DATE	BY
01	PRELIMINARY SUBDIVISION PLAT PSP-23-03	08/01/2023	SREG
02	TOWN OF ROLESVILLE PSP-23-05	12/05/2023	SREG
03	TOWN OF ROLESVILLE PSP V3-23-03	03/01/2024	SREG
04	TOWN OF ROLESVILLE PSP V4-23-03	06/04/2024	SREG
05	TOWN OF ROLESVILLE PSP V5-23-03	09/03/2024	SREG
06	TOWN OF ROLESVILLE PSP V6-23-03	11/01/2024	SREG

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036225 ENGINEER JOSHUA W. LAMBERT

STRONG ROCK ENGINEERING GROUP, PLLC | COMPANY LICENSE # P-2165
SUITE 1110 RALEIGH, NC 27609 | INFORMATION@STRONGROCKGROUP.COM
305 CHURCH AT NORTH HILLS STREET, SUITE 1110 RALEIGH, NC 27609

STRONG ROCK PROJECT	PSP-23-03
NOT FOR CONSTRUCTION	
SCALE	AS SHOWN
DESIGNED BY	JWL
DRAWN BY	SRG
CHECKED BY	JWL

RESERVE @ MITCHELL MILL
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA
PRELIMINARY SUBDIVISION PLAT
THE DRAINAGE MAP
EXHIBIT - 02

DRAWING SHEET
EX-02

02 OF 02

RAINFALL DATA

NOAA Atlas 14, Volume 2, Version 3
Location name: Wake Forest, North Carolina, USA*
Latitude: 35.8807°, Longitude: -78.4771°
Elevation: 282 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**4.85** (4.44-5.30)	**5.63** (5.16-6.16)	**6.42** (5.89-7.01)	**7.21** (6.59-7.86)	**7.99** (7.28-8.71)	**8.62** (7.81-9.40)	**9.17** (8.27-10.0)	**9.66** (8.66-10.5)	**10.2** (9.07-11.1)	**10.7** (9.43-11.7)
10-min	**3.87** (3.55-4.24)	**4.50** (4.13-4.92)	**5.14** (4.72-5.61)	**5.76** (5.27-6.29)	**6.37** (5.80-6.94)	**6.86** (6.22-7.48)	**7.29** (6.57-7.94)	**7.66** (6.86-8.35)	**8.07** (7.18-8.81)	**8.42** (7.42-9.21)
15-min	**3.22** (2.95-3.53)	**3.77** (3.46-4.12)	**4.34** (3.98-4.73)	**4.86** (4.44-5.30)	**5.38** (4.90-5.87)	**5.79** (5.25-6.31)	**6.14** (5.54-6.69)	**6.44** (5.78-7.03)	**6.77** (6.02-7.40)	**7.04** (6.21-7.71)
30-min	**2.21** (2.02-2.42)	**2.61** (2.39-2.85)	**3.08** (2.82-3.36)	**3.52** (3.22-3.84)	**3.99** (3.63-4.35)	**4.36** (3.96-4.75)	**4.70** (4.24-5.12)	**5.02** (4.49-5.47)	**5.39** (4.79-5.88)	**5.70** (5.03-6.24)
60-min	**1.38** (1.26-1.51)	**1.64** (1.50-1.79)	**1.98** (1.81-2.16)	**2.29** (2.10-2.50)	**2.65** (2.42-2.89)	**2.96** (2.68-3.22)	**3.24** (2.92-3.53)	**3.52** (3.15-3.84)	**3.87** (3.44-4.22)	**4.16** (3.67-4.56)
2-hr	**0.806** (0.732-0.889)	**0.959** (0.875-1.05)	**1.17** (1.07-1.29)	**1.38** (1.25-1.51)	**1.62** (1.46-1.77)	**1.83** (1.64-2.00)	**2.03** (1.81-2.22)	**2.24** (1.98-2.44)	**2.50** (2.20-2.74)	**2.74** (2.38-3.00)
3-hr	**0.568** (0.516-0.629)	**0.677** (0.618-0.747)	**0.830** (0.755-0.915)	**0.981** (0.890-1.08)	**1.16** (1.05-1.28)	**1.33** (1.19-1.46)	**1.49** (1.32-1.63)	**1.66** (1.46-1.82)	**1.88** (1.64-2.06)	**2.09** (1.80-2.30)
6-hr	**0.342** (0.312-0.377)	**0.407** (0.373-0.448)	**0.500** (0.456-0.549)	**0.591** (0.538-0.648)	**0.705** (0.637-0.771)	**0.807** (0.725-0.882)	0.909 (0.810-0.992)	**1.02** (0.897-1.11)	**1.16** (1.01-1.27)	**1.30** (1.11-1.42)
12-hr	**0.200** (0.183-0.220)	**0.238** (0.219-0.262)	**0.294** (0.269-0.322)	**0.350** (0.319-0.383)	**0.420** (0.380-0.459)	**0.484** (0.435-0.527)	**0.549** (0.488-0.597)	**0.619** (0.544-0.672)	**0.715** (0.619-0.776)	**0.804** (0.685-0.873)
24-hr	**0.119** (0.111-0.128)	**0.144** (0.134-0.155)	**0.181** (0.168-0.195)	**0.211** (0.195-0.227)	**0.251** (0.232-0.270)	**0.283** (0.261-0.305)	**0.316** (0.290-0.341)	**0.351** (0.321-0.378)	**0.398** (0.363-0.430)	**0.436** (0.395-0.472)
2-day	**0.069** (0.064-0.074)	**0.083** (0.077-0.089)	**0.103** (0.096-0.112)	**0.120** (0.111-0.129)	**0.142** (0.131-0.153)	**0.160** (0.147-0.172)	**0.178** (0.163-0.192)	**0.197** (0.180-0.212)	**0.222** (0.203-0.241)	**0.243** (0.220-0.263)
3-day	**0.048** (0.045-0.052)	**0.058** (0.054-0.063)	**0.073** (0.068-0.078)	**0.084** (0.078-0.090)	**0.099** (0.092-0.106)	**0.111** (0.103-0.120)	**0.124** (0.114-0.133)	**0.137** (0.126-0.147)	**0.155** (0.141-0.167)	**0.169** (0.153-0.182)
4-day	**0.038** (0.036-0.041)	**0.046** (0.043-0.049)	**0.057** (0.053-0.061)	**0.066** (0.061-0.070)	**0.078** (0.072-0.083)	**0.087** (0.081-0.093)	**0.097** (0.089-0.104)	**0.107** (0.098-0.115)	**0.121** (0.110-0.130)	**0.132** (0.120-0.142)
7-day	**0.025** (0.024-0.027)	**0.030** (0.028-0.032)	**0.037** (0.035-0.039)	**0.042** (0.040-0.045)	**0.050** (0.046-0.053)	**0.056** (0.052-0.059)	**0.062** (0.057-0.066)	**0.068** (0.063-0.073)	**0.076** (0.070-0.082)	**0.083** (0.076-0.089)
10-day	**0.020** (0.019-0.021)	**0.024** (0.022-0.025)	**0.029** (0.027-0.031)	**0.033** (0.031-0.035)	**0.038** (0.036-0.041)	**0.042** (0.039-0.045)	**0.046** (0.043-0.050)	**0.051** (0.047-0.054)	**0.057** (0.052-0.061)	**0.061** (0.056-0.066)
20-day	**0.013** (0.012-0.014)	**0.016** (0.015-0.017)	**0.019** (0.018-0.020)	**0.021** (0.020-0.022)	**0.024** (0.023-0.026)	**0.027** (0.025-0.029)	**0.029** (0.027-0.031)	**0.032** (0.030-0.034)	**0.035** (0.033-0.038)	**0.038** (0.035-0.041)
30-day	**0.011** (0.010-0.012)	**0.013** (0.012-0.014)	**0.015** (0.014-0.016)	**0.017** (0.016-0.018)	**0.019** (0.018-0.020)	**0.021** (0.019-0.022)	**0.023** (0.021-0.024)	**0.024** (0.023-0.026)	**0.027** (0.025-0.028)	**0.028** (0.026-0.030)
45-day	**0.009** (0.009-0.010)	**0.011** (0.010-0.011)	**0.012** (0.012-0.013)	**0.014** (0.013-0.015)	**0.015** (0.015-0.016)	**0.017** (0.016-0.018)	**0.018** (0.017-0.019)	**0.019** (0.018-0.020)	**0.021** (0.019-0.022)	**0.022** (0.020-0.023)
60-day	**0.008** (0.008-0.009)	**0.010** (0.009-0.010)	**0.011** (0.010-0.012)	**0.012** (0.011-0.013)	**0.013** (0.013-0.014)	**0.014** (0.014-0.015)	**0.015** (0.014-0.016)	**0.016** (0.015-0.017)	**0.018** (0.016-0.019)	**0.018** (0.017-0.020)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

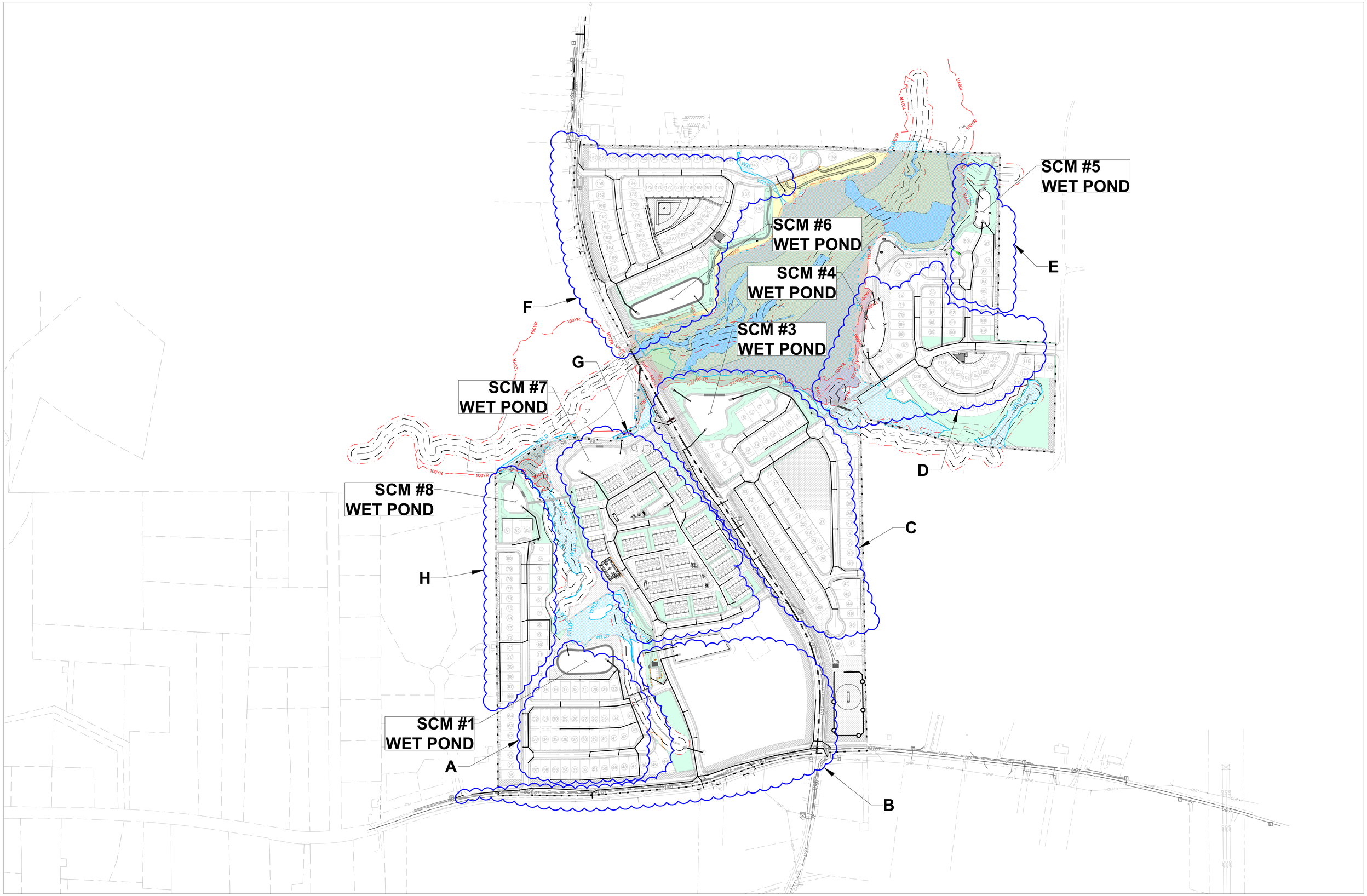
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAAAtlas 14 document for more information.

Back to Top

PF graphical

THE TABLE REPORT & PROFILE HGL OUTPUTS


SCM #5
WET POND
SCM #6
WET POND
SCM #4
WET POND
SCM #3
WET POND
SCM #7
WET POND
SCM #8
WET POND
SCM #1
WET POND
E
F
G
D
C
H
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B

S T O R M W A T E R AREA " A "

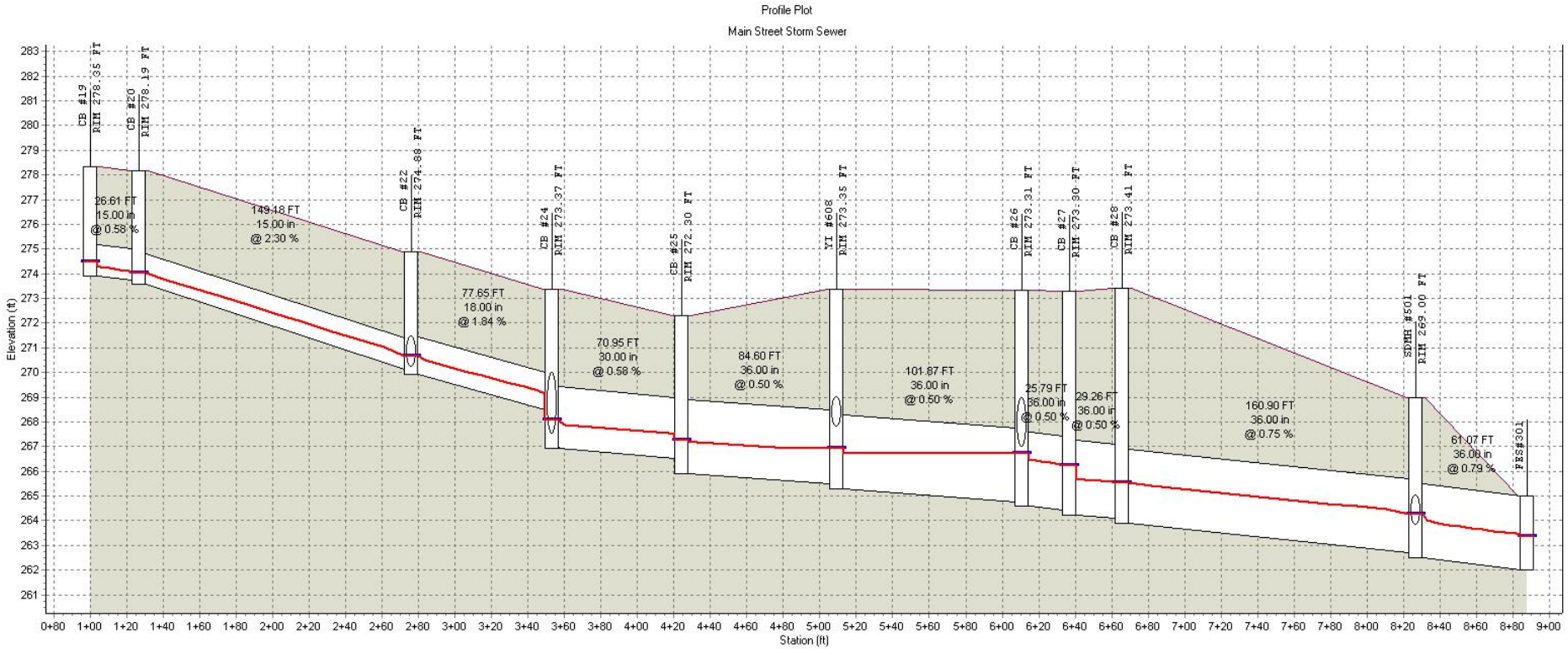
STORMWATER PIPING AND HYDRAULIC GRADE LINE FOR 10-YR STORM

PLAN VIEW

DRAINAGE AREA

SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
1	Sub-CB#06	0.11	CB #06	0.8300	0.60	0.50	0.66	7.210	0 00:05:00
2	Sub-CB#07	0.07	CB #07	0.4900	0.60	0.29	0.25	7.210	0 00:05:00
3	Sub-CB#08	0.10	CB #08	0.4900	0.60	0.29	0.35	7.210	0 00:05:00
4	Sub-CB#09	0.42	CB #09	0.5400	0.60	0.32	1.64	7.210	0 00:05:00
5	Sub-CB#10	0.03	CB #10	0.8300	0.60	0.50	0.18	7.210	0 00:05:00
6	Sub-CB#11	0.28	CB #11	0.5400	0.60	0.32	1.09	7.210	0 00:05:00
7	Sub-CB#12	0.13	CB #12	0.4900	0.60	0.29	0.46	7.210	0 00:05:00
8	Sub-CB#13	0.17	CB #13	0.5400	0.60	0.32	0.66	7.210	0 00:05:00
9	Sub-CB#14	0.14	CB #14	0.5400	0.60	0.32	0.55	7.210	0 00:05:00
10	Sub-CB#15	0.14	CB #15	0.5400	0.60	0.32	0.55	7.210	0 00:05:00
11	Sub-CB#16	0.36	CB #16	0.5900	0.60	0.35	1.53	7.210	0 00:05:00
12	Sub-CB#17	0.36	CB #17	0.5900	0.60	0.35	1.53	7.210	0 00:05:00
13	Sub-CB#18	0.15	CB #18	0.5400	0.60	0.32	0.58	7.210	0 00:05:00
14	Sub-CB#19	0.50	CB #19	0.5400	0.60	0.32	1.95	7.210	0 00:05:00
15	Sub-CB#20	0.40	CB #20	0.5400	0.60	0.32	1.56	7.210	0 00:05:00
16	Sub-CB#21	0.27	CB #21	0.5900	0.60	0.35	1.15	7.210	0 00:05:00
17	Sub-CB#22	0.28	CB #22	0.5900	0.60	0.35	1.19	7.210	0 00:05:00
18	Sub-CB#23	0.18	CB #23	0.5900	0.60	0.35	0.77	7.210	0 00:05:00
19	Sub-CB#24	0.11	CB #24	0.5900	0.60	0.35	0.47	7.210	0 00:05:00
20	Sub-CB#25	0.55	CB #25	0.5900	0.60	0.35	2.34	7.210	0 00:05:00
21	Sub-CB#26	0.32	CB #26	0.5400	0.60	0.32	1.25	7.210	0 00:05:00
22	Sub-CB#27	0.08	CB #27	0.8300	0.60	0.50	0.48	7.210	0 00:05:00
23	Sub-CB#28	0.20	CB #28	0.5900	0.60	0.35	0.85	7.210	0 00:05:00
24	Sub-YI#601	0.19	YI #601	0.3500	0.60	0.21	0.48	7.210	0 00:05:00
25	Sub-YI#602	0.29	YI #602	0.3500	0.60	0.21	0.73	7.210	0 00:05:00
26	Sub-YI#603	0.34	YI #603	0.3500	0.60	0.21	0.86	7.210	0 00:05:00
27	Sub-YI#604	0.80	YI #604	0.3500	0.60	0.21	2.02	7.210	0 00:05:00
28	Sub-YI#605	0.35	YI #605	0.3500	0.60	0.21	0.88	7.210	0 00:05:00
29	Sub-YI#606	0.34	YI #606	0.3500	0.60	0.21	0.86	7.210	0 00:05:00
30	Sub-YI#607	0.31	YI #607	0.3000	0.60	0.18	0.67	7.210	0 00:05:00
31	Sub-YI#608	0.23	YI #608	0.3000	0.60	0.18	0.50	7.210	0 00:05:00
32	Sub-YI#609	0.11	YI #609	0.3000	0.60	0.18	0.24	7.210	0 00:05:00
33	Sub-YI#610	0.19	YI #610	0.3500	0.60	0.21	0.48	7.210	0 00:05:00
34	Sub-YI#611	0.24	YI #611	0.3500	0.60	0.21	0.61	7.210	0 00:05:00

MODEL INPUT										MODEL OUTPUT									
SN	Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (inches)	Manning's Roughness	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Max Flow Velocity (ft/sec)	Travel Time (min)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged (min)	Max Flow Depth (ft)	Reported Condition
1	P #06	YI #601	YI #602	150.01	278.05	273.94	2.7400	15.000	0.0130	0.45	0 00:05	4.26	0.59	10.69	0.04	0.14	0.00	0.18	Calculated
2	P #07	YI #602	YI #603	155.38	273.30	271.71	1.0300	15.000	0.0130	1.11	0 00:05	3.85	0.67	6.54	0.17	0.28	0.00	0.36	Calculated
3	P #08	YI #603	YI #604	150.02	271.51	269.29	1.4800	18.000	0.0130	1.86	0 00:05	4.97	0.50	12.78	0.15	0.26	0.00	0.40	Calculated
4	P #09	YI #604	CB #23	113.04	268.75	268.18	0.5000	24.000	0.0130	3.65	0 00:05	3.85	0.49	16.00	0.23	0.34	0.00	0.69	Calculated
5	P #10	CB #23	CB #24	33.68	267.73	267.49	0.6900	30.000	0.0130	4.39	0 00:05	4.14	0.14	33.96	0.13	0.27	0.00	0.67	Calculated
6	P #11	CB #19	CB #20	26.61	273.92	273.76	0.5800	15.000	0.0130	1.54	0 00:05	3.12	0.14	4.93	0.31	0.42	0.00	0.53	Calculated
7	P #12	CB #20	CB #22	149.18	273.56	270.13	2.3000	15.000	0.0130	2.83	0 00:05	6.15	0.40	9.79	0.29	0.41	0.00	0.51	Calculated
8	P #13	CB #21	CB #22	26.71	270.54	270.22	1.2100	15.000	0.0130	1.37	0 00:05	3.57	0.12	7.11	0.19	0.36	0.00	0.46	Calculated
9	P #14	CB #22	CB #24	77.65	269.93	268.50	1.8400	18.000	0.0130	5.35	0 00:05	6.73	0.19	14.26	0.37	0.46	0.00	0.69	Calculated
10	P #15	CB #24	CB #25	70.95	266.91	266.50	0.5800	30.000	0.0130	10.26	0 00:05	5.04	0.23	31.26	0.33	0.43	0.00	1.08	Calculated
11	P #16	CB #25	YI #608	84.60	265.90	265.48	0.5000	36.000	0.0130	12.31	0 00:06	4.25	0.33	47.16	0.26	0.46	0.00	1.39	Calculated
12	P #17	YI #605	YI #606	150.00	275.34	272.76	1.7200	15.000	0.0130	0.83	0 00:05	4.29	0.58	8.48	0.10	0.22	0.00	0.27	Calculated
13	P #18	YI #606	YI #607	158.24	272.44	270.24	1.3800	15.000	0.0130	1.61	0 00:05	4.75	0.56	7.60	0.21	0.32	0.00	0.40	Calculated
14	P #19	YI #607	YI #608	92.62	270.04	267.78	2.4500	15.000	0.0130	2.20	0 00:05	6.21	0.25	10.10	0.22	0.33	0.00	0.41	Calculated
15	P #20	YI #608	CB #26	101.87	265.28	264.77	0.5000	36.000	0.0130	14.28	0 00:06	3.46	0.49	47.16	0.30	0.60	0.00	1.80	Calculated
16	P #21	CB #06	CB #07	36.60	281.29	279.14	5.8800	15.000	0.0130	0.64	0 00:05	5.93	0.10	15.66	0.04	0.14	0.00	0.18	Calculated
17	P #22	CB #07	CB #08	26.75	278.94	278.66	1.0400	15.000	0.0130	0.87	0 00:05	3.34	0.13	6.60	0.13	0.26	0.00	0.33	Calculated
18	P #23	CB #08	CB #10	35.96	278.46	277.34	3.1300	15.000	0.0130	1.19	0 00:05	4.88	0.12	11.43	0.10	0.26	0.00	0.33	Calculated
19	P #24	CB #09	CB #10	25.98	277.58	277.34	0.9200	15.000	0.0130	1.46	0 00:05	3.64	0.12	6.21	0.24	0.36	0.00	0.45	Calculated
20	P #25	CB #10	CB #12	170.21	277.14	275.39	1.0300	18.000	0.0130	2.84	0 00:05	4.59	0.62	10.65	0.27	0.38	0.00	0.57	Calculated
21	P #26	CB #11	CB #12	25.86	275.76	275.63	0.5000	15.000	0.0130	1.04	0 00:05	2.70	0.16	4.56	0.23	0.35	0.00	0.44	Calculated
22	P #27	CB #12	CB #13	45.42	275.19	274.69	1.1000	18.000	0.0130	4.22	0 00:05	5.08	0.15	11.02	0.38	0.48	0.00	0.71	Calculated
23	P #28	CB #13	CB #15	138.04	274.49	273.80	0.5000	24.000	0.0130	4.67	0 00:06	4.13	0.56	16.00	0.29	0.39	0.00	0.78	Calculated
24	P #29	CB #14	CB #15	25.72	274.71	274.58	0.5000	15.000	0.0130	0.52	0 00:05	2.28	0.19	4.57	0.11	0.24	0.00	0.30	Calculated
25	P #30	CB #15	CB #17	200.76	273.60	270.05	1.7700	24.000	0.0130	5.55	0 00:06	6.52	0.51	30.06	0.18	0.32	0.00	0.63	Calculated
26	P #31	CB #16	CB #17	25.83	270.89	270.76	0.5000	15.000	0.0130	1.24	0 00:05	2.83	0.15	4.56	0.27	0.39	0.00	0.48	Calculated
27	P #32	CB #17	CB #18	87.06	269.85	268.60	1.4300	24.000	0.0130	7.62	0 00:06	6.61	0.22	27.10	0.28	0.40	0.00	0.79	Calculated
28	P #33	CB #18	CB #26	71.92	268.40	266.98	1.9800	24.000	0.0130	8.24	0 00:06	7.44	0.16	31.84	0.26	0.38	0.00	0.77	Calculated
29	P #34	CB #26	CB #27	25.79	264.57	264.44	0.5000	36.000	0.0130	23.37	0 00:06	4.73	0.09	47.04	0.50	0.66	0.00	1.98	Calculated
30	P #35	CB #27	CB #28	29.26	264.24	264.10	0.5000	36.000	0.0130	23.74	0 00:06	5.55	0.09	47.16	0.50	0.58	0.00	1.75	Calculated
31	P #36	CB #28	SDMH #501	160.90	263.90	262.68	0.7500	36.000	0.0130	24.54	0 00:06	6.39	0.42	57.90	0.42	0.54	0.00	1.61	Calculated
32	P #37	YI #609	YI #610	155.00	273.50	270.00	2.2600	15.000	0.0130	0.22	0 00:05	3.14	0.82	9.71	0.02	0.11	0.00	0.13	Calculated
33	P #38	YI #610	YI #611	146.69	269.80	266.56	2.2100	15.000	0.0130	0.66	0 00:05	4.36	0.56	9.60	0.07	0.18	0.00	0.23	Calculated
34	P #39	YI #611	SDMH #501	71.25	266.36	263.80	3.5900	15.000	0.0130	1.23	0 00:05	6.06	0.20	12.24	0.10	0.28	0.00	0.35	Calculated
35	P #40	SDMH #501	FES#301	61.07	262.48	262.00	0.7900	36.000	0.0130	25.56	0 00:06	6.81	0.15	59.32	0.43	0.52	0.00	1.57	Calculated

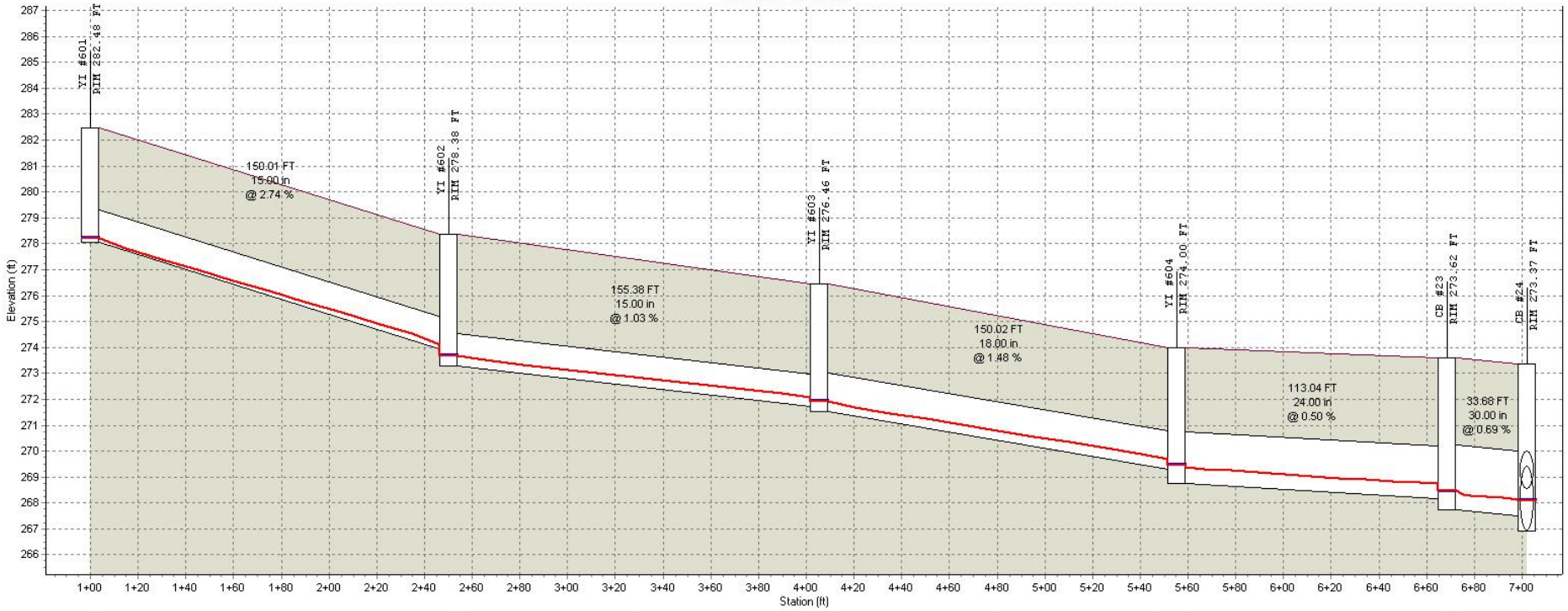


	CB #19	CB #20	CB #22	CB #24	CB #25	YI #608	CB #26	CB #27	CB #28	SDMH #501	FES#301
RIM (FT):	278.35	278.19	274.88	273.37	272.30	273.35	273.31	273.30	273.41	269.00	
Invert (ft):	273.92	273.56	269.93	266.91	265.90	265.28	264.57	264.24	263.90	262.48	262.00
Min Pipe Cover (ft):										3.32	
Max HGL (ft):	274.49	274.04	270.68	268.10	267.25	266.92	266.73	266.23	265.54	264.26	263.38

Link ID:	P #11	P #12	P #14	P #15	P #16	P #20	P #34	P #35	P #36	P #40
(FT):	26.61	149.18	77.65	70.95	84.60	101.87	25.79	29.26	160.90	61.07
(in):	15.00	15.00	18.00	30.00	36.00	36.00	36.00	36.00	36.00	36.00
@ (%):	0.58	2.30	1.84	0.58	0.50	0.50	0.50	0.50	0.75	0.79
Up Invert (ft):	273.92	273.56	269.93	266.91	265.90	265.28	264.57	264.24	263.90	262.48
Dn Invert (ft):	273.76	270.13	268.50	266.50	265.48	264.77	264.44	264.10	262.68	262.00
Max Q (cfs):	1.54	2.83	5.35	10.26	12.31	14.28	23.37	23.74	24.54	25.56
Max Vel (ft/s):	3.12	6.15	6.73	5.04	4.25	3.46	4.73	5.55	6.39	6.81
Max Depth (ft):	0.53	0.51	0.69	1.08	1.39	1.80	1.98	1.75	1.61	1.57

Profile Plot

Main Street Storm Sewer



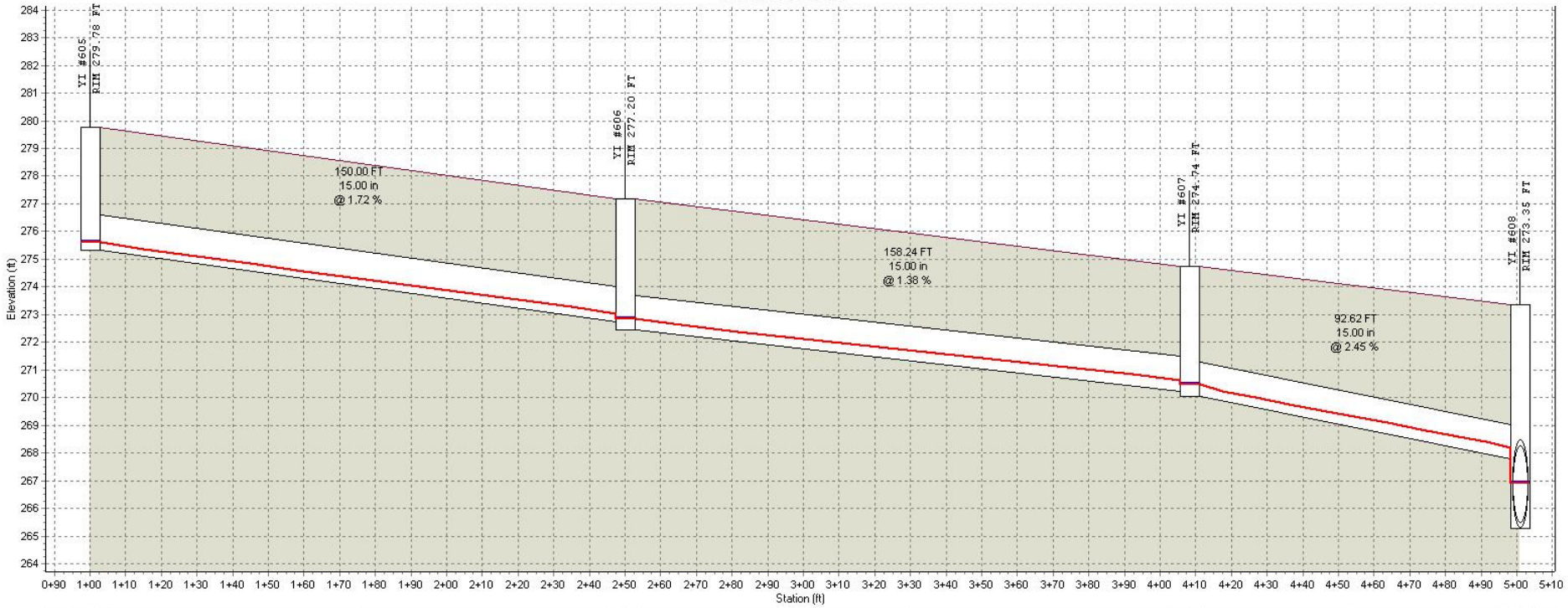
:	YI #601	YI #602	YI #603	YI #604	CB #23	CB #24
RIM (FT):	282.48	278.38	276.46	274.00	273.62	273.37
Invert (ft):	278.05	273.30	271.51	268.75	267.73	266.91
Min Pipe Cover (ft):						
Max HGL (ft):	278.23	273.67	271.92	269.47	268.46	268.10

Link ID:	P #06	P #07	P #08	P #09	P #10
(FT):	150.01	155.38	150.02	113.04	33.68
(in):	15.00	15.00	18.00	24.00	30.00
@ (%):	2.74	1.03	1.48	0.50	0.69
Up Invert (ft):	278.05	273.30	271.51	268.75	267.73
Dn Invert (ft):	273.94	271.71	269.29	268.18	267.49
Max Q (cfs):	0.45	1.11	1.86	3.65	4.39
Max Vel (ft/s):	4.26	3.85	4.97	3.85	4.14
Max Depth (ft):	0.18	0.36	0.40	0.69	0.67

HGL

Profile Plot

Main Street Storm Sewer



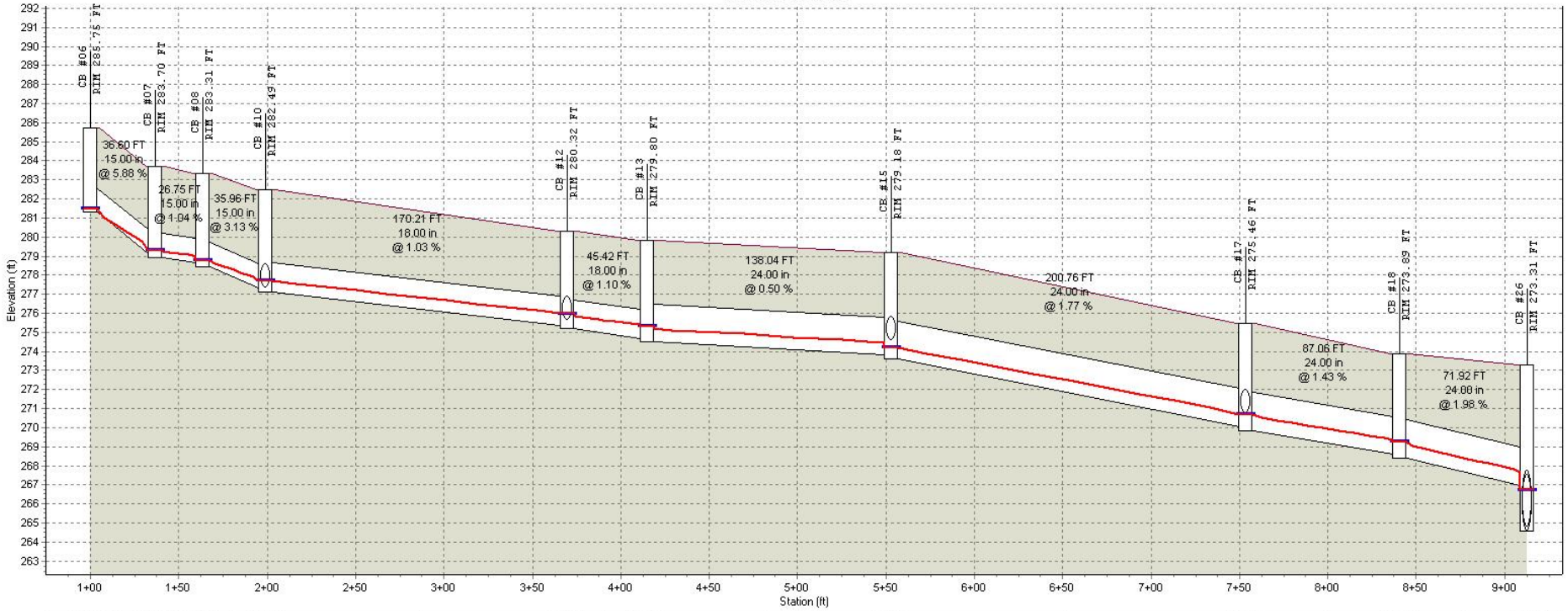
	YI #605	YI #606	YI #607	YI #608
RIM (FT):	279.78	277.20	274.74	273.35
Invert (ft):	275.34	272.44	270.04	265.28
Min Pipe Cover (ft):				
Max HGL (ft):	275.62	272.85	270.48	266.92

Link ID:	P #17	P #18	P #19
(FT):	150.00	158.24	92.62
(in):	15.00	15.00	15.00
@ (%):	1.72	1.38	2.45
Up Invert (ft):	275.34	272.44	270.04
Dn Invert (ft):	272.76	270.24	267.78
Max Q (cfs):	0.83	1.61	2.20
Max Vel (ft/s):	4.29	4.75	6.21
Max Depth (ft):	0.27	0.40	0.41

HGL

Profile Plot

Main Street Storm Sewer



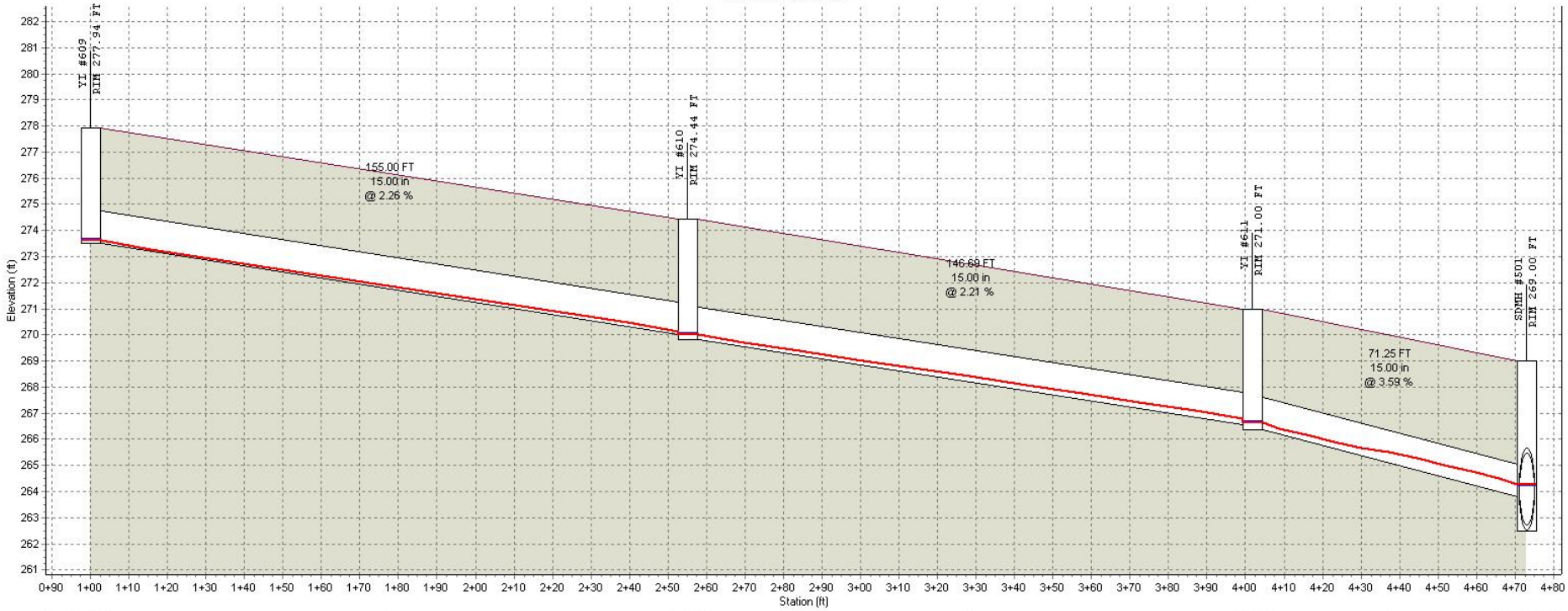
:	CB #06	CB #07	CB #08	CB #10	CB #12	CB #13	CB #15	CB #17	CB #18	CB #26
RIM (FT):	285.75	283.70	283.31	282.49	280.32	279.80	279.18	275.46	273.89	273.31
Invert (ft):	281.29	278.94	278.46	277.14	275.19	274.49	273.60	269.85	268.40	264.57
Min Pipe Cover (ft):										
Max HGL (ft):	281.48	279.30	278.76	277.70	275.98	275.31	274.21	270.71	269.24	266.73

Link ID:	P #21	P #22	P #23	P #25	P #27	P #28	P #30	P #32	P #33
(FT):	36.60	26.75	35.96	170.21	45.42	138.04	200.76	87.06	71.92
(in):	15.00	15.00	15.00	18.00	18.00	24.00	24.00	24.00	24.00
@ (%):	5.88	1.04	3.13	1.03	1.10	0.50	1.77	1.43	1.98
Up Invert (ft):	281.29	278.94	278.46	277.14	275.19	274.49	273.60	269.85	268.40
Dn Invert (ft):	279.14	278.66	277.34	275.39	274.69	273.80	270.05	268.60	266.98
Max Q (cfs):	0.64	0.87	1.19	2.84	4.22	4.67	5.55	7.62	8.24
Max Vel (ft/s):	5.93	3.34	4.88	4.59	5.08	4.13	6.52	6.61	7.44
Max Depth (ft):	0.18	0.33	0.33	0.57	0.71	0.78	0.63	0.79	0.77

HGL

Profile Plot

Main Street Storm Sewer



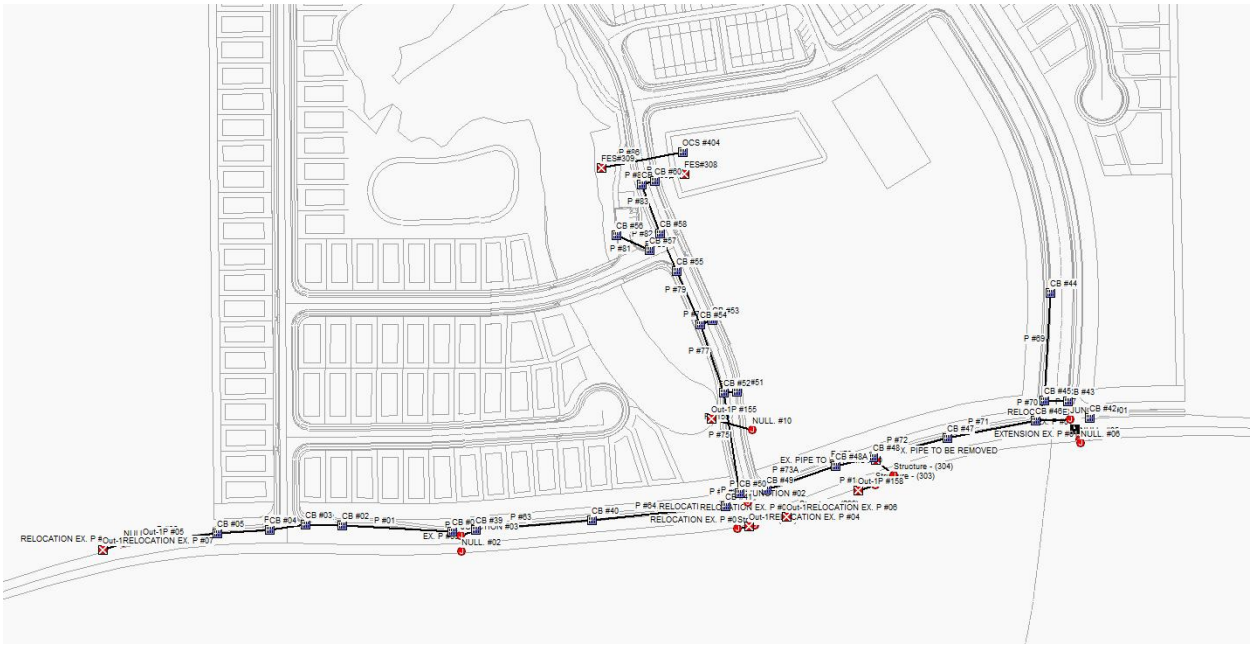
:	YI #609	YI #610	YI #611	SDMH #501
RIM (FT):	277.94	274.44	271.00	269.00
Invert (ft):	273.50	269.80	266.36	262.48
Min Pipe Cover (ft):				3.32
Max HGL (ft):	273.63	270.03	266.65	264.26

Link ID:	P #37	P #38	P #39
(FT):	155.00	146.69	71.25
(in):	15.00	15.00	15.00
@ (%):	2.26	2.21	3.59
Up Invert (ft):	273.50	269.80	266.36
Dn Invert (ft):	270.00	266.56	263.80
Max Q (cfs):	0.22	0.66	1.23
Max Vel (ft/s):	3.14	4.36	6.06
Max Depth (ft):	0.13	0.23	0.35

HGL

S T O R M W A T E R AREA " B "

STORMWATER PIPING AND HYDRAULIC GRADE LINE FOR 10-YR STORM



PLAN VIEW

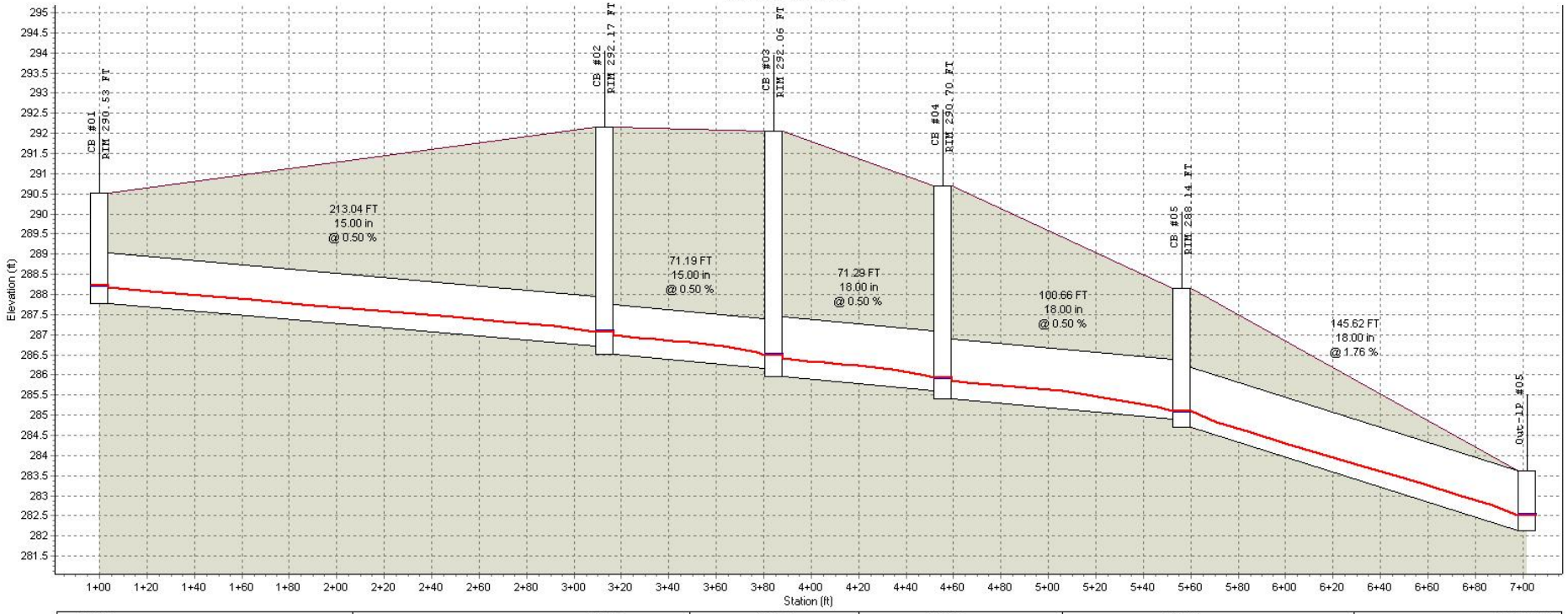
DRAINAGE AREA

SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
1	Sub-CB#01	0.22	CB #01	0.8300	0.60	0.50	1.32	7.210	0 00:05:00
2	Sub-CB#02	0.08	CB #02	0.8300	0.60	0.50	0.48	7.210	0 00:05:00
3	Sub-CB#03	0.02	CB #03	0.8300	0.60	0.50	0.12	7.210	0 00:05:00
4	Sub-CB#04	0.01	CB #04	0.8300	0.60	0.50	0.06	7.210	0 00:05:00
5	Sub-CB#05	0.07	CB #05	0.8300	0.60	0.50	0.42	7.210	0 00:05:00
6	Sub-CB#39	0.09	CB #39	0.8300	0.60	0.50	0.54	7.210	0 00:05:00
7	Sub-CB#40	0.10	CB #40	0.8300	0.60	0.50	0.60	7.210	0 00:05:00
8	Sub-CB#41	0.21	CB #41	0.8300	0.60	0.50	1.26	7.210	0 00:05:00
9	Sub-CB#42	0.25	CB #42	0.8300	0.60	0.50	1.50	7.210	0 00:05:00
10	Sub-CB#43	0.10	CB #43	0.8300	0.60	0.50	0.60	7.210	0 00:05:00
11	Sub-CB#44	0.49	CB #44	0.8300	0.60	0.50	2.93	7.210	0 00:05:00
12	Sub-CB#45	0.41	CB #45	0.8300	0.60	0.50	2.45	7.210	0 00:05:00
13	Sub-CB#46	0.06	CB #46	0.8300	0.60	0.50	0.36	7.210	0 00:05:00
14	Sub-CB#47	0.18	CB #47	0.8300	0.60	0.50	1.08	7.210	0 00:05:00
15	Sub-CB#48	0.17	CB #48	0.8300	0.60	0.50	1.02	7.210	0 00:05:00
16	Sub-CB#48A	0.09	CB #48A	0.8300	0.60	0.50	0.54	7.210	0 00:05:00
17	Sub-CB#49	0.15	CB #49	0.8300	0.60	0.50	0.90	7.210	0 00:05:00
18	Sub-CB#50	0.05	CB #50	0.8300	0.60	0.50	0.30	7.210	0 00:05:00
19	Sub-CB#51	0.17	CB #51	0.8300	0.60	0.50	1.02	7.210	0 00:05:00
20	Sub-CB#52	0.11	CB #52	0.8300	0.60	0.50	0.66	7.210	0 00:05:00
21	Sub-CB#53	0.08	CB #53	0.8300	0.60	0.50	0.48	7.210	0 00:05:00
22	Sub-CB#54	0.08	CB #54	0.8300	0.60	0.50	0.48	7.210	0 00:05:00
23	Sub-CB#55	0.07	CB #55	0.8300	0.60	0.50	0.42	7.210	0 00:05:00
24	Sub-CB#56	0.17	CB #56	0.7900	0.60	0.48	0.97	7.210	0 00:05:00
25	Sub-CB#57	0.01	CB #57	0.7000	0.60	0.42	0.05	7.210	0 00:05:00
26	Sub-CB#58	0.04	CB #58	0.8300	0.60	0.50	0.24	7.210	0 00:05:00
27	Sub-CB#59	0.05	CB #59	0.8300	0.60	0.50	0.30	7.210	0 00:05:00
28	Sub-CB#60	0.18	CB #60	0.8300	0.60	0.50	1.08	7.210	0 00:05:00

MODEL INPUT									MODEL OUTPUT									
SN	Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (inches)	Manning's Roughness	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Max Flow Velocity (ft/sec)	Travel Time (min)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged (min)	Max Flow Depth (ft)	Reported Condition
1	P #01	CB #01	CB #02	213.04	287.77	286.71	0.5000	15.000	0.0130	1.16	0 00:05	3.05	1.16	4.57	0.25	0.35	0.00	0.44	Calculated
2	P #02	CB #02	CB #03	71.19	286.51	286.15	0.5000	15.000	0.0130	1.57	0 00:06	3.16	0.38	4.57	0.34	0.42	0.00	0.53	Calculated
3	P #03	CB #03	CB #04	71.29	285.95	285.60	0.5000	18.000	0.0130	1.66	0 00:06	3.14	0.38	7.43	0.22	0.34	0.00	0.51	Calculated
4	P #04	CB #04	CB #05	100.66	285.40	284.89	0.5000	18.000	0.0130	1.68	0 00:06	3.20	0.52	7.43	0.23	0.34	0.00	0.51	Calculated
5	P #05	CB #05	Out-1P #05	145.62	284.69	282.13	1.7600	18.000	0.0130	1.95	0 00:06	5.36	0.45	13.94	0.14	0.26	0.00	0.39	Calculated
6	P #63	CB #39	CB #40	225.54	286.44	284.19	1.0000	18.000	0.0130	0.46	0 00:06	2.95	1.27	10.50	0.04	0.14	0.00	0.22	Calculated
7	P #64	CB #40	CB #41	260.75	283.83	281.22	1.0000	18.000	0.0130	0.91	0 00:06	3.59	1.21	10.50	0.09	0.20	0.00	0.30	Calculated
8	P #65	CB #41	CB #50	36.63	281.02	280.31	1.9400	18.000	0.0130	1.78	0 00:05	4.97	0.12	14.63	0.12	0.26	0.00	0.38	Calculated
9	P #67	CB #42	CB #43	54.24	289.66	289.34	0.5800	15.000	0.0130	1.48	0 00:05	3.20	0.28	4.94	0.30	0.40	0.00	0.50	Calculated
10	P #68	CB #43	CB #45	44.83	289.14	288.92	0.5100	15.000	0.0130	2.01	0 00:05	3.30	0.23	4.59	0.44	0.50	0.00	0.62	Calculated
11	P #69	CB #44	CB #45	208.09	300.49	288.32	5.8500	15.000	0.0130	2.29	0 00:05	6.56	0.53	15.62	0.15	0.42	0.00	0.53	Calculated
12	P #70	CB #45	CB #46	43.41	288.12	287.37	1.7200	18.000	0.0130	6.51	0 00:05	6.49	0.11	13.79	0.47	0.55	0.00	0.83	Calculated
13	P #71	CB #46	CB #47	174.15	287.17	285.45	0.9900	24.000	0.0130	6.85	0 00:06	5.89	0.49	22.45	0.31	0.40	0.00	0.80	Calculated
14	P #72	CB #47	CB #48	149.18	285.25	283.20	1.3800	24.000	0.0130	7.61	0 00:06	6.77	0.37	26.54	0.29	0.39	0.00	0.78	Calculated
15	P #73	CB #48	CB #48A	73.98	282.79	281.66	1.5300	24.000	0.0130	8.42	0 00:06	5.91	0.21	27.95	0.30	0.49	0.00	0.97	Calculated
16	P #73A	CB #48A	CB #49	142.39	281.46	280.75	0.5000	24.000	0.0130	8.83	0 00:06	4.77	0.50	16.00	0.55	0.57	0.00	1.14	Calculated
17	P #74	CB #49	CB #50	52.38	280.55	279.78	1.4700	24.000	0.0130	9.36	0 00:06	6.67	0.13	27.40	0.34	0.46	0.00	0.92	Calculated
18	P #75	CB #50	CB #52	197.13	279.23	276.24	1.5200	24.000	0.0130	11.30	0 00:07	7.83	0.42	27.85	0.41	0.47	0.00	0.94	Calculated
19	P #76	CB #51	CB #52	25.77	275.08	274.82	1.0000	15.000	0.0130	1.05	0 00:05	3.44	0.12	6.46	0.16	0.30	0.00	0.37	Calculated
20	P #77	CB #52	CB #54	139.25	273.99	271.20	2.0000	24.000	0.0130	12.45	0 00:07	7.53	0.31	31.99	0.39	0.52	0.00	1.04	Calculated
21	P #78	CB #53	CB #54	25.70	272.44	272.31	0.5000	15.000	0.0130	0.55	0 00:05	2.31	0.19	4.57	0.12	0.25	0.00	0.31	Calculated
22	P #79	CB #54	CB #55	113.81	271.00	269.87	0.9900	24.000	0.0130	13.10	0 00:07	6.65	0.29	22.56	0.58	0.60	0.00	1.20	Calculated
23	P #80	CB #55	CB #58	79.16	269.67	266.25	4.3200	24.000	0.0130	13.34	0 00:07	7.83	0.17	47.01	0.28	0.54	0.00	1.08	Calculated
24	P #81	CB #56	CB #57	69.63	267.04	266.64	0.5600	15.000	0.0130	1.03	0 00:05	2.74	0.42	4.85	0.21	0.60	0.00	0.75	Calculated
25	P #82	CB #57	CB #58	38.34	266.44	266.25	0.5000	18.000	0.0130	0.80	0 00:09	2.13	0.30	7.43	0.11	0.83	0.00	1.24	Calculated
26	P #83	CB #58	CB #59	100.52	266.05	265.55	0.5000	30.000	0.0130	14.00	0 00:07	4.69	0.36	29.00	0.48	0.59	0.00	1.47	Calculated
27	P #84	CB #59	CB #60	26.17	265.35	265.22	0.5000	30.000	0.0130	14.11	0 00:07	4.91	0.09	29.00	0.49	0.57	0.00	1.42	Calculated
28	P #85	CB #60	FES#308	60.67	265.02	264.00	1.6800	30.000	0.0130	14.62	0 00:07	7.70	0.13	53.13	0.28	0.41	0.00	1.03	Calculated

Profile Plot

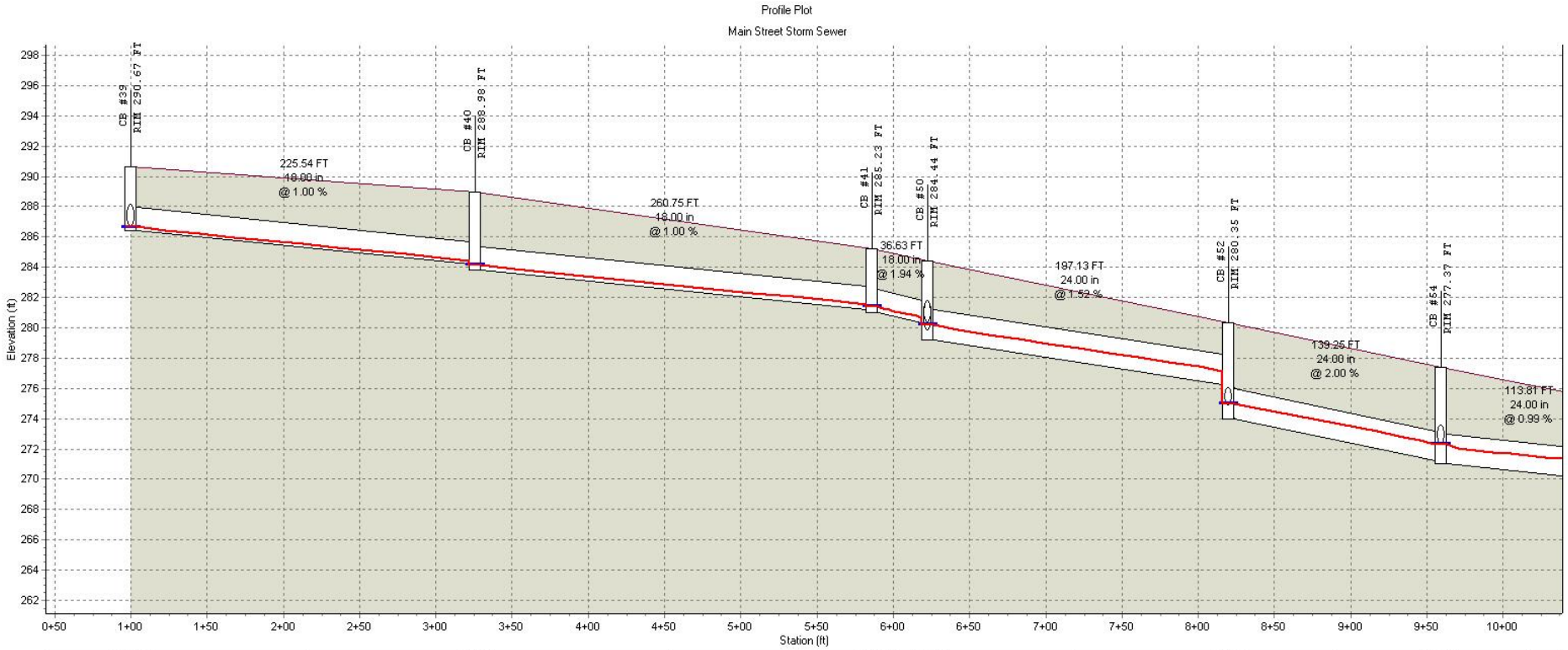
Main Street Storm Sewer



:	CB #01		CB #02	CB #03	CB #04	CB #05	Out-1P #05
RIM (FT):	290.53		292.17	292.06	290.70	288.14	
Invert (ft):	287.77		286.51	285.95	285.40	284.69	282.13
Min Pipe Cover (ft):							
Max HGL (ft):	288.22		287.07	286.49	285.92	285.09	282.51

Link ID:	P #01	P #02	P #03	P #04	P #05
(FT):	213.04	71.19	71.29	100.66	145.62
(in):	15.00	15.00	18.00	18.00	18.00
@ (%):	0.50	0.50	0.50	0.50	1.76
Up Invert (ft):	287.77	286.51	285.95	285.40	284.69
Dn Invert (ft):	286.71	286.15	285.60	284.89	282.13
Max Q (cfs):	1.16	1.57	1.66	1.68	1.95
Max Vel (ft/s):	3.05	3.16	3.14	3.20	5.36
Max Depth (ft):	0.44	0.53	0.51	0.51	0.39

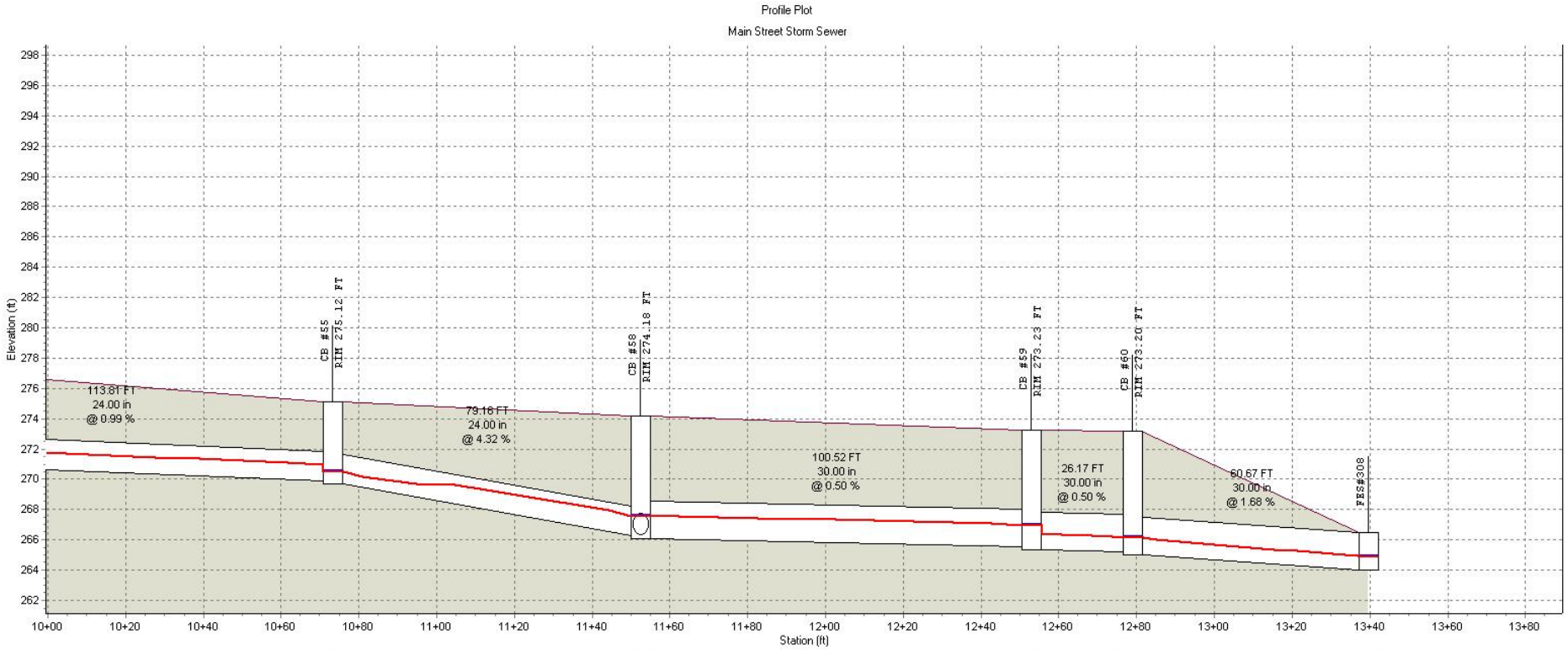
HGL



:	CB #39	CB #40	CB #41	CB #50	CB #52	CB #54	
RIM (FT):	290.67	288.98	285.23	284.44	280.35	277.37	
Invert (ft):	286.44	283.83	281.02	279.23	273.99	271.00	
Min Pipe Cover (ft):							
Max HGL (ft):	286.66	284.13	281.43	280.22	274.96	272.31	

Link ID:	P #63	P #64	P #65	P #75	P #77	P #79
(FT):	225.54	260.75	36.63	197.13	139.25	113.81
(in):	18.00	18.00	18.00	24.00	24.00	24.00
@ (%):	1.00	1.00	1.94	1.52	2.00	0.99
Up Invert (ft):	286.44	283.83	281.02	279.23	273.99	271.00
Dn Invert (ft):	284.19	281.22	280.31	276.24	271.20	269.87
Max Q (cfs):	0.46	0.91	1.78	11.30	12.45	13.10
Max Vel (ft/s):	2.95	3.59	4.97	7.83	7.53	6.65
Max Depth (ft):	0.22	0.30	0.38	0.94	1.04	1.20

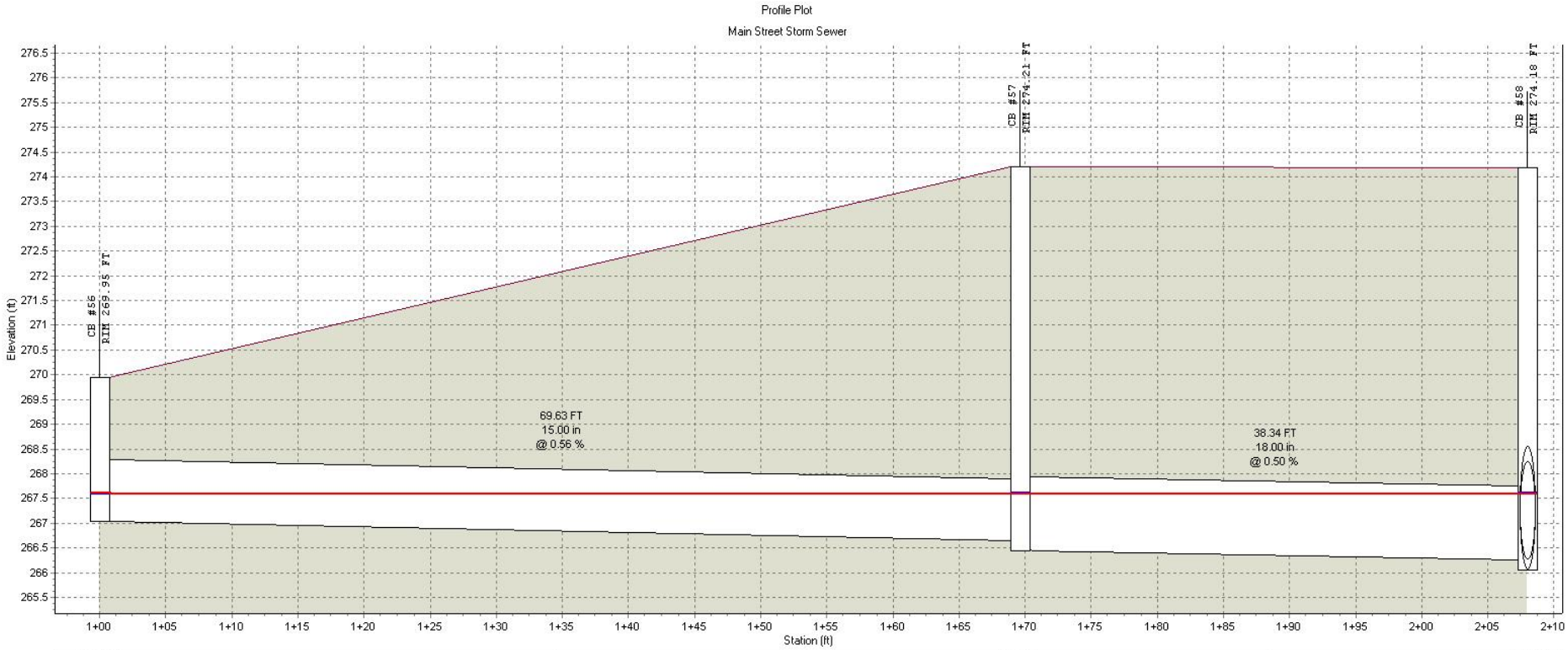
HGL



	CB #55	CB #58	CB #59	CB #60	FES#308
RIM (FT):	275.12	274.18	273.23	273.20	
Invert (ft):	269.67	266.05	265.35	265.02	264.00
Min Pipe Cover (ft):					
Max HGL (ft):	270.50	267.59	266.96	266.18	264.90

Link ID:	P #79	P #80	P #83	P #84	P #85	
(FT):	113.81	79.16	100.52	26.17	60.67	
(in):	24.00	24.00	30.00	30.00	30.00	
@ (%):	0.99	4.32	0.50	0.50	1.68	
Up Invert (ft):	271.00	269.67	266.05	265.35	265.02	
Dn Invert (ft):	269.87	266.25	265.55	265.22	264.00	
Max Q (cfs):	13.10	13.34	14.00	14.11	14.62	
Max Vel (ft/s):	6.65	7.83	4.69	4.91	7.70	
Max Depth (ft):	1.20	1.08	1.47	1.42	1.03	

HGL

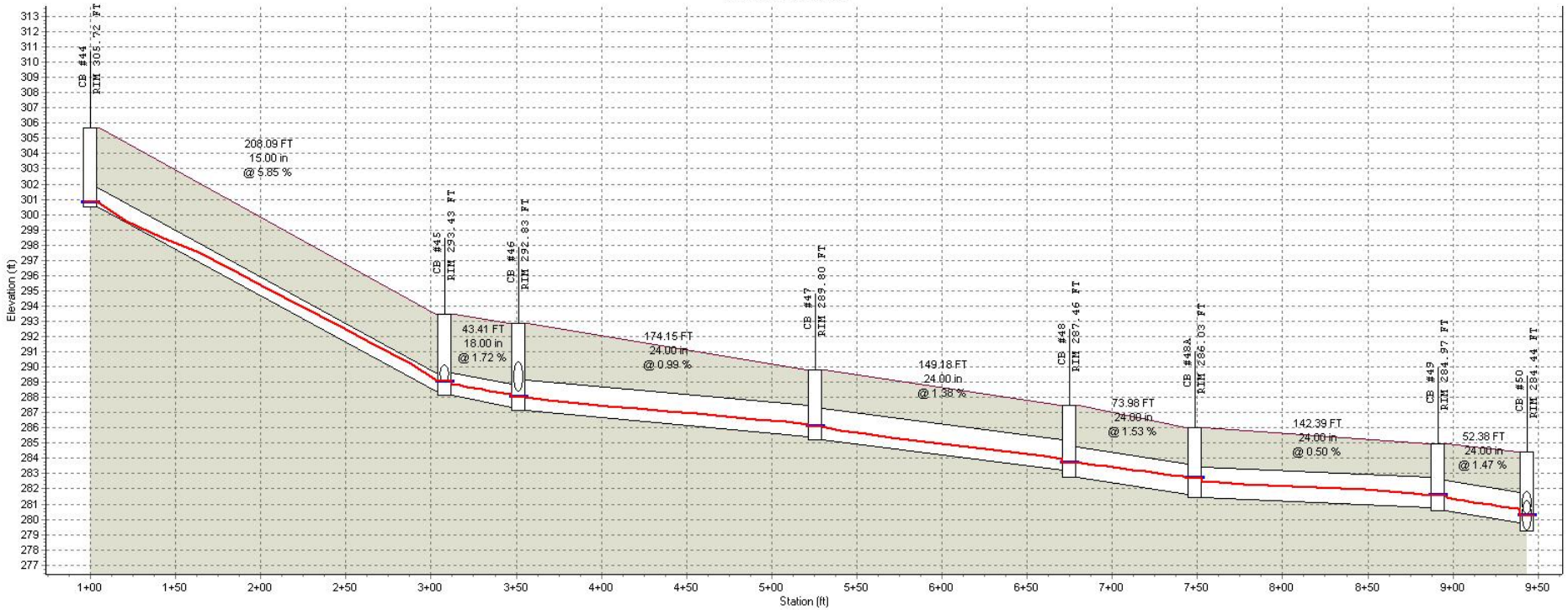


:	CB #56	CB #57	CB #58
RIM (FT):	269.95	274.21	274.18
Invert (ft):	267.04	266.44	266.05
Min Pipe Cover (ft):			
Max HGL (ft):	267.60	267.60	267.59

Link ID:	P #81	P #82
(FT):	69.63	38.34
(in):	15.00	18.00
@ (%):	0.56	0.50
Up Invert (ft):	267.04	266.44
Dn Invert (ft):	266.64	266.25
Max Q (cfs):	1.03	0.80
Max Vel (ft/s):	2.74	2.13
Max Depth (ft):	0.75	1.24

Profile Plot

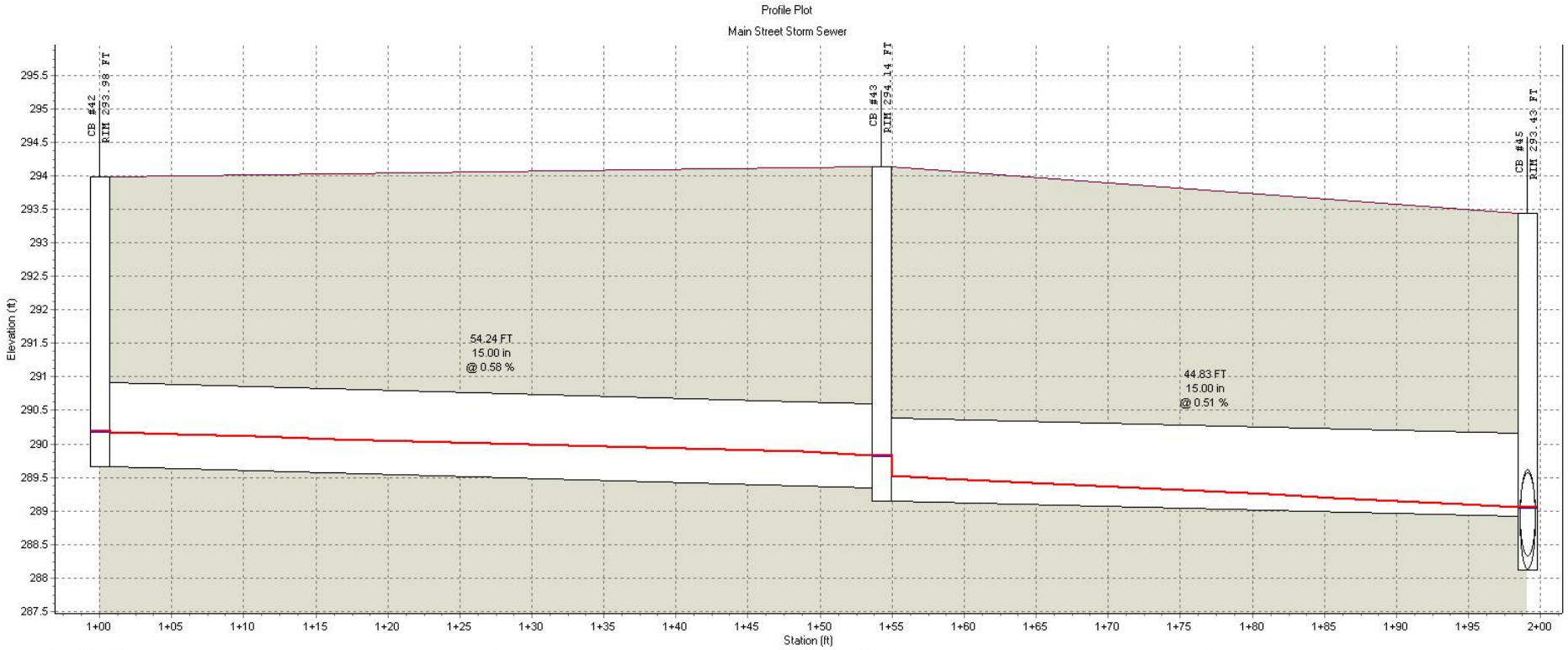
Main Street Storm Sewer



:	CB #44	CB #45	CB #46	CB #47	CB #48	CB #48A	CB #49	CB #50
RIM (FT):	305.72	293.43	292.83	289.80	287.46	286.03	284.97	284.44
Invert (ft):	300.49	288.12	287.17	285.25	282.79	281.46	280.55	279.23
Min Pipe Cover (ft):								
Max HGL (ft):	300.81	289.05	288.00	286.07	283.71	282.68	281.57	280.22

Link ID:	P #69	P #70	P #71	P #72	P #73	P #73A	P #74
(FT):	208.09	43.41	174.15	149.18	73.98	142.39	52.38
(in):	15.00	18.00	24.00	24.00	24.00	24.00	24.00
@ (%):	5.85	1.72	0.99	1.38	1.53	0.50	1.47
Up Invert (ft):	300.49	288.12	287.17	285.25	282.79	281.46	280.55
Dn Invert (ft):	288.32	287.37	285.45	283.20	281.66	280.75	279.78
Max Q (cfs):	2.29	6.51	6.85	7.61	8.42	8.83	9.36
Max Vel (ft/s):	6.56	6.49	5.89	6.77	5.91	4.77	6.67
Max Depth (ft):	0.53	0.83	0.80	0.78	0.97	1.14	0.92

HGL

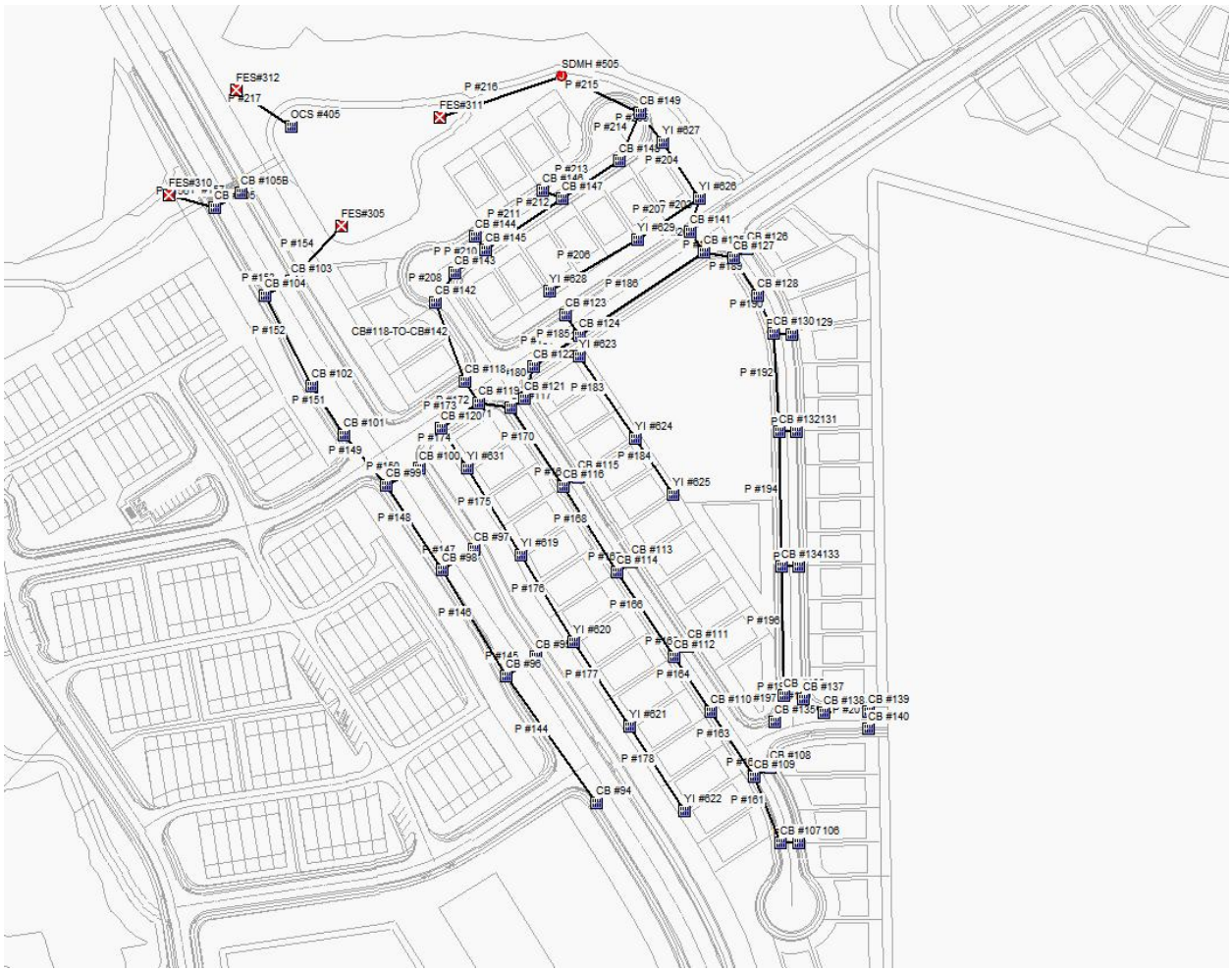


:	CB #42		CB #43		CB #45
RIM (FT):	293.98		294.14		293.43
Invert (ft):	289.66		289.14		288.12
Min Pipe Cover (ft):					
Max HGL (ft):	290.19		289.82		289.05
Link ID:		P #67		P #68	
(FT):		54.24		44.83	
(in):		15.00		15.00	
@ (%):		0.58		0.51	
Up Invert (ft):		289.66		289.14	
Dn Invert (ft):		289.34		288.92	
Max Q (cfs):		1.48		2.01	
Max Vel (ft/s):		3.20		3.30	
Max Depth (ft):		0.50		0.62	

HGL

S T O R M W A T E R AREA " C "

STORMWATER PIPING AND HYDRAULIC GRADE LINE FOR 10-YR STORM



PLAN VIEW

DRAINAGE AREA

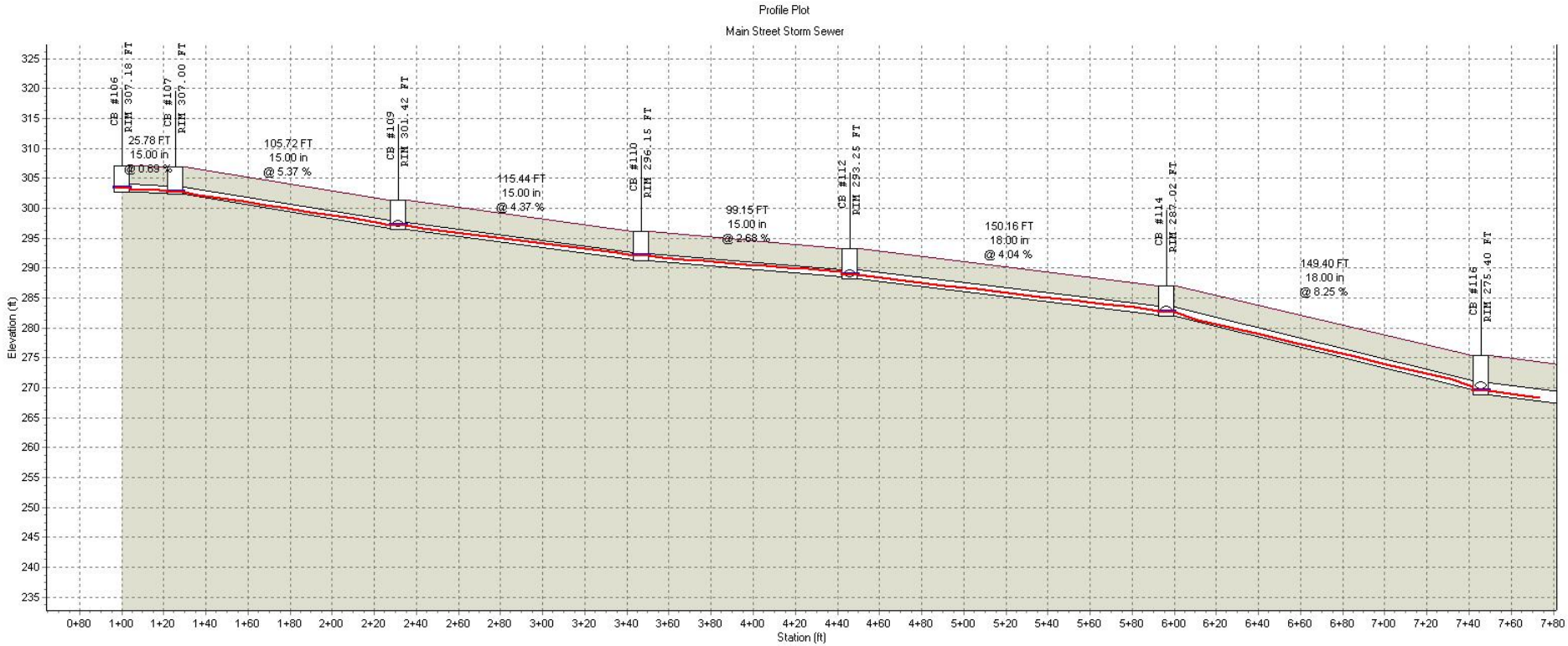
SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
1	Sub-CB#100	0.18	CB #100	0.8300	0.60	0.50	1.08	7.210	0 00:05:00
2	Sub-CB#101	0.04	CB #101	0.8300	0.60	0.50	0.24	7.210	0 00:05:00
3	Sub-CB#102	0.09	CB #102	0.8300	0.60	0.50	0.54	7.210	0 00:05:00
4	Sub-CB#103	0.27	CB #103	0.8300	0.60	0.50	1.62	7.210	0 00:05:00
5	Sub-CB#104	0.14	CB #104	0.8300	0.60	0.50	0.84	7.210	0 00:05:00
6	Sub-CB#105	0.12	CB #105	0.8300	0.60	0.50	0.72	7.210	0 00:05:00
7	Sub-CB#105B	0.14	CB #105B	0.8300	0.60	0.50	0.84	7.210	0 00:05:00
8	Sub-CB#106	0.50	CB #106	0.6900	0.60	0.42	2.49	7.210	0 00:05:00
9	Sub-CB#107	0.42	CB #107	0.5500	0.60	0.33	1.67	7.210	0 00:05:00
10	Sub-CB#108	0.42	CB #108	0.6900	0.60	0.42	2.09	7.210	0 00:05:00
11	Sub-CB#109	0.21	CB #109	0.5000	0.60	0.30	0.76	7.210	0 00:05:00
12	Sub-CB#110	0.19	CB #110	0.5400	0.60	0.32	0.74	7.210	0 00:05:00
13	Sub-CB#111	0.24	CB #111	0.5900	0.60	0.35	1.02	7.210	0 00:05:00
14	Sub-CB#112	0.18	CB #112	0.5400	0.60	0.32	0.70	7.210	0 00:05:00
15	Sub-CB#113	0.24	CB #113	0.5400	0.60	0.32	0.93	7.210	0 00:05:00
16	Sub-CB#114	0.28	CB #114	0.5400	0.60	0.32	1.09	7.210	0 00:05:00
17	Sub-CB#115	0.25	CB #115	0.5400	0.60	0.32	0.97	7.210	0 00:05:00
18	Sub-CB#116	0.27	CB #116	0.5400	0.60	0.32	1.05	7.210	0 00:05:00
19	Sub-CB#117	0.35	CB #117	0.5900	0.60	0.35	1.49	7.210	0 00:05:00
20	Sub-CB#118	0.08	CB #118	0.8300	0.60	0.50	0.48	7.210	0 00:05:00
21	Sub-CB#119	0.05	CB #119	0.8300	0.60	0.50	0.30	7.210	0 00:05:00
22	Sub-CB#120	0.09	CB #120	0.8300	0.60	0.50	0.54	7.210	0 00:05:00
23	Sub-CB#121	0.24	CB #121	0.5400	0.60	0.32	0.93	7.210	0 00:05:00
24	Sub-CB#122	0.05	CB #122	0.8300	0.60	0.50	0.30	7.210	0 00:05:00
25	Sub-CB#123	0.07	CB #123	0.8300	0.60	0.50	0.42	7.210	0 00:05:00
26	Sub-CB#124	0.12	CB #124	0.5900	0.60	0.35	0.51	7.210	0 00:05:00
27	Sub-CB#125	0.18	CB #125	0.8300	0.60	0.50	1.08	7.210	0 00:05:00
28	Sub-CB#126	0.49	CB #126	0.6400	0.60	0.39	2.26	7.210	0 00:05:00
29	Sub-CB#127	0.09	CB #127	0.8300	0.60	0.50	0.54	7.210	0 00:05:00
30	Sub-CB#128	0.04	CB #128	0.8300	0.60	0.50	0.24	7.210	0 00:05:00
31	Sub-CB#129	0.44	CB #129	0.6900	0.60	0.42	2.19	7.210	0 00:05:00
32	Sub-CB#130	0.08	CB #130	0.8300	0.60	0.50	0.48	7.210	0 00:05:00
33	Sub-CB#131	0.53	CB #131	0.7400	0.60	0.45	2.83	7.210	0 00:05:00
34	Sub-CB#132	0.43	CB #132	0.7900	0.60	0.48	2.45	7.210	0 00:05:00
35	Sub-CB#133	0.52	CB #133	0.6900	0.60	0.42	2.59	7.210	0 00:05:00

DRAINAGE AREA

SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
36	Sub-CB#134	0.26	CB #134	0.5900	0.60	0.35	1.11	7.210	0 00:05:00
37	Sub-CB#135	0.01	CB #135	0.8300	0.60	0.50	0.06	7.210	0 00:05:00
38	Sub-CB#136	0.03	CB #136	0.8300	0.60	0.50	0.18	7.210	0 00:05:00
39	Sub-CB#137	0.02	CB #137	0.8300	0.60	0.50	0.12	7.210	0 00:05:00
40	Sub-CB#138	0.02	CB #138	0.8300	0.60	0.50	0.12	7.210	0 00:05:00
41	Sub-CB#139	0.10	CB #139	0.5900	0.60	0.35	0.43	7.210	0 00:05:00
42	Sub-CB#140	0.22	CB #140	0.5900	0.60	0.35	0.94	7.210	0 00:05:00
43	Sub-CB#141	0.16	CB #141	0.8300	0.60	0.50	0.96	7.210	0 00:05:00
44	Sub-CB#142	0.24	CB #142	0.5900	0.60	0.35	1.02	7.210	0 00:05:00
45	Sub-CB#143	0.11	CB #143	0.8300	0.60	0.50	0.66	7.210	0 00:05:00
46	Sub-CB#144	0.24	CB #144	0.6400	0.60	0.39	1.11	7.210	0 00:05:00
47	Sub-CB#145	0.09	CB #145	0.5900	0.60	0.35	0.38	7.210	0 00:05:00
48	Sub-CB#146	0.34	CB #146	0.7900	0.60	0.48	1.94	7.210	0 00:05:00
49	Sub-CB#147	0.25	CB #147	0.5900	0.60	0.35	1.06	7.210	0 00:05:00
50	Sub-CB#148	0.17	CB #148	0.5900	0.60	0.35	0.72	7.210	0 00:05:00
51	Sub-CB#149	0.44	CB #149	0.6900	0.60	0.42	2.19	7.210	0 00:05:00
52	Sub-CB#94	0.49	CB #94	0.8300	0.60	0.50	2.93	7.210	0 00:05:00
53	Sub-CB#95	0.23	CB #95	0.8300	0.60	0.50	1.38	7.210	0 00:05:00
54	Sub-CB#96	0.18	CB #96	0.8300	0.60	0.50	1.08	7.210	0 00:05:00
55	Sub-CB#97	0.19	CB #97	0.8300	0.60	0.50	1.14	7.210	0 00:05:00
56	Sub-CB#98	0.16	CB #98	0.8300	0.60	0.50	0.96	7.210	0 00:05:00
57	Sub-CB#99	0.12	CB #99	0.8300	0.60	0.50	0.72	7.210	0 00:05:00
58	Sub-YI#619	0.60	YI #619	0.3500	0.60	0.21	1.51	7.210	0 00:05:00
59	Sub-YI#620	0.19	YI #620	0.3500	0.60	0.21	0.48	7.210	0 00:05:00
60	Sub-YI#621	0.19	YI #621	0.3500	0.60	0.21	0.48	7.210	0 00:05:00
61	Sub-YI#622	0.17	YI #622	0.3100	0.60	0.19	0.38	7.210	0 00:05:00
62	Sub-YI#623	0.16	YI #623	0.5400	0.60	0.32	0.62	7.210	0 00:05:00
63	Sub-YI#624	0.11	YI #624	0.3500	0.60	0.21	0.28	7.210	0 00:05:00
64	Sub-YI#625	0.23	YI #625	0.3500	0.60	0.21	0.58	7.210	0 00:05:00
65	Sub-YI#626	0.18	YI #626	0.3100	0.60	0.19	0.40	7.210	0 00:05:00
66	Sub-YI#627	0.08	YI #627	0.3100	0.60	0.19	0.18	7.210	0 00:05:00
67	Sub-YI#628	0.17	YI #628	0.3100	0.60	0.19	0.38	7.210	0 00:05:00
68	Sub-YI#629	0.24	YI #629	0.3100	0.60	0.19	0.54	7.210	0 00:05:00
69	Sub-YI#631	0.36	YI #631	0.3500	0.60	0.21	0.91	7.210	0 00:05:00

MODEL INPUT										MODEL OUTPUT									
SN	Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (inches)	Manning's Roughness	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Max Flow Velocity (ft/sec)	Travel Time (min)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged (min)	Max Flow Depth (ft)	Reported Condition
1	P #144	CB #94	CB #96	230.73	308.82	293.73	6.5400	15.000	0.0130	2.22	0 00:05	9.20	0.42	16.52	0.13	0.25	0.00	0.31	Calculated
2	P #145	CB #95	CB #96	52.50	294.25	293.73	0.9900	15.000	0.0130	1.28	0 00:05	3.78	0.23	6.44	0.20	0.32	0.00	0.40	Calculated
3	P #146	CB #96	CB #98	182.60	293.53	280.57	7.1000	15.000	0.0130	5.04	0 00:05	11.72	0.26	17.21	0.29	0.38	0.00	0.48	Calculated
4	P #147	CB #97	CB #98	55.78	280.74	280.46	0.5000	15.000	0.0130	1.10	0 00:05	2.86	0.33	4.57	0.24	0.35	0.00	0.44	Calculated
5	P #148	CB #98	CB #99	150.42	279.82	270.99	5.8700	15.000	0.0130	6.96	0 00:05	11.68	0.21	15.65	0.45	0.49	0.00	0.61	Calculated
6	P #149	CB #99	CB #101	97.68	270.79	265.64	5.2700	18.000	0.0130	8.59	0 00:05	11.35	0.14	24.12	0.36	0.44	0.00	0.67	Calculated
7	P #150	CB #100	CB #99	55.99	271.95	271.50	0.8100	15.000	0.0130	1.03	0 00:05	3.32	0.28	5.80	0.18	0.30	0.00	0.37	Calculated
8	P #151	CB #101	CB #102	85.87	265.10	260.15	5.7600	18.000	0.0130	8.79	0 00:05	11.66	0.12	25.21	0.35	0.44	0.00	0.66	Calculated
9	P #152	CB #102	CB #104	150.45	259.12	252.01	4.7200	18.000	0.0130	9.22	0 00:06	11.42	0.22	22.83	0.40	0.47	0.00	0.70	Calculated
10	P #153	CB #104	CB #103	44.68	251.21	248.90	5.1600	24.000	0.0130	9.89	0 00:06	10.43	0.07	51.37	0.19	0.34	0.00	0.68	Calculated
11	P #154	CB #103	FES#305	107.20	247.75	240.00	7.2300	24.000	0.0130	11.09	0 00:06	13.46	0.13	60.82	0.18	0.31	0.00	0.62	Calculated
12	P #156	CB #105	FES#310	70.12	242.73	237.90	6.8900	15.000	0.0130	1.62	0 00:05	8.29	0.14	16.95	0.10	0.22	0.00	0.27	Calculated
13	P #157	CB #105B	CB #105	44.68	246.24	243.55	6.0400	15.000	0.0130	0.93	0 00:05	6.66	0.11	15.87	0.06	0.17	0.00	0.21	Calculated
14	P #160	CB #106	CB #107	25.78	302.74	302.56	0.6900	15.000	0.0130	1.98	0 00:05	3.52	0.12	5.35	0.37	0.47	0.00	0.58	Calculated
15	P #161	CB #107	CB #109	105.72	302.36	296.68	5.3700	15.000	0.0130	3.44	0 00:05	8.79	0.20	14.97	0.23	0.36	0.00	0.45	Calculated
16	P #162	CB #108	CB #109	25.90	296.91	296.76	0.5700	15.000	0.0130	2.21	0 00:05	3.38	0.13	4.90	0.45	0.53	0.00	0.66	Calculated
17	P #163	CB #109	CB #110	115.44	296.48	291.43	4.3700	15.000	0.0130	6.54	0 00:05	9.64	0.20	13.51	0.48	0.54	0.00	0.68	Calculated
18	P #164	CB #110	CB #112	99.15	291.23	288.57	2.6800	15.000	0.0130	7.09	0 00:05	8.36	0.20	10.58	0.67	0.66	0.00	0.82	Calculated
19	P #165	CB #111	CB #112	25.69	288.57	288.44	0.5000	15.000	0.0130	0.93	0 00:05	2.29	0.19	4.57	0.20	0.40	0.00	0.51	Calculated
20	P #166	CB #112	CB #114	150.16	288.24	282.18	4.0400	18.000	0.0130	8.52	0 00:05	10.56	0.24	21.10	0.40	0.47	0.00	0.70	Calculated
21	P #167	CB #113	CB #114	25.64	282.61	282.48	0.5000	15.000	0.0130	0.97	0 00:05	2.66	0.16	4.57	0.21	0.34	0.00	0.42	Calculated
22	P #168	CB #114	CB #116	149.40	281.98	269.65	8.2500	18.000	0.0130	10.33	0 00:05	14.50	0.17	30.18	0.34	0.42	0.00	0.64	Calculated
23	P #169	CB #115	CB #116	26.09	271.06	269.74	5.0700	15.000	0.0130	0.96	0 00:05	6.04	0.07	14.55	0.07	0.19	0.00	0.23	Calculated
24	P #170	CB #116	CB #117	140.40	268.89	262.95	4.2300	24.000	0.0130	12.08	0 00:05	7.55	0.31	46.53	0.26	0.51	0.00	1.02	Calculated
25	P #171	CB #119	CB #117	46.45	264.70	263.36	2.8800	24.000	0.0130	4.66	0 00:05	5.86	0.13	38.41	0.12	0.37	0.00	0.74	Calculated
26	P #172	CB #118	CB #119	37.73	266.54	266.35	0.5000	15.000	0.0130	0.46	0 00:05	2.26	0.28	4.57	0.10	0.22	0.00	0.28	Calculated
27	P #173	CB #120	CB #119	67.91	265.52	264.92	0.8900	24.000	0.0130	3.96	0 00:05	4.68	0.24	21.32	0.19	0.31	0.00	0.63	Calculated
28	P #174	YI #631	CB #120	71.13	266.07	265.72	0.5000	18.000	0.0130	3.49	0 00:05	3.78	0.31	7.40	0.47	0.52	0.00	0.78	Calculated
29	P #175	YI #619	YI #631	150.08	275.15	266.27	5.9100	15.000	0.0130	2.65	0 00:05	6.86	0.36	15.71	0.17	0.40	0.00	0.50	Calculated
30	P #176	YI #620	YI #619	150.17	285.63	275.35	6.8500	15.000	0.0130	1.23	0 00:05	7.86	0.32	16.90	0.07	0.19	0.00	0.23	Calculated
31	P #177	YI #621	YI #620	150.00	290.09	285.83	2.8400	15.000	0.0130	0.80	0 00:05	5.07	0.49	10.89	0.07	0.19	0.00	0.23	Calculated
32	P #178	YI #622	YI #621	150.03	296.78	290.29	4.3200	15.000	0.0130	0.36	0 00:05	4.66	0.54	13.43	0.03	0.11	0.00	0.14	Calculated
33	P #179	CB #117	CB #121	25.67	262.75	262.45	1.1900	30.000	0.0130	18.00	0 00:06	6.81	0.06	44.67	0.40	0.53	0.00	1.32	Calculated
34	P #180	CB #121	CB #122	49.06	262.25	259.63	5.3400	30.000	0.0130	18.73	0 00:06	11.45	0.07	94.75	0.20	0.37	0.00	0.92	Calculated
35	P #181	CB #122	CB #124	81.56	259.43	256.17	3.9900	30.000	0.0130	19.03	0 00:06	11.57	0.12	81.93	0.23	0.37	0.00	0.92	Calculated

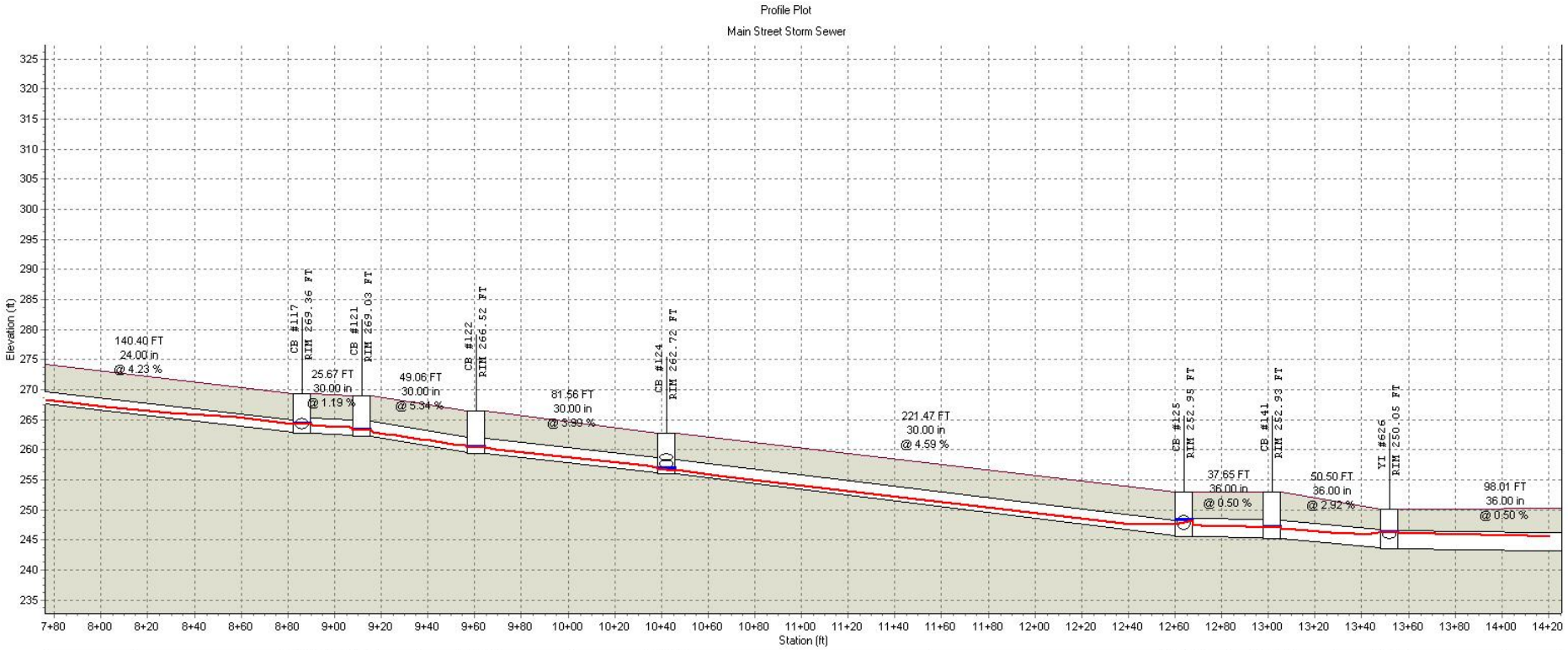
MODEL INPUT										MODEL OUTPUT									
SN	Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (inches)	Manning's Roughness	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Max Flow Velocity (ft/sec)	Travel Time (min)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged (min)	Max Flow Depth (ft)	Reported Condition
36	P #182	YI #623	CB #124	30.37	259.34	256.91	8.0000	18.000	0.0130	1.41	0 00:05	7.86	0.06	29.71	0.05	0.16	0.00	0.24	Calculated
37	P #183	YI #624	YI #623	146.93	270.25	260.64	6.5400	15.000	0.0130	0.82	0 00:05	6.89	0.36	16.52	0.05	0.15	0.00	0.19	Calculated
38	P #184	YI #625	YI #624	100.00	278.45	270.45	8.0000	15.000	0.0130	0.57	0 00:05	6.61	0.25	18.27	0.03	0.12	0.00	0.15	Calculated
39	P #185	CB #123	CB #124	37.69	258.29	258.11	0.5000	15.000	0.0130	0.41	0 00:05	2.18	0.29	4.57	0.09	0.21	0.00	0.26	Calculated
40	P #186	CB #124	CB #125	221.47	255.97	245.81	4.5900	30.000	0.0130	21.04	0 00:06	6.16	0.60	87.87	0.24	0.66	0.00	1.64	Calculated
41	P #187	CB #127	CB #125	43.66	247.38	246.61	1.7600	30.000	0.0130	15.12	0 00:05	6.73	0.11	54.35	0.28	0.59	0.00	1.48	Calculated
42	P #188	CB #126	CB #127	25.73	248.69	248.56	0.5000	15.000	0.0130	2.20	0 00:05	3.30	0.13	4.57	0.48	0.53	0.00	0.67	Calculated
43	P #189	CB #128	CB #127	66.31	249.22	247.58	2.4700	24.000	0.0130	12.59	0 00:05	7.34	0.15	35.56	0.35	0.54	0.00	1.09	Calculated
44	P #190	CB #130	CB #128	60.56	250.74	249.42	2.1900	24.000	0.0130	12.34	0 00:05	8.25	0.12	33.44	0.37	0.48	0.00	0.96	Calculated
45	P #191	CB #129	CB #130	26.65	252.12	251.99	0.5000	15.000	0.0130	2.21	0 00:05	3.31	0.13	4.57	0.48	0.53	0.00	0.67	Calculated
46	P #192	CB #132	CB #130	144.82	258.13	250.94	4.9600	18.000	0.0130	9.40	0 00:05	9.99	0.24	23.40	0.40	0.53	0.00	0.79	Calculated
47	P #193	CB #131	CB #132	25.82	259.42	259.29	0.5000	15.000	0.0130	2.67	0 00:05	3.49	0.12	4.57	0.58	0.60	0.00	0.75	Calculated
48	P #194	CB #134	CB #132	199.91	273.19	259.20	7.0000	15.000	0.0130	4.80	0 00:05	11.55	0.29	17.09	0.28	0.37	0.00	0.46	Calculated
49	P #195	CB #133	CB #134	25.63	274.92	274.00	3.6100	15.000	0.0130	2.13	0 00:05	6.38	0.07	12.27	0.17	0.32	0.00	0.40	Calculated
50	P #196	CB #136	CB #134	190.24	281.82	274.00	4.1100	15.000	0.0130	1.97	0 00:06	7.49	0.42	13.10	0.15	0.27	0.00	0.33	Calculated
51	P #197	CB #135	CB #136	42.41	285.38	282.41	7.0000	18.000	0.0130	0.06	0 00:05	3.10	0.23	27.79	0.00	0.03	0.00	0.05	Calculated
52	P #198	CB #137	CB #136	28.13	282.16	282.02	0.5000	15.000	0.0130	1.80	0 00:06	3.13	0.15	4.57	0.39	0.47	0.00	0.59	Calculated
53	P #199	CB #138	CB #137	37.57	282.55	282.36	0.5000	15.000	0.0130	1.70	0 00:05	3.13	0.20	4.57	0.37	0.46	0.00	0.57	Calculated
54	P #200	CB #139	CB #138	65.53	283.08	282.75	0.5000	15.000	0.0130	1.60	0 00:05	3.17	0.34	4.57	0.35	0.43	0.00	0.54	Calculated
55	P #201	CB #140	CB #139	25.78	283.41	283.28	0.5000	15.000	0.0130	1.23	0 00:05	2.83	0.15	4.57	0.27	0.38	0.00	0.48	Calculated
56	P #202	CB #125	CB #141	37.65	245.61	245.42	0.5000	36.000	0.0130	36.03	0 00:06	6.19	0.10	47.16	0.76	0.77	0.00	2.30	Calculated
57	P #203	CB #141	YI #626	50.50	245.22	243.75	2.9200	36.000	0.0130	36.67	0 00:06	7.04	0.12	114.04	0.32	0.74	0.00	2.21	Calculated
58	P #204	YI #626	YI #627	98.01	243.55	243.05	0.5000	36.000	0.0130	36.91	0 00:06	5.83	0.28	47.16	0.78	0.84	0.00	2.53	Calculated
59	P #205	YI #627	CB #149	55.09	242.85	242.35	0.9200	36.000	0.0130	36.89	0 00:06	6.30	0.15	64.11	0.58	0.78	0.00	2.33	Calculated
60	P #206	YI #628	YI #629	149.99	247.99	246.02	1.3100	15.000	0.0130	0.35	0 00:05	3.04	0.82	7.41	0.05	0.19	0.00	0.24	Calculated
61	P #207	YI #629	YI #626	109.82	245.82	245.09	0.6700	18.000	0.0130	1.41	0 00:07	2.67	0.69	8.58	0.16	0.56	0.00	0.83	Calculated
62	P #208	CB #142	CB #143	53.21	255.38	251.12	8.0000	15.000	0.0130	1.00	0 00:05	7.59	0.12	18.27	0.05	0.16	0.00	0.20	Calculated
63	P #209	CB #143	CB #145	55.73	249.94	247.82	3.8100	15.000	0.0130	1.63	0 00:05	6.59	0.14	12.61	0.13	0.26	0.00	0.32	Calculated
64	P #210	CB #144	CB #145	26.08	248.13	248.00	0.5000	15.000	0.0130	0.89	0 00:05	2.61	0.17	4.57	0.20	0.32	0.00	0.40	Calculated
65	P #211	CB #145	CB #147	136.75	247.62	245.62	1.4600	18.000	0.0130	2.90	0 00:05	4.11	0.55	12.69	0.23	0.44	0.00	0.66	Calculated
66	P #212	CB #146	CB #147	31.19	246.51	246.35	0.5000	15.000	0.0130	1.55	0 00:05	3.03	0.17	4.57	0.34	0.43	0.00	0.54	Calculated
67	P #213	CB #147	CB #148	101.24	245.42	244.91	0.5000	18.000	0.0130	5.01	0 00:05	4.23	0.40	7.43	0.68	0.64	0.00	0.96	Calculated
68	P #214	CB #148	CB #149	77.32	244.71	244.32	0.5000	24.000	0.0130	5.67	0 00:06	4.20	0.31	16.08	0.35	0.45	0.00	0.89	Calculated
69	P #215	CB #149	SDMH #505	128.18	242.15	241.17	0.7600	42.000	0.0130	44.24	0 00:06	6.69	0.32	87.88	0.50	0.65	0.00	2.28	Calculated
70	P #216	SDMH #505	FES#311	191.19	240.97	240.00	0.5100	42.000	0.0130	44.17	0 00:07	6.95	0.46	71.55	0.62	0.63	0.00	2.21	Calculated



:	CB #106	CB #107	CB #109	CB #110	CB #112	CB #114	CB #116
RIM (FT):	307.18	307.00	301.42	296.15	293.25	287.02	275.40
Invert (ft):	302.74	302.36	296.48	291.23	288.24	281.98	268.89
Min Pipe Cover (ft):							
Max HGL (ft):	303.38	302.79	297.16	292.12	288.97	282.64	269.59

Link ID:	P #160	P #161	P #163	P #164	P #166	P #168	
(FT):	25.78	105.72	115.44	99.15	150.16	149.40	
(in):	15.00	15.00	15.00	15.00	18.00	18.00	
@ (%):	0.69	5.37	4.37	2.68	4.04	8.25	
Up Invert (ft):	302.74	302.36	296.48	291.23	288.24	281.98	
Dn Invert (ft):	302.56	296.68	291.43	288.57	282.18	269.65	
Max Q (cfs):	1.98	3.44	6.54	7.09	8.52	10.33	
Max Vel (ft/s):	3.52	8.79	9.64	8.36	10.56	14.50	
Max Depth (ft):	0.58	0.45	0.68	0.82	0.70	0.64	

HGL



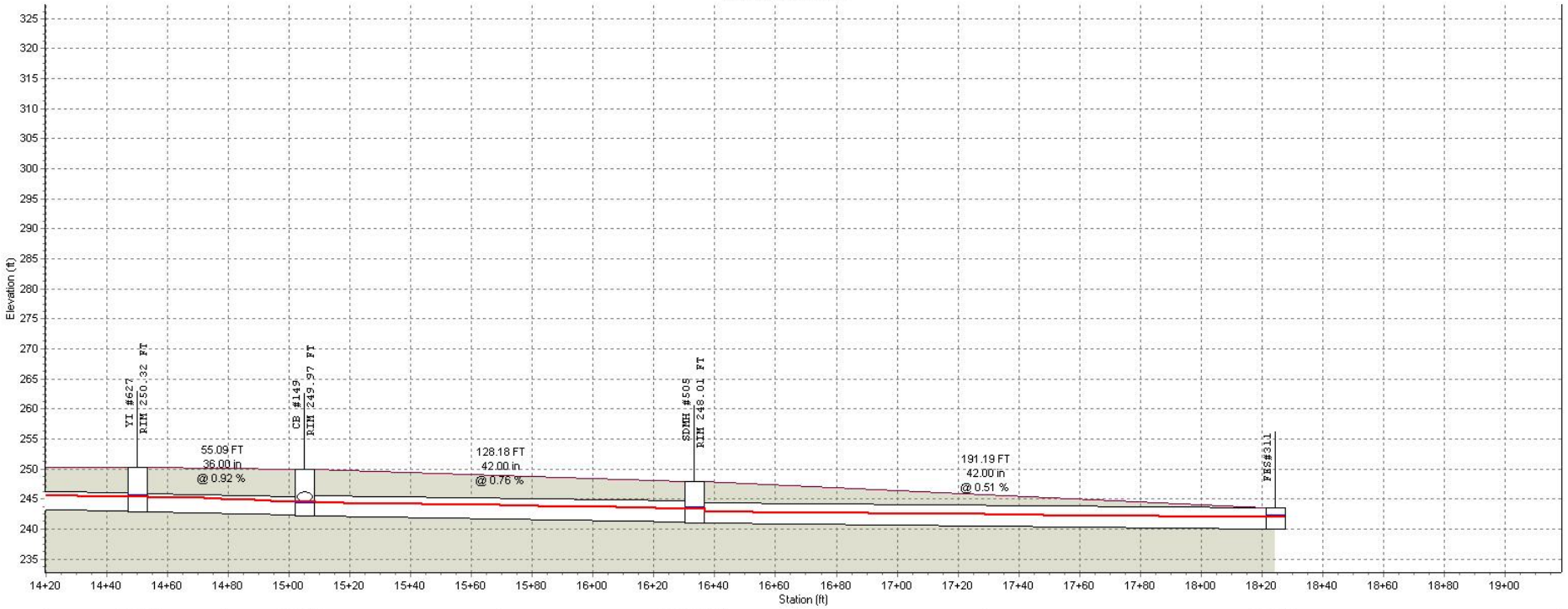
		CB #117	CB #121	CB #122	CB #124	CB #125	CB #141	YI #626	
RIM (FT):		269.36	269.03	266.52	262.72	252.95	252.93	250.05	
Invert (ft):		262.75	262.25	259.43	255.97	245.61	245.22	243.55	
Min Pipe Cover (ft):									
Max HGL (ft):		264.30	263.26	260.45	256.81	248.26	247.09	246.29	

Link ID:	P #170	P #179	P #180	P #181	P #186	P #202	P #203	P #204
(FT):	140.40	25.67	49.06	81.56	221.47	37.65	50.50	98.01
(in):	24.00	30.00	30.00	30.00	30.00	36.00	36.00	36.00
@ (%):	4.23	1.19	5.34	3.99	4.59	0.50	2.92	0.50
Up Invert (ft):	268.89	262.75	262.25	259.43	255.97	245.61	245.22	243.55
Dn Invert (ft):	262.95	262.45	259.63	256.17	245.81	245.42	243.75	243.05
Max Q (cfs):	12.08	18.00	18.73	19.03	21.04	36.03	36.67	36.91
Max Vel (ft/s):	7.55	6.81	11.45	11.57	6.16	6.19	7.04	5.83
Max Depth (ft):	1.02	1.32	0.92	0.92	1.64	2.30	2.21	2.53

HGL

Profile Plot

Main Street Storm Sewer



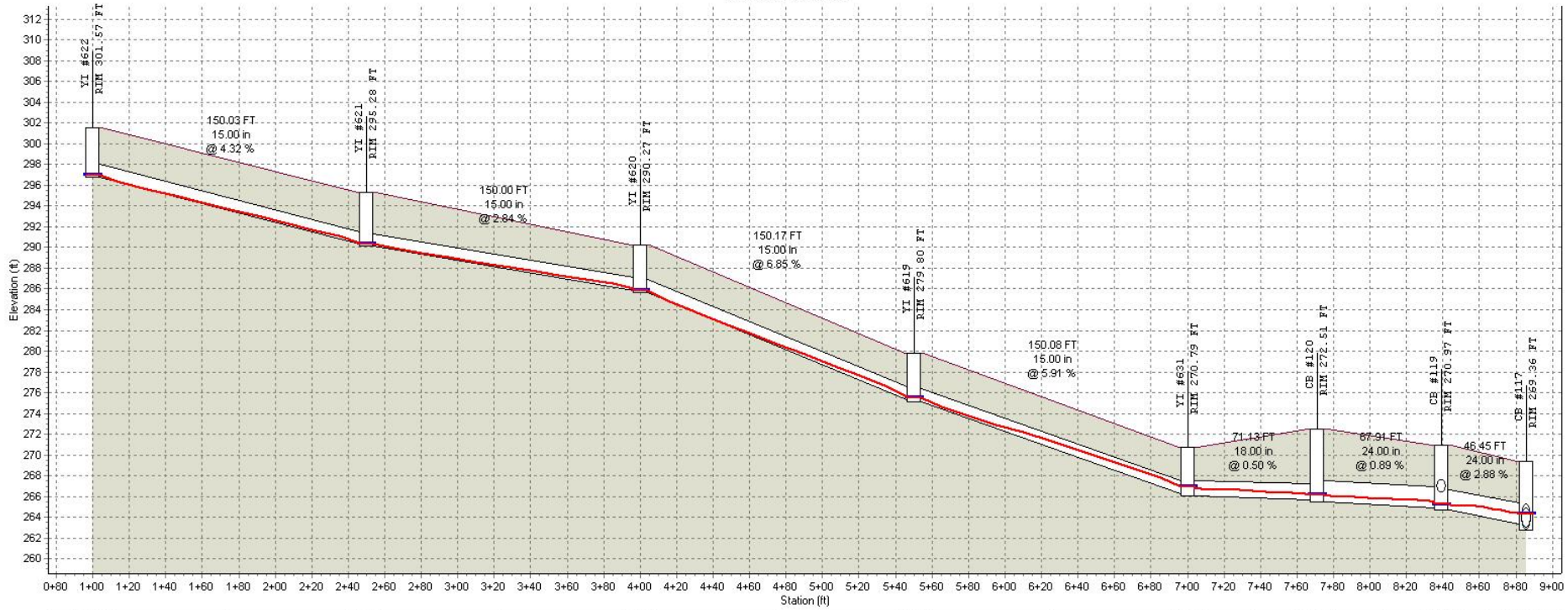
:	YI #627	CB #149	SDMH #505	FES#311
RIM (FT):	250.32	249.97	248.01	
Invert (ft):	242.85	242.15	240.97	240.00
Min Pipe Cover (ft):			3.35	
Max HGL (ft):	245.37	244.50	243.39	241.99

Link ID:	P #205	P #215	P #216	
(FT):	55.09	128.18	191.19	
(in):	36.00	42.00	42.00	
@ (%):	0.92	0.76	0.51	
Up Invert (ft):	242.85	242.15	240.97	
Dn Invert (ft):	242.35	241.17	240.00	
Max Q (cfs):	36.89	44.24	44.17	
Max Vel (ft/s):	6.30	6.69	6.95	
Max Depth (ft):	2.33	2.28	2.21	

HGL

Profile Plot

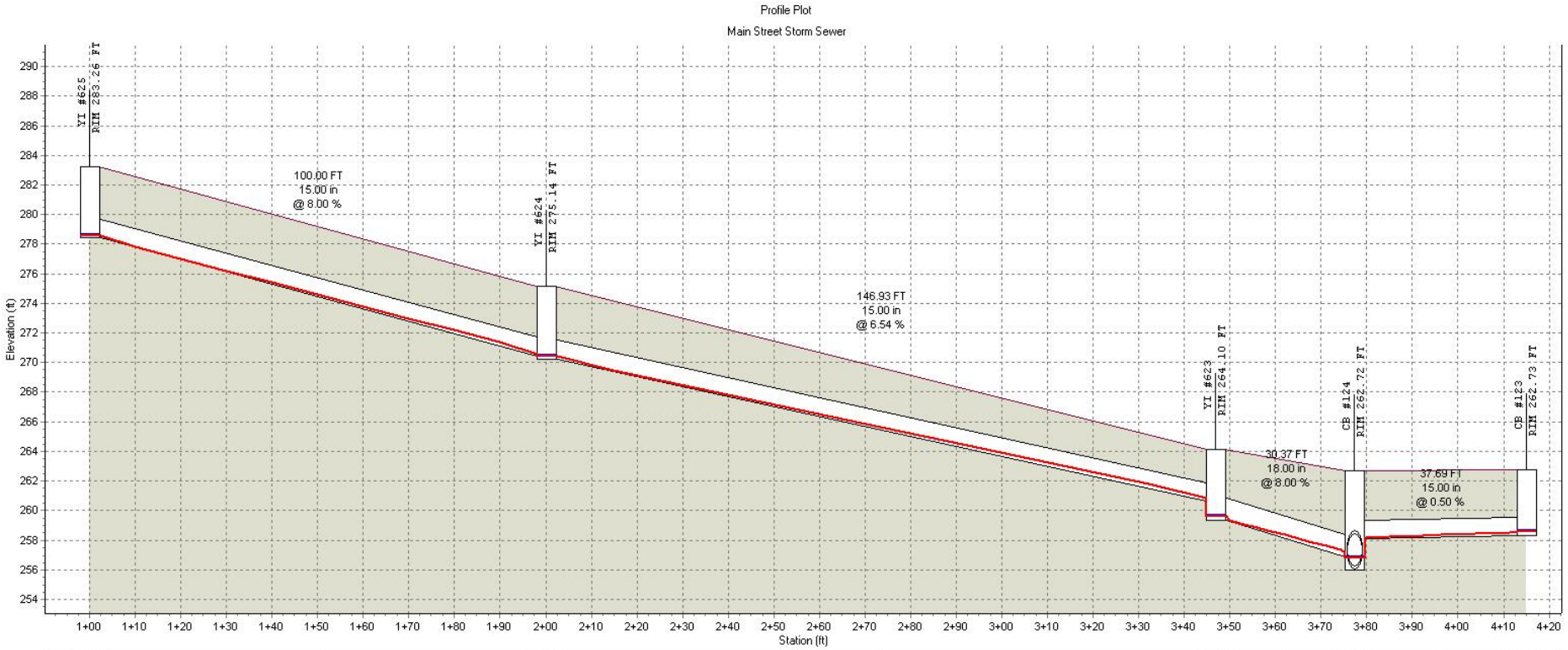
Main Street Storm Sewer



:	YI #622	YI #621	YI #620	YI #619	YI #631	CB #120	CB #119	CB #117
RIM (FT):	301.57	295.28	290.27	279.80	270.79	272.51	270.97	269.36
Invert (ft):	296.78	290.09	285.63	275.15	266.07	265.52	264.70	262.75
Min Pipe Cover (ft):								
Max HGL (ft):	296.92	290.33	285.87	275.50	266.92	266.20	265.25	264.30

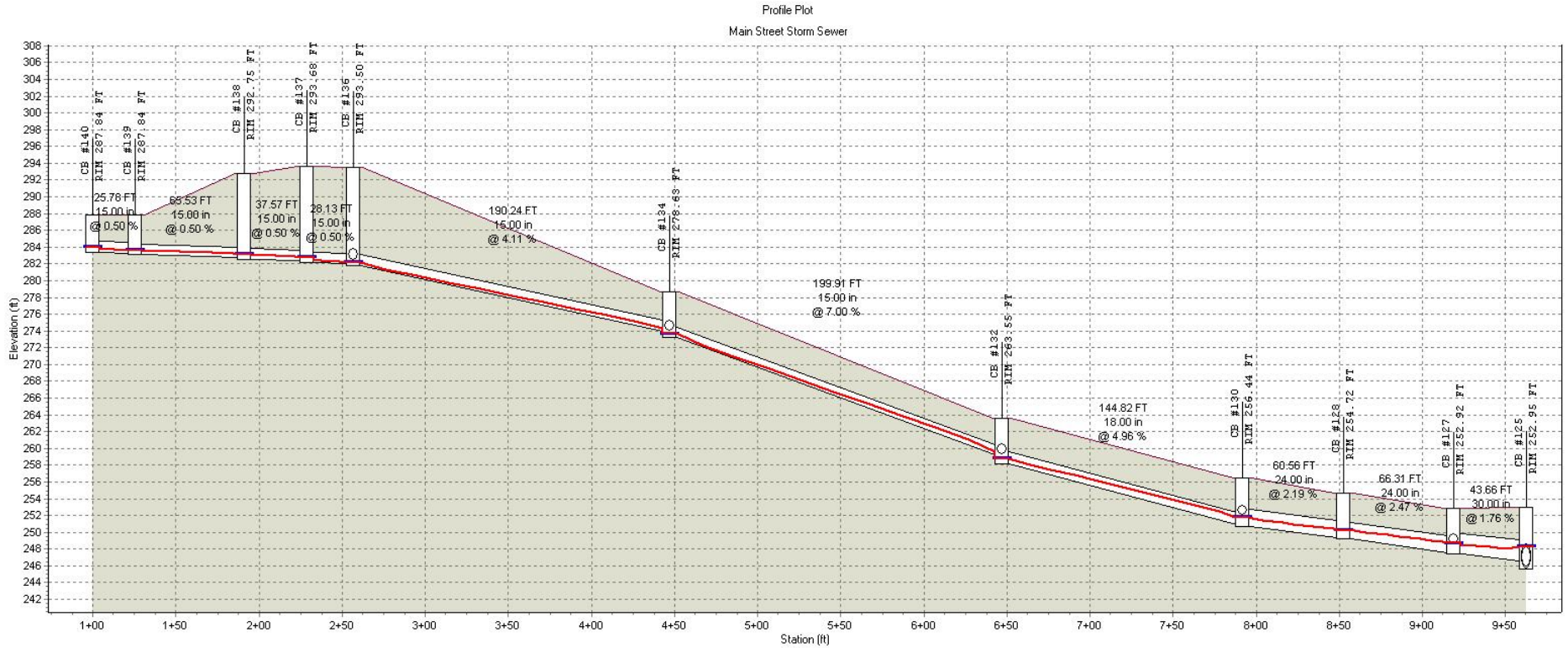
Link ID:	P #178	P #177	P #176	P #175	P #174	P #173	P #171
(FT):	150.03	150.00	150.17	150.08	71.13	67.91	46.45
(in):	15.00	15.00	15.00	15.00	18.00	24.00	24.00
@ (%):	4.32	2.84	6.85	5.91	0.50	0.89	2.88
Up Invert (ft):	296.78	290.09	285.63	275.15	266.07	265.52	264.70
Dn Invert (ft):	290.29	285.83	275.35	266.27	265.72	264.92	263.36
Max Q (cfs):	0.36	0.80	1.23	2.65	3.49	3.96	4.66
Max Vel (ft/s):	4.66	5.07	7.86	6.86	3.78	4.68	5.86
Max Depth (ft):	0.14	0.23	0.23	0.50	0.78	0.63	0.74

HGL



	YI #625	YI #624	YI #623	CB #124	CB #123
RIM (FT):	283.26	275.14	264.10	262.72	262.73
Invert (ft):	278.45	270.25	259.34	255.97	258.29
Min Pipe Cover (ft):					
Max HGL (ft):	278.60	270.44	259.59	256.81	258.57

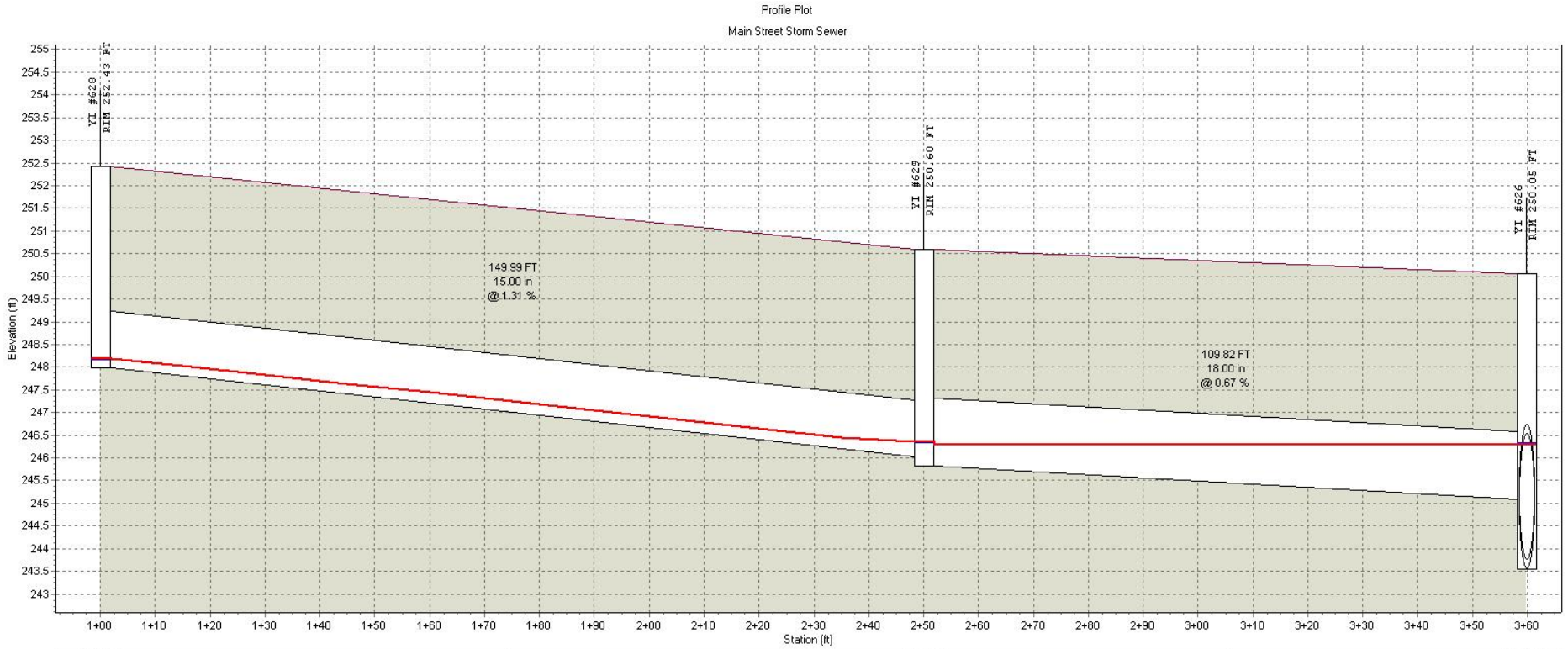
Link ID:	P #184	P #183	P #182	P #185
(FT):	100.00	146.93	30.37	37.69
(in):	15.00	15.00	18.00	15.00
@ (%):	8.00	6.54	8.00	0.50
Up Invert (ft):	278.45	270.25	259.34	258.29
Dn Invert (ft):	270.45	260.64	256.91	258.11
Max Q (cfs):	0.57	0.82	1.41	0.41
Max Vel (ft/s):	6.61	6.89	7.86	2.18
Max Depth (ft):	0.15	0.19	0.24	0.26



	CB #140	CB #139	CB #138	CB #137	CB #136	CB #134	CB #132	CB #130	CB #128	CB #127	CB #125
RIM (FT):	287.84	287.84	292.75	293.68	293.50	278.63	263.55	256.44	254.72	252.92	252.95
Invert (ft):	283.41	283.08	282.55	282.16	281.82	273.19	258.13	250.74	249.22	247.38	245.61
Min Pipe Cover (ft):											
Max HGL (ft):	283.93	283.66	283.17	282.82	282.16	273.67	258.82	251.82	250.26	248.71	248.26

Link ID:	P #201	P #200	P #199	P #198	P #196	P #194	P #192	P #190	P #189	P #187
(FT):	25.78	65.53	37.57	28.13	190.24	199.91	144.82	60.56	66.31	43.66
(in):	15.00	15.00	15.00	15.00	15.00	15.00	18.00	24.00	24.00	30.00
@ (%):	0.50	0.50	0.50	0.50	4.11	7.00	4.96	2.19	2.47	1.76
Up Invert (ft):	283.41	283.08	282.55	282.16	281.82	273.19	258.13	250.74	249.22	247.38
Dn Invert (ft):	283.28	282.75	282.36	282.02	274.00	259.20	250.94	249.42	247.58	246.61
Max Q (cfs):	1.23	1.60	1.70	1.80	1.97	4.80	9.40	12.34	12.59	15.12
Max Vel (ft/s):	2.83	3.17	3.13	3.13	7.49	11.55	9.99	8.25	7.34	6.73
Max Depth (ft):	0.48	0.54	0.57	0.59	0.33	0.46	0.79	0.96	1.09	1.48

HGL

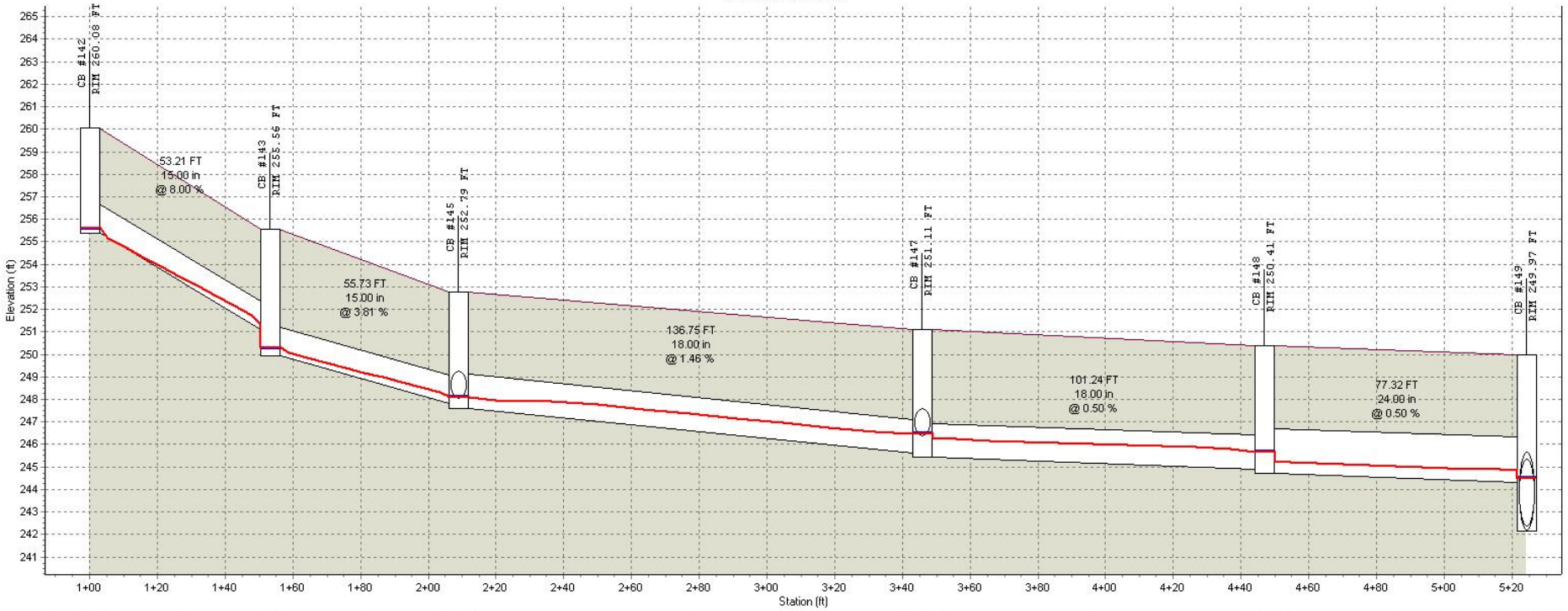


:	YI #628		YI #629		YI #626
RIM (FT):	252.43		250.60		250.05
Invert (ft):	247.99		245.82		243.55
Min Pipe Cover (ft):					
Max HGL (ft):	248.18		246.35		246.29
Link ID:		P #206		P #207	
(FT):		149.99		109.82	
(in):		15.00		18.00	
@ (%):		1.31		0.67	
Up Invert (ft):		247.99		245.82	
Dn Invert (ft):		246.02		245.09	
Max Q (cfs):		0.35		1.41	
Max Vel (ft/s):		3.04		2.67	
Max Depth (ft):		0.24		0.83	

HGL

Profile Plot

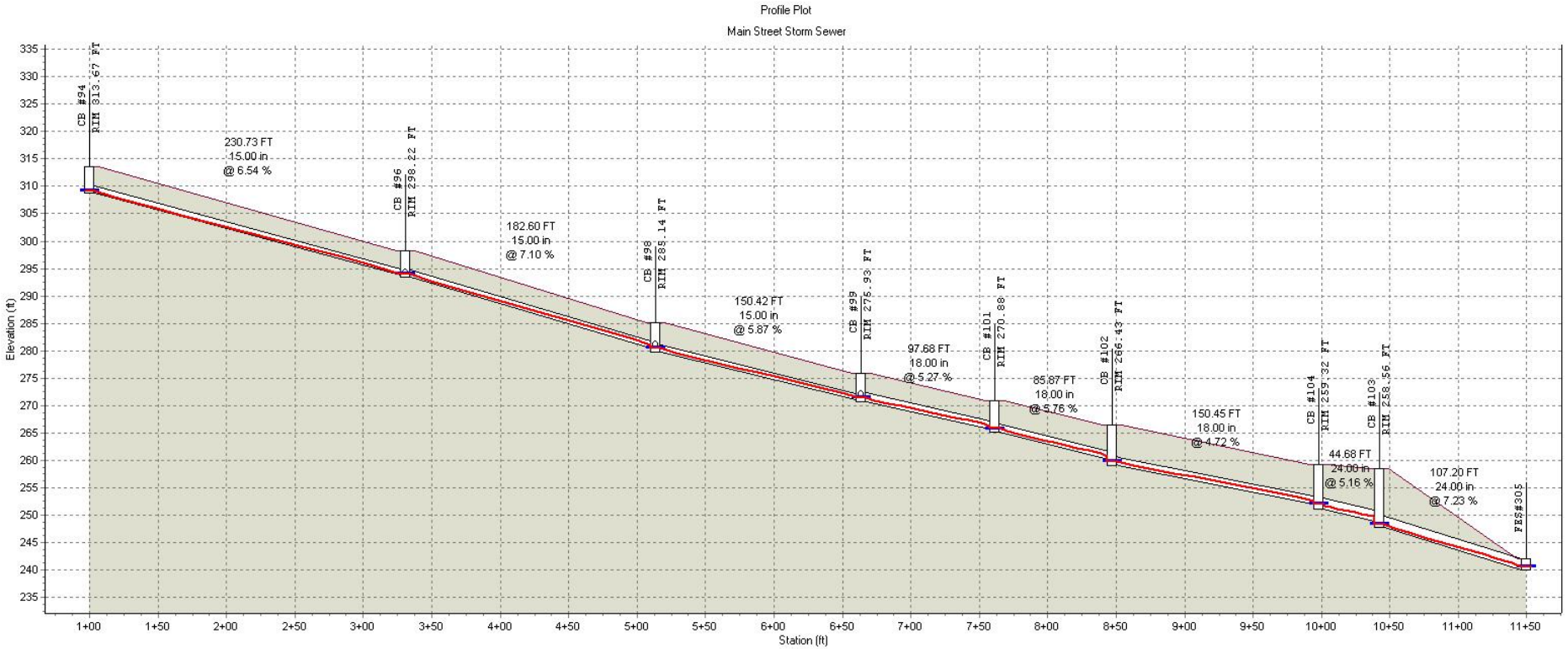
Main Street Storm Sewer



:	CB #142	CB #143	CB #145	CB #147	CB #148	CB #149
RIM (FT):	260.08	255.56	252.79	251.11	250.41	249.97
Invert (ft):	255.38	249.94	247.62	245.42	244.71	242.15
Min Pipe Cover (ft):						
Max HGL (ft):	255.59	250.28	248.11	246.47	245.68	244.50

Link ID:	P #208	P #209	P #211	P #213	P #214
(FT):	53.21	55.73	136.75	101.24	77.32
(in):	15.00	15.00	18.00	18.00	24.00
@ (%):	8.00	3.81	1.46	0.50	0.50
Up Invert (ft):	255.38	249.94	247.62	245.42	244.71
Dn Invert (ft):	251.12	247.82	245.62	244.91	244.32
Max Q (cfs):	1.00	1.63	2.90	5.01	5.67
Max Vel (ft/s):	7.59	6.59	4.11	4.23	4.20
Max Depth (ft):	0.20	0.32	0.66	0.96	0.89

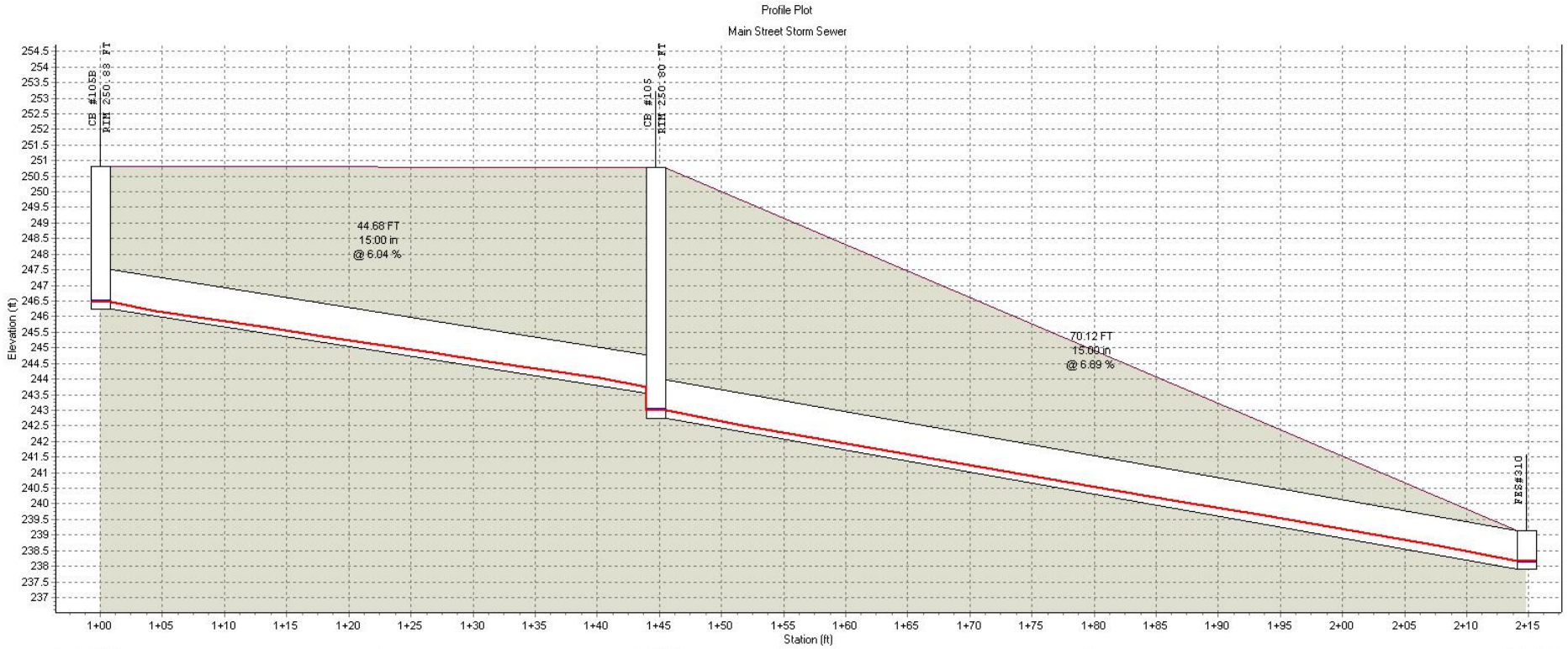
HGL



:	CB #94	CB #96	CB #98	CB #99	CB #101	CB #102	CB #104	CB #103	FES#305
RIM (FT):	313.67	298.22	285.14	275.93	270.88	266.43	259.32	258.56	
Invert (ft):	308.82	293.53	279.82	270.79	265.10	259.12	251.21	247.75	240.00
Min Pipe Cover (ft):									
Max HGL (ft):	309.14	294.02	280.46	271.50	265.81	259.86	251.98	248.40	240.58

Link ID:	P #144	P #146	P #148	P #149	P #151	P #152	P #153	P #154
(FT):	230.73	182.60	150.42	97.68	85.87	150.45	44.68	107.20
(in):	15.00	15.00	15.00	18.00	18.00	18.00	24.00	24.00
@ (%):	6.54	7.10	5.87	5.27	5.76	4.72	5.16	7.23
Up Invert (ft):	308.82	293.53	279.82	270.79	265.10	259.12	251.21	247.75
Dn Invert (ft):	293.73	280.57	270.99	265.64	260.15	252.01	248.90	240.00
Max Q (cfs):	2.22	5.04	6.96	8.59	8.79	9.22	9.89	11.09
Max Vel (ft/s):	9.20	11.72	11.68	11.35	11.66	11.42	10.43	13.46
Max Depth (ft):	0.31	0.48	0.61	0.67	0.66	0.70	0.68	0.62

HGL

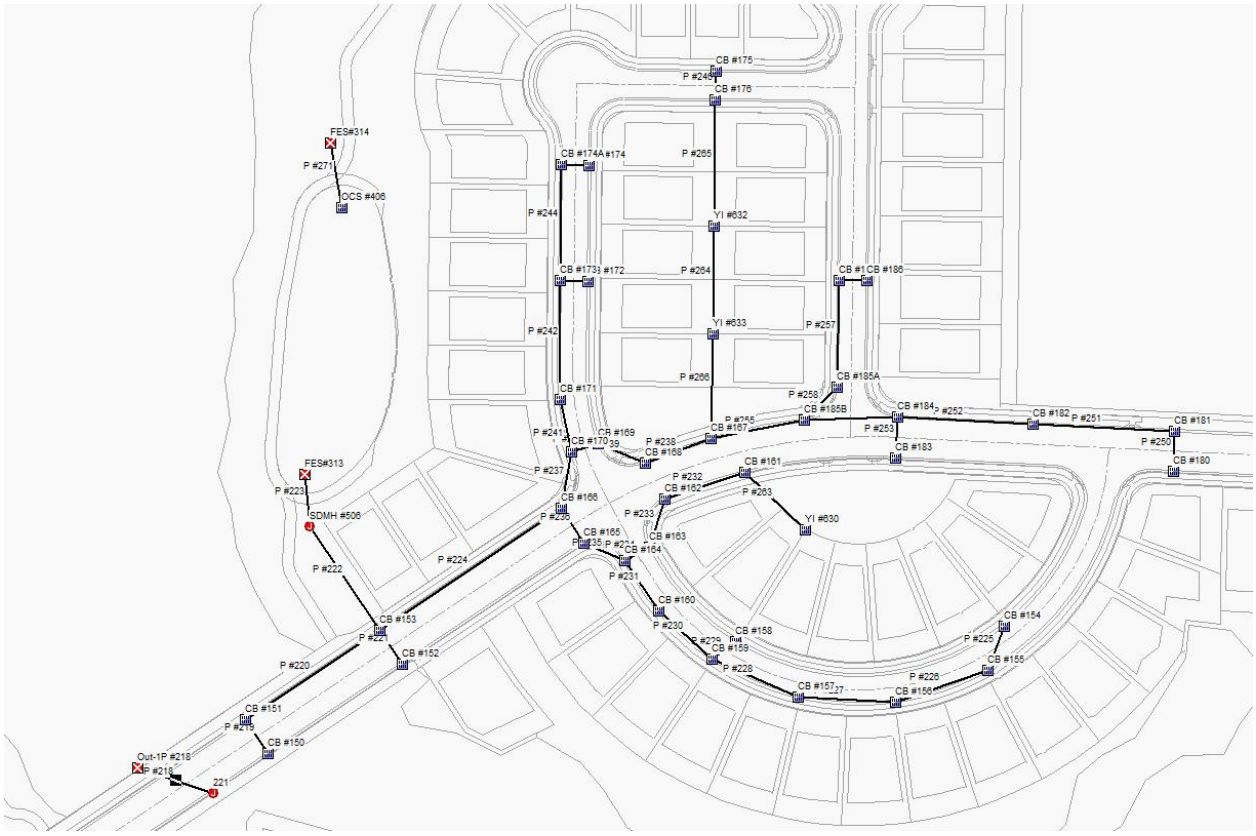


:	CB #105B		CB #105		FES#310
RIM (FT):	250.83		250.80		
Invert (ft):	246.24		242.73		237.90
Min Pipe Cover (ft):					
Max HGL (ft):	246.47		243.01		238.16
Link ID:		P #157		P #156	
(FT):		44.68		70.12	
(in):		15.00		15.00	
@ (%):		6.04		6.89	
Up Invert (ft):		246.24		242.73	
Dn Invert (ft):		243.55		237.90	
Max Q (cfs):		0.93		1.62	
Max Vel (ft/s):		6.66		8.29	
Max Depth (ft):		0.21		0.27	

HGL

S T O R M W A T E R AREA " D "

STORMWATER PIPING AND HYDRAULIC GRADE LINE FOR 10-YR STORM

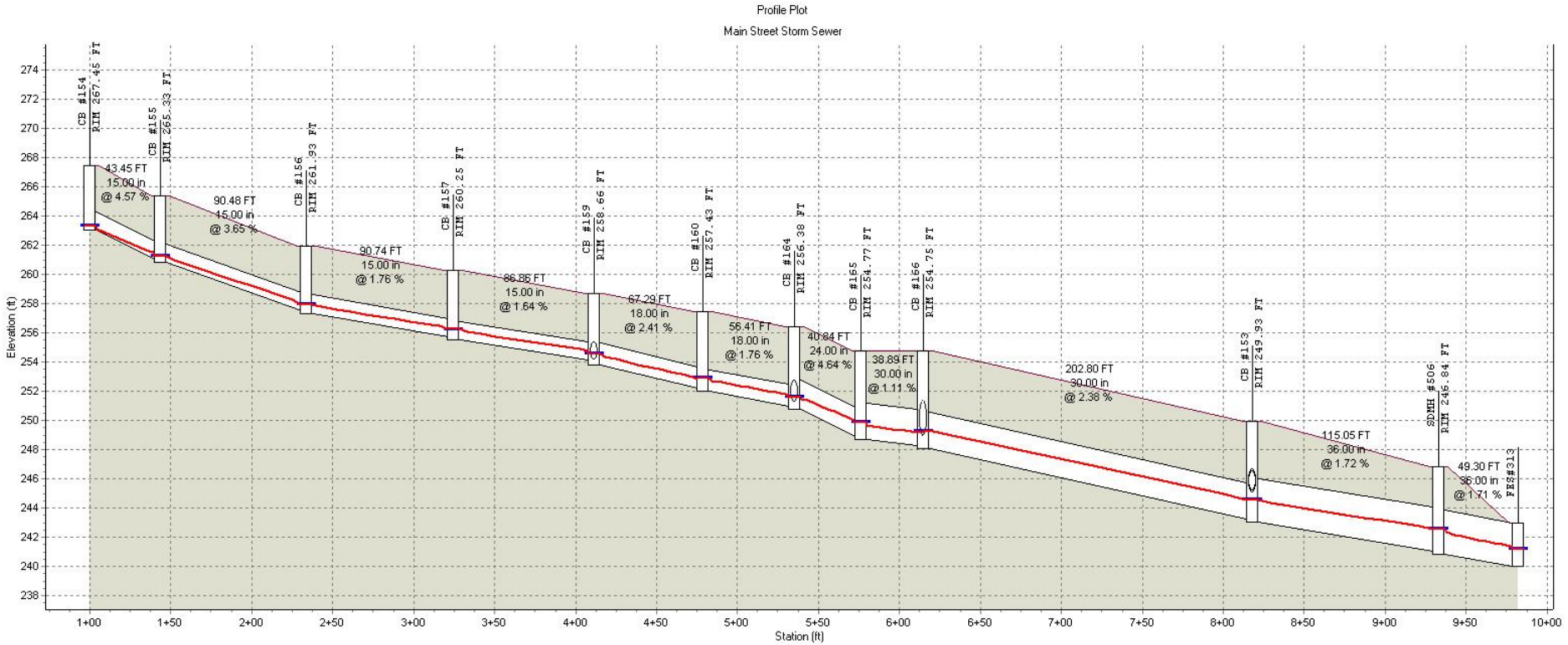


PLAN VIEW

DRAINAGE AREA

SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
1	Sub-CB#150	0.29	CB #150	0.5900	0.60	0.35	1.23	7.210	0 00:05:00
2	Sub-CB#151	0.25	CB #151	0.8300	0.60	0.50	1.50	7.210	0 00:05:00
3	Sub-CB#152	0.42	CB #152	0.5500	0.60	0.33	1.67	7.210	0 00:05:00
4	Sub-CB#153	0.34	CB #153	0.5400	0.60	0.32	1.32	7.210	0 00:05:00
5	Sub-CB#154	0.27	CB #154	0.5900	0.60	0.35	1.15	7.210	0 00:05:00
6	Sub-CB#155	0.45	CB #155	0.5400	0.60	0.32	1.75	7.210	0 00:05:00
7	Sub-CB#156	0.18	CB #156	0.5400	0.60	0.32	0.70	7.210	0 00:05:00
8	Sub-CB#157	0.20	CB #157	0.5400	0.60	0.32	0.78	7.210	0 00:05:00
9	Sub-CB#158	0.43	CB #158	0.5900	0.60	0.35	1.83	7.210	0 00:05:00
10	Sub-CB#159	0.17	CB #159	0.5900	0.60	0.35	0.72	7.210	0 00:05:00
11	Sub-CB#160	0.13	CB #160	0.5400	0.60	0.32	0.51	7.210	0 00:05:00
12	Sub-CB#161	0.10	CB #161	0.8300	0.60	0.50	0.60	7.210	0 00:05:00
13	Sub-CB#162	0.05	CB #162	0.8300	0.60	0.50	0.30	7.210	0 00:05:00
14	Sub-CB#163	0.26	CB #163	0.5900	0.60	0.35	1.11	7.210	0 00:05:00
15	Sub-CB#164	0.09	CB #164	0.5900	0.60	0.35	0.38	7.210	0 00:05:00
16	Sub-CB#165	0.08	CB #165	0.4900	0.60	0.29	0.28	7.210	0 00:05:00
17	Sub-CB#166	0.10	CB #166	0.5900	0.60	0.35	0.43	7.210	0 00:05:00
18	Sub-CB#167	0.14	CB #167	0.7900	0.60	0.48	0.80	7.210	0 00:05:00
19	Sub-CB#168	0.05	CB #168	0.8300	0.60	0.50	0.30	7.210	0 00:05:00
20	Sub-CB#169	0.41	CB #169	0.5000	0.60	0.30	1.48	7.210	0 00:05:00
21	Sub-CB#170	0.10	CB #170	0.4900	0.60	0.29	0.35	7.210	0 00:05:00
22	Sub-CB#171	0.19	CB #171	0.5400	0.60	0.32	0.74	7.210	0 00:05:00
23	Sub-CB#172	0.18	CB #172	0.5400	0.60	0.32	0.70	7.210	0 00:05:00
24	Sub-CB#173	0.19	CB #173	0.5400	0.60	0.32	0.74	7.210	0 00:05:00
25	Sub-CB#174	0.09	CB #174	0.4900	0.60	0.29	0.32	7.210	0 00:05:00
26	Sub-CB#174A	0.41	CB #174A	0.5900	0.60	0.35	1.74	7.210	0 00:05:00
27	Sub-CB#175	0.41	CB #175	0.5900	0.60	0.35	1.74	7.210	0 00:05:00
28	Sub-CB#176	0.04	CB #176	0.8300	0.60	0.50	0.24	7.210	0 00:05:00
29	Sub-CB#180	0.24	CB #180	0.5900	0.60	0.35	1.02	7.210	0 00:05:00
30	Sub-CB#181	0.10	CB #181	0.8300	0.60	0.50	0.60	7.210	0 00:05:00
31	Sub-CB#182	0.09	CB #182	0.8300	0.60	0.50	0.54	7.210	0 00:05:00
32	Sub-CB#183	0.09	CB #183	0.8300	0.60	0.50	0.54	7.210	0 00:05:00
33	Sub-CB#184	0.09	CB #184	0.8300	0.60	0.50	0.54	7.210	0 00:05:00
34	Sub-CB#185	0.14	CB #185	0.5400	0.60	0.32	0.55	7.210	0 00:05:00
35	Sub-CB#185A	0.01	CB #185A	0.7000	0.60	0.42	0.05	7.210	0 00:05:00
36	Sub-CB#185B	0.05	CB #185B	0.8300	0.60	0.50	0.30	7.210	0 00:05:00
37	Sub-CB#186	0.23	CB #186	0.5400	0.60	0.32	0.90	7.210	0 00:05:00
38	Sub-YI#630	0.62	YI #630	0.3500	0.60	0.21	1.57	7.210	0 00:05:00
39	Sub-YI#632	0.25	YI #632	0.3500	0.60	0.21	0.63	7.210	0 00:05:00
40	Sub-YI#633	0.36	YI #633	0.3500	0.60	0.21	0.91	7.210	0 00:05:00

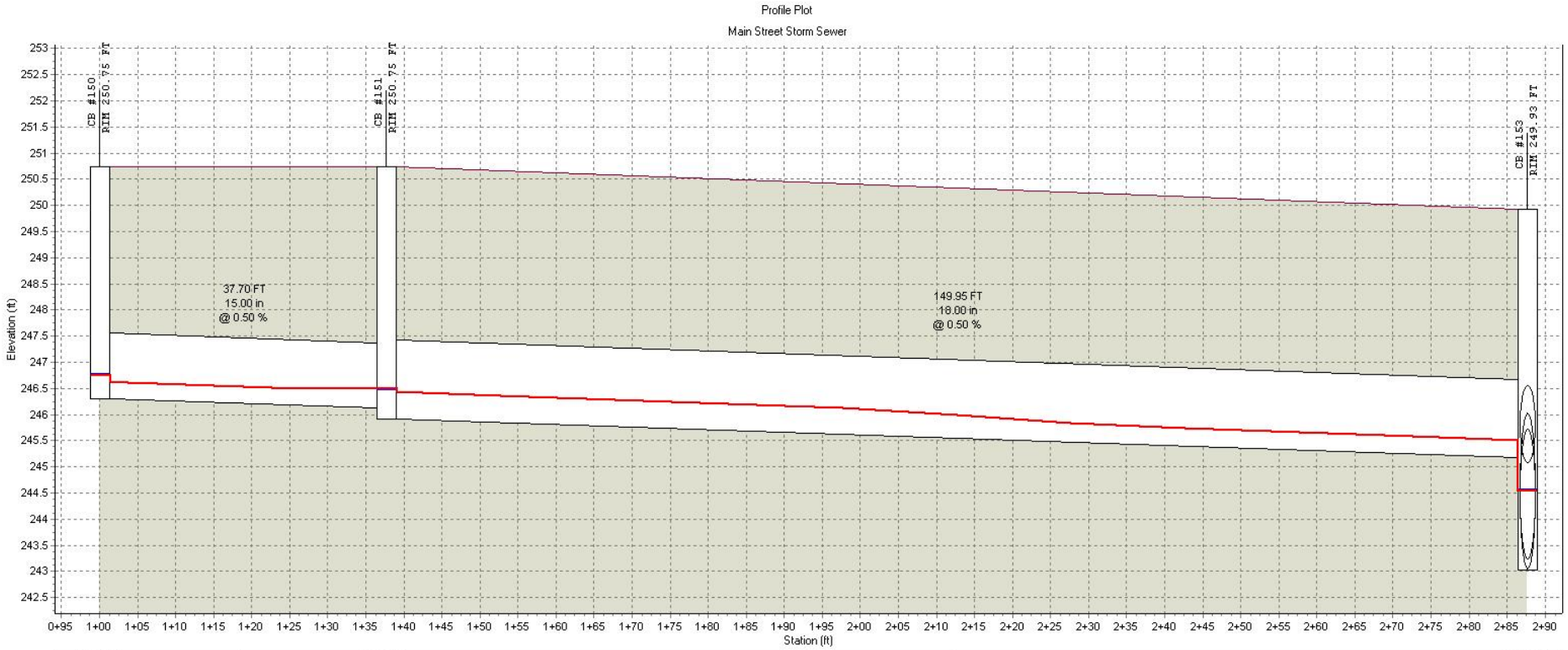
MODEL INPUT										MODEL OUTPUT									
SN	Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (inches)	Manning's Roughness	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Max Flow Velocity (ft/sec)	Travel Time (min)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged (min)	Max Flow Depth (ft)	Reported Condition
1	P #219	CB #150	CB #151	37.70	246.31	246.12	0.5000	15.000	0.0130	0.96	0 00:05	2.70	0.23	4.57	0.21	0.33	0.00	0.41	Calculated
2	P #220	CB #151	CB #153	149.95	245.92	245.17	0.5000	18.000	0.0130	1.99	0 00:05	3.40	0.74	7.43	0.27	0.37	0.00	0.55	Calculated
3	P #221	CB #152	CB #153	37.73	245.24	245.05	0.5000	18.000	0.0130	1.67	0 00:06	3.04	0.21	7.43	0.23	0.35	0.00	0.53	Calculated
4	P #222	CB #153	SDMH #506	115.05	243.02	241.04	1.7200	36.000	0.0130	30.05	0 00:06	8.40	0.23	87.49	0.34	0.51	0.00	1.52	Calculated
5	P #223	SDMH #506	FES#313	49.30	240.84	240.00	1.7100	36.000	0.0130	30.08	0 00:06	8.78	0.09	87.27	0.34	0.49	0.00	1.46	Calculated
6	P #224	CB #166	CB #153	202.80	248.06	243.22	2.3800	30.000	0.0130	25.02	0 00:06	9.98	0.34	63.31	0.40	0.51	0.00	1.27	Calculated
7	P #225	CB #154	CB #155	43.45	263.02	261.03	4.5700	15.000	0.0130	1.09	0 00:05	6.27	0.12	13.81	0.08	0.20	0.00	0.25	Calculated
8	P #226	CB #155	CB #156	90.48	260.83	257.52	3.6500	15.000	0.0130	2.67	0 00:05	7.39	0.20	12.34	0.22	0.34	0.00	0.42	Calculated
9	P #227	CB #156	CB #157	90.74	257.32	255.72	1.7600	15.000	0.0130	3.42	0 00:05	6.10	0.25	8.58	0.40	0.47	0.00	0.58	Calculated
10	P #228	CB #157	CB #159	86.86	255.52	254.10	1.6400	15.000	0.0130	4.08	0 00:05	6.14	0.24	8.28	0.49	0.53	0.00	0.67	Calculated
11	P #229	CB #158	CB #159	27.12	254.24	254.10	0.5300	15.000	0.0130	1.45	0 00:05	2.98	0.15	4.71	0.31	0.42	0.00	0.52	Calculated
12	P #230	CB #159	CB #160	67.29	253.80	252.18	2.4100	18.000	0.0130	6.12	0 00:05	7.16	0.16	16.31	0.37	0.49	0.00	0.73	Calculated
13	P #231	CB #160	CB #164	56.41	251.98	250.98	1.7600	18.000	0.0130	6.57	0 00:05	6.71	0.14	13.95	0.47	0.54	0.00	0.81	Calculated
14	P #232	CB #161	CB #162	77.51	253.23	252.57	0.8500	18.000	0.0130	2.05	0 00:05	4.05	0.32	9.71	0.21	0.33	0.00	0.49	Calculated
15	P #233	CB #162	CB #163	47.01	252.37	251.59	1.6400	18.000	0.0130	2.32	0 00:05	3.89	0.20	13.47	0.17	0.40	0.00	0.60	Calculated
16	P #234	CB #163	CB #164	25.73	251.39	251.26	0.5000	18.000	0.0130	3.68	0 00:05	3.67	0.12	7.43	0.50	0.55	0.00	0.83	Calculated
17	P #235	CB #164	CB #165	40.84	250.78	248.89	4.6400	24.000	0.0130	10.59	0 00:05	7.92	0.09	48.72	0.22	0.44	0.00	0.88	Calculated
18	P #236	CB #165	CB #166	38.89	248.69	248.26	1.1100	30.000	0.0130	10.84	0 00:06	5.28	0.12	43.13	0.25	0.44	0.00	1.09	Calculated
19	P #237	CB #170	CB #166	53.43	251.39	248.87	4.7200	30.000	0.0130	13.70	0 00:06	10.89	0.08	89.10	0.15	0.30	0.00	0.76	Calculated
20	P #238	CB #167	CB #168	65.21	253.47	252.71	1.1700	24.000	0.0130	8.05	0 00:05	5.67	0.19	24.43	0.33	0.47	0.00	0.93	Calculated
21	P #239	CB #168	CB #169	47.73	252.51	251.92	1.2300	24.000	0.0130	8.29	0 00:06	4.36	0.18	25.11	0.33	0.58	0.00	1.17	Calculated
22	P #240	CB #169	CB #170	25.80	251.72	251.59	0.5000	24.000	0.0130	9.59	0 00:06	4.53	0.09	16.00	0.60	0.64	0.00	1.28	Calculated
23	P #241	CB #171	CB #170	49.61	252.72	251.72	2.0100	18.000	0.0130	3.95	0 00:05	6.24	0.13	14.89	0.27	0.39	0.00	0.58	Calculated
24	P #242	CB #173	CB #171	109.56	255.46	252.92	2.3300	18.000	0.0130	3.29	0 00:05	6.71	0.27	16.02	0.21	0.32	0.00	0.48	Calculated
25	P #243	CB #172	CB #173	25.73	256.01	255.88	0.5000	15.000	0.0130	0.66	0 00:05	2.41	0.18	4.57	0.14	0.27	0.00	0.34	Calculated
26	P #244	CB #174A	CB #173	107.41	258.29	255.66	2.4400	18.000	0.0130	1.69	0 00:05	5.74	0.31	16.42	0.10	0.22	0.00	0.33	Calculated
27	P #245	CB #174	CB #174A	25.60	258.69	258.56	0.5000	15.000	0.0130	0.31	0 00:05	2.00	0.21	4.57	0.07	0.18	0.00	0.23	Calculated
28	P #246	CB #175	CB #176	26.23	258.56	258.43	0.5000	15.000	0.0130	1.27	0 00:05	2.85	0.15	4.57	0.28	0.39	0.00	0.49	Calculated
29	P #250	CB #180	CB #181	37.71	277.52	276.95	1.5000	15.000	0.0130	0.97	0 00:05	4.01	0.16	7.92	0.12	0.25	0.00	0.32	Calculated
30	P #251	CB #181	CB #182	131.27	276.75	271.30	4.1500	18.000	0.0130	1.53	0 00:05	6.82	0.32	21.39	0.07	0.18	0.00	0.28	Calculated
31	P #252	CB #182	CB #184	126.56	271.10	265.16	4.7000	18.000	0.0130	2.01	0 00:05	7.68	0.27	22.77	0.09	0.21	0.00	0.31	Calculated
32	P #253	CB #183	CB #184	37.71	267.23	267.04	0.5000	15.000	0.0130	0.52	0 00:05	2.33	0.27	4.57	0.11	0.24	0.00	0.30	Calculated
33	P #254	CB #184	CB #185B	85.93	264.96	260.39	5.3100	18.000	0.0130	3.02	0 00:05	8.79	0.16	24.20	0.12	0.25	0.00	0.37	Calculated
34	P #255	CB #185B	CB #167	88.06	257.93	253.67	4.8400	18.000	0.0130	4.54	0 00:05	7.00	0.21	23.11	0.20	0.41	0.00	0.61	Calculated
35	P #256	CB #186	CB #185	25.73	259.37	259.24	0.5000	15.000	0.0130	0.76	0 00:05	2.50	0.17	4.57	0.17	0.30	0.00	0.37	Calculated
36	P #257	CB #185	CB #185A	98.73	259.04	258.55	0.5000	15.000	0.0130	1.23	0 00:05	3.02	0.54	4.57	0.27	0.37	0.00	0.46	Calculated
37	P #258	CB #185A	CB #185B	43.39	258.35	258.13	0.5000	15.000	0.0130	1.27	0 00:06	2.92	0.25	4.57	0.28	0.38	0.00	0.48	Calculated
38	P #263	YI #630	CB #161	77.97	253.82	253.43	0.5000	15.000	0.0130	1.50	0 00:05	3.15	0.41	4.57	0.33	0.41	0.00	0.52	Calculated
39	P #264	YI #632	YI #633	100.00	256.27	254.35	1.9200	15.000	0.0130	2.07	0 00:05	4.72	0.35	8.94	0.23	0.42	0.00	0.52	Calculated
40	P #265	CB #176	YI #632	116.89	258.23	256.56	1.4300	15.000	0.0130	1.47	0 00:05	4.64	0.42	7.72	0.19	0.31	0.00	0.38	Calculated
41	P #266	YI #633	CB #167	97.52	254.15	253.67	0.5000	15.000	0.0130	2.85	0 00:05	3.48	0.47	4.57	0.62	0.64	0.00	0.80	Calculated



:	CB #154	CB #155	CB #156	CB #157	CB #159	CB #160	CB #164	CB #165	CB #166	CB #153	SDMH #506	FES#313
RIM (FT):	267.45	265.33	261.93	260.25	258.66	257.43	256.38	254.77	254.75	249.93	246.84	
Invert (ft):	263.02	260.83	257.32	255.52	253.80	251.98	250.78	248.69	248.06	243.02	240.84	240.00
Min Pipe Cover (ft):											2.79	
Max HGL (ft):	263.28	261.26	257.94	256.24	254.56	252.88	251.59	249.84	249.28	244.55	242.56	241.22

Link ID:	P #225	P #226	P #227	P #228	P #230	P #231	P #235	P #236	P #224	P #222	P #223
(FT):	43.45	90.48	90.74	86.86	67.29	56.41	40.84	38.89	202.80	115.05	49.30
(in):	15.00	15.00	15.00	15.00	18.00	18.00	24.00	30.00	30.00	36.00	36.00
@ (%):	4.57	3.65	1.76	1.64	2.41	1.76	4.64	1.11	2.38	1.72	1.71
Up Invert (ft):	263.02	260.83	257.32	255.52	253.80	251.98	250.78	248.69	248.06	243.02	240.84
Dn Invert (ft):	261.03	257.52	255.72	254.10	252.18	250.98	248.89	248.26	243.22	241.04	240.00
Max Q (cfs):	1.09	2.67	3.42	4.08	6.12	6.57	10.59	10.84	25.02	30.05	30.08
Max Vel (ft/s):	6.27	7.39	6.10	6.14	7.16	6.71	7.92	5.28	9.98	8.40	8.78
Max Depth (ft):	0.25	0.42	0.58	0.67	0.73	0.81	0.88	1.09	1.27	1.52	1.46

HGL

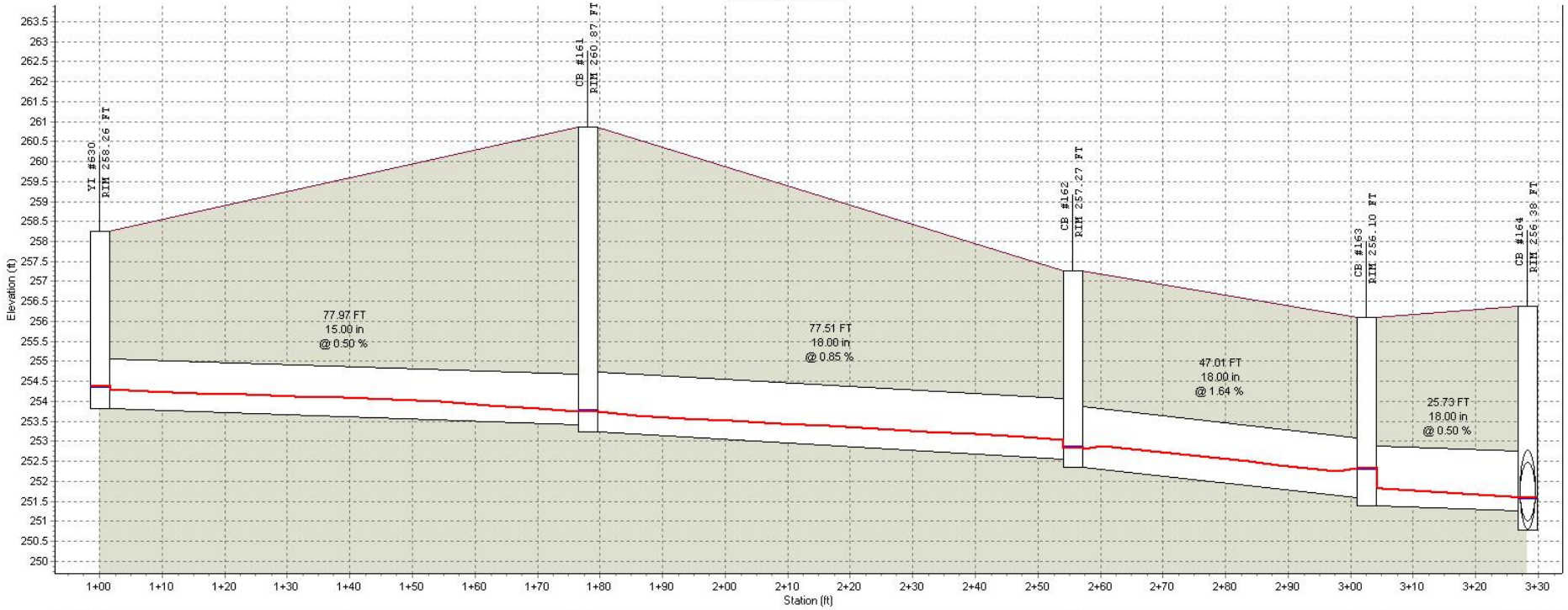


	CB #150	CB #151	CB #153
RIM (FT):	250.75	250.75	249.93
Invert (ft):	246.31	245.92	243.02
Min Pipe Cover (ft):			
Max HGL (ft):	246.75	246.49	244.55

Link ID:	P #219	P #220
(FT):	37.70	149.95
(in):	15.00	18.00
@ (%):	0.50	0.50
Up Invert (ft):	246.31	245.92
Dn Invert (ft):	246.12	245.17
Max Q (cfs):	0.96	1.99
Max Vel (ft/s):	2.70	3.40
Max Depth (ft):	0.41	0.55

Profile Plot

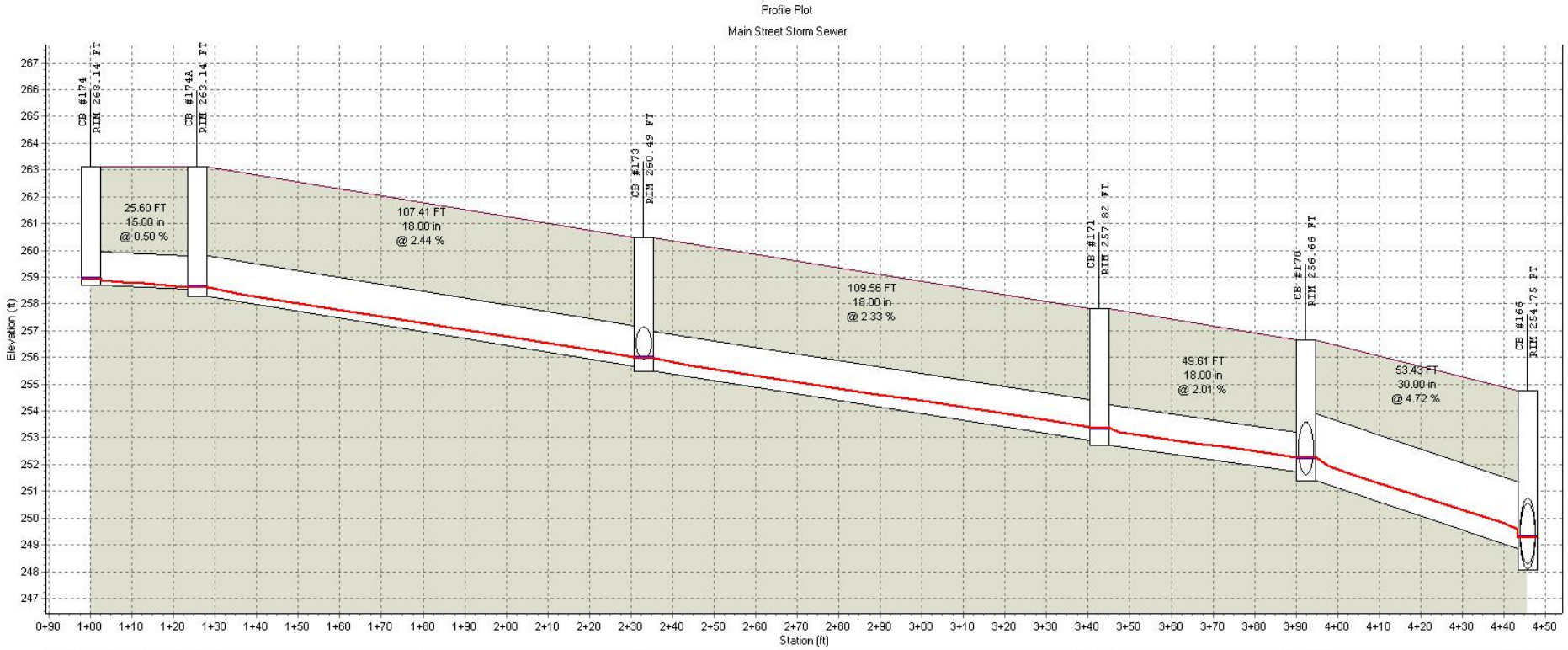
Main Street Storm Sewer



	YI #630	CB #161	CB #162	CB #163	CB #164
RIM (FT):	258.26	260.87	257.27	256.10	256.38
Invert (ft):	253.82	253.23	252.37	251.39	250.78
Min Pipe Cover (ft):					
Max HGL (ft):	254.37	253.75	252.85	252.32	251.59

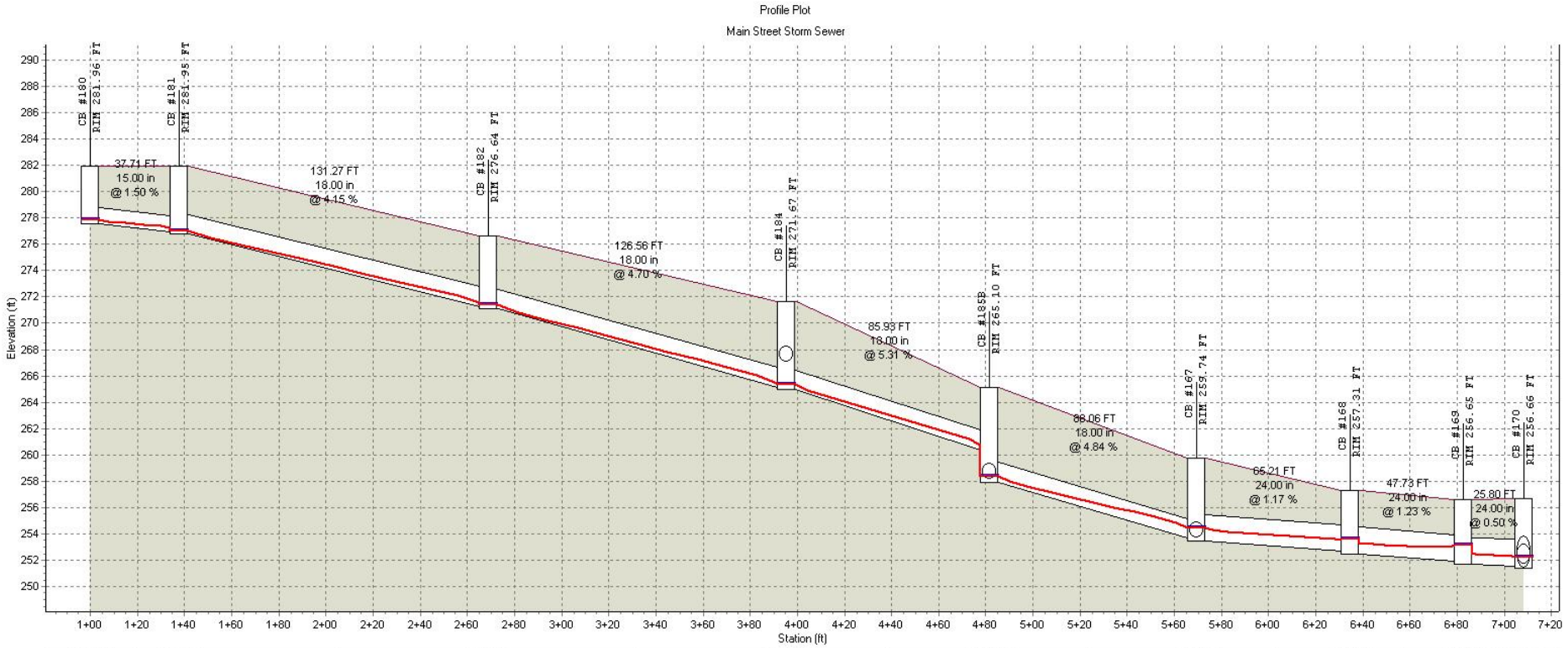
Link ID:	P #263	P #232	P #233	P #234
(FT):	77.97	77.51	47.01	25.73
(in):	15.00	18.00	18.00	18.00
@ (%):	0.50	0.85	1.64	0.50
Up Invert (ft):	253.82	253.23	252.37	251.39
Dn Invert (ft):	253.43	252.57	251.59	251.26
Max Q (cfs):	1.50	2.05	2.32	3.68
Max Vel (ft/s):	3.15	4.05	3.89	3.67
Max Depth (ft):	0.52	0.49	0.60	0.83

HGL



:	CB #174	CB #174A	CB #173	CB #171	CB #170	CB #166
RIM (FT):	263.14	263.14	260.49	257.82	256.66	254.75
Invert (ft):	258.69	258.29	255.46	252.72	251.39	248.06
Min Pipe Cover (ft):						
Max HGL (ft):	258.93	258.64	255.97	253.35	252.24	249.28

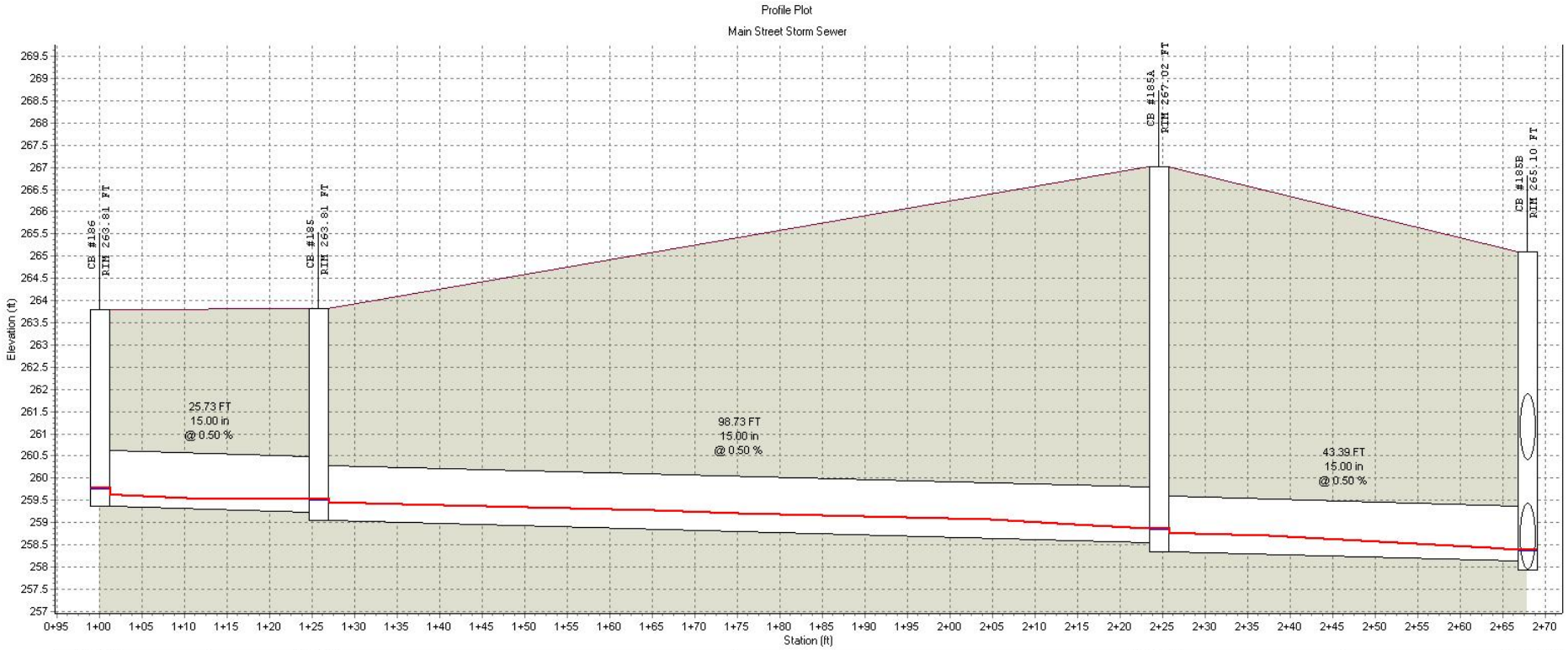
Link ID:	P #245	P #244	P #242	P #241	P #237
(FT):	25.60	107.41	109.56	49.61	53.43
(in):	15.00	18.00	18.00	18.00	30.00
@ (%):	0.50	2.44	2.33	2.01	4.72
Up Invert (ft):	258.69	258.29	255.46	252.72	251.39
Dn Invert (ft):	258.56	255.66	252.92	251.72	248.87
Max Q (cfs):	0.31	1.69	3.29	3.95	13.70
Max Vel (ft/s):	2.00	5.74	6.71	6.24	10.89
Max Depth (ft):	0.23	0.33	0.48	0.58	0.76



:	CB #180	CB #181	CB #182	CB #184	CB #185B	CB #167	CB #168	CB #169	CB #170
RIM (FT):	281.96	281.95	276.64	271.67	265.10	259.74	257.31	256.65	256.66
Invert (ft):	277.52	276.75	271.10	264.96	257.93	253.47	252.51	251.72	251.39
Min Pipe Cover (ft):									
Max HGL (ft):	277.85	277.03	271.42	265.34	258.38	254.44	253.60	253.16	252.24

Link ID:	P #250	P #251	P #252	P #254	P #255	P #238	P #239	P #240
(FT):	37.71	131.27	126.56	85.93	88.06	65.21	47.73	25.80
(in):	15.00	18.00	18.00	18.00	18.00	24.00	24.00	24.00
@ (%):	1.50	4.15	4.70	5.31	4.84	1.17	1.23	0.50
Up Invert (ft):	277.52	276.75	271.10	264.96	257.93	253.47	252.51	251.72
Dn Invert (ft):	276.95	271.30	265.16	260.39	253.67	252.71	251.92	251.59
Max Q (cfs):	0.97	1.53	2.01	3.02	4.54	8.05	8.29	9.59
Max Vel (ft/s):	4.01	6.82	7.68	8.79	7.00	5.67	4.36	4.53
Max Depth (ft):	0.32	0.28	0.31	0.37	0.61	0.93	1.17	1.28

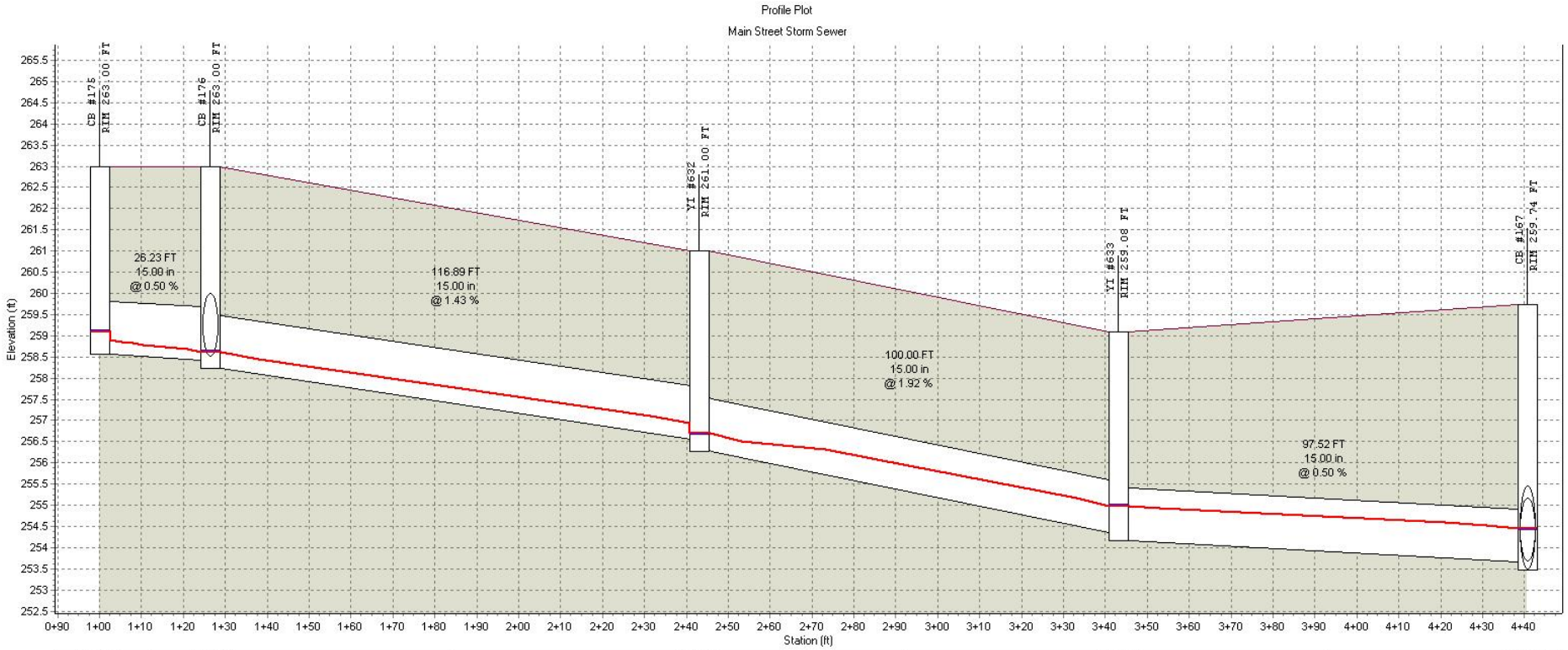
HGL



	CB #186	CB #185	CB #185A	CB #185B
RIM (FT):	263.81	263.81	267.02	265.10
Invert (ft):	259.37	259.04	258.35	257.93
Min Pipe Cover (ft):				
Max HGL (ft):	259.77	259.52	258.86	258.38

Link ID:	P #256	P #257	P #258
(FT):	25.73	98.73	43.39
(in):	15.00	15.00	15.00
@ (%):	0.50	0.50	0.50
Up Invert (ft):	259.37	259.04	258.35
Dn Invert (ft):	259.24	258.55	258.13
Max Q (cfs):	0.76	1.23	1.27
Max Vel (ft/s):	2.50	3.02	2.92
Max Depth (ft):	0.37	0.46	0.48

HGL



:	CB #175	CB #176	YI #632	YI #633	CB #167
RIM (FT):	263.00	263.00	261.00	259.08	259.74
Invert (ft):	258.56	258.23	256.27	254.15	253.47
Min Pipe Cover (ft):					
Max HGL (ft):	259.10	258.62	256.69	254.98	254.44

Link ID:	P #246	P #265	P #264	P #266
(FT):	26.23	116.89	100.00	97.52
(in):	15.00	15.00	15.00	15.00
@ (%):	0.50	1.43	1.92	0.50
Up Invert (ft):	258.56	258.23	256.27	254.15
Dn Invert (ft):	258.43	256.56	254.35	253.67
Max Q (cfs):	1.27	1.47	2.07	2.85
Max Vel (ft/s):	2.85	4.64	4.72	3.48
Max Depth (ft):	0.49	0.38	0.52	0.80

S T O R M W A T E R AREA " E "

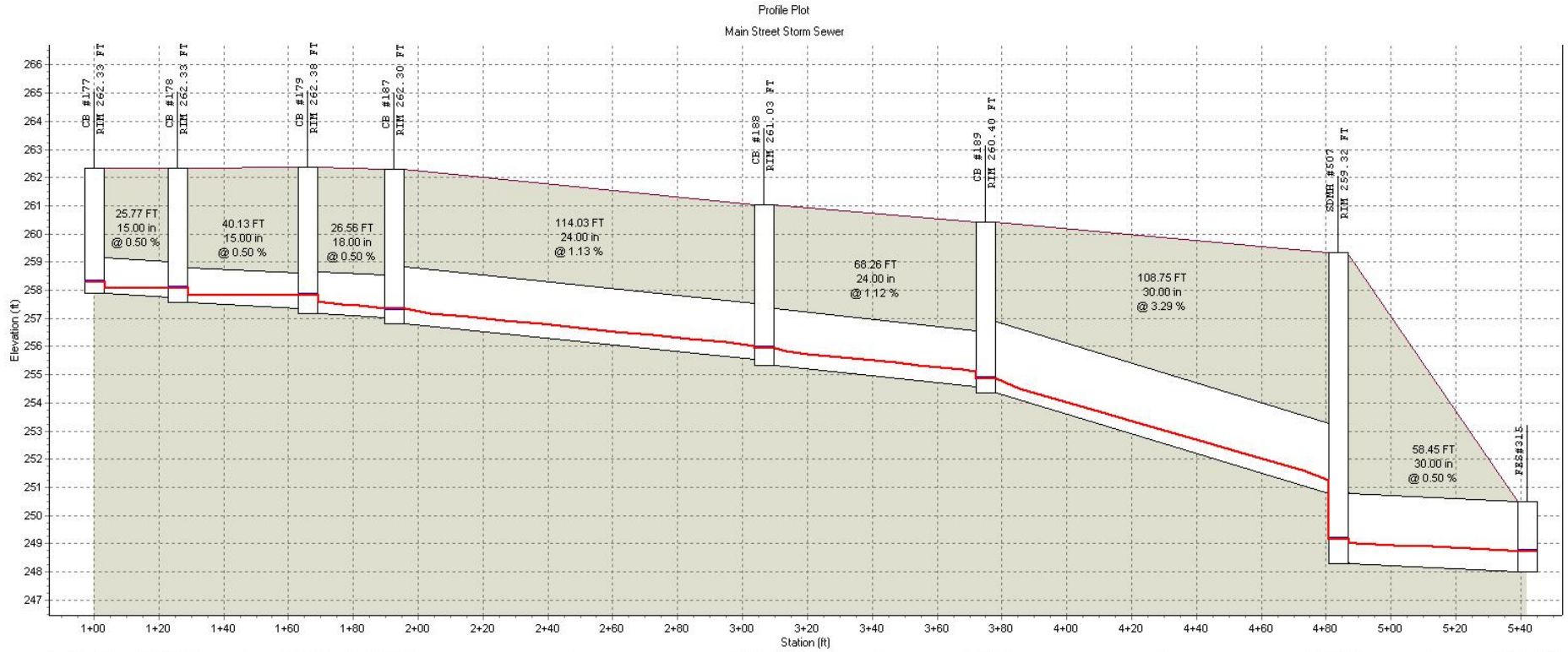
STORMWATER PIPING AND HYDRAULIC GRADE LINE FOR 10-YR STORM

PLAN VIEW

DRAINAGE AREA

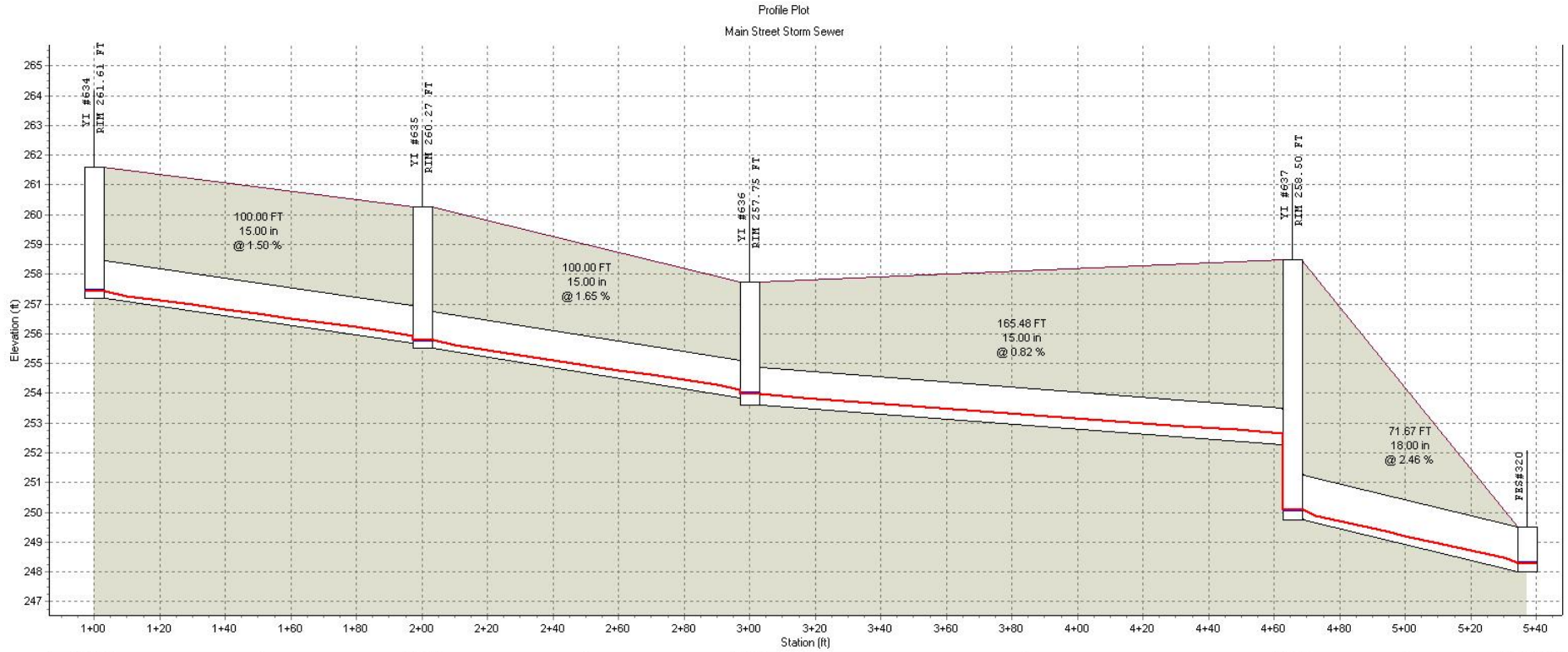
SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
1	Sub-CB#177	0.12	CB #177	0.4900	0.60	0.29	0.42	7.210	0 00:05:00
2	Sub-CB#178	0.12	CB #178	0.4900	0.60	0.29	0.42	7.210	0 00:05:00
3	Sub-CB#179	0.26	CB #179	0.5400	0.60	0.32	1.01	7.210	0 00:05:00
4	Sub-CB#187	0.28	CB #187	0.5400	0.60	0.32	1.09	7.210	0 00:05:00
5	Sub-CB#188	0.23	CB #188	0.5400	0.60	0.32	0.90	7.210	0 00:05:00
6	Sub-CB#189	0.48	CB #189	0.5400	0.60	0.32	1.87	7.210	0 00:05:00
7	Sub-YI#634	0.22	YI #634	0.3500	0.60	0.21	0.56	7.210	0 00:05:00
8	Sub-YI#635	0.13	YI #635	0.3500	0.60	0.21	0.33	7.210	0 00:05:00
9	Sub-YI#636	0.13	YI #636	0.3500	0.60	0.21	0.33	7.210	0 00:05:00
10	Sub-YI#637	0.17	YI #637	0.3000	0.60	0.18	0.37	7.210	0 00:05:00

MODEL INPUT										MODEL OUTPUT								
SN	Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (inches)	Manning's Roughness	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Max Flow Velocity (ft/sec)	Travel Time (min)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged (min)	Max Flow Depth (ft)	Reported Condition
1	P #247	CB #177	CB #178	25.77	257.89	257.76	0.5000	15.000	0.0130	0.81	0 00:05	2.54	0.17	4.57	0.18	0.31	0.00	0.38	Calculated
2	P #248	CB #178	CB #179	40.13	257.56	257.36	0.5000	15.000	0.0130	1.29	0 00:05	2.84	0.24	4.57	0.28	0.40	0.00	0.50	Calculated
3	P #249	CB #179	CB #187	26.56	257.16	257.03	0.5000	18.000	0.0130	2.10	0 00:05	3.15	0.14	7.43	0.28	0.40	0.00	0.60	Calculated
4	P #259	CB #187	CB #188	114.03	256.83	255.54	1.1300	24.000	0.0130	2.93	0 00:05	4.88	0.39	24.07	0.12	0.25	0.00	0.49	Calculated
5	P #260	CB #188	CB #189	68.26	255.34	254.57	1.1200	24.000	0.0130	3.76	0 00:06	5.03	0.23	23.96	0.16	0.29	0.00	0.58	Calculated
6	P #261	CB #189	SDMH #507	108.75	254.37	250.79	3.2900	30.000	0.0130	5.54	0 00:06	8.31	0.22	74.42	0.07	0.19	0.00	0.48	Calculated
7	P #261A	SDMH #507	FES#315	58.45	248.29	248.00	0.5000	30.000	0.0130	5.56	0 00:06	4.05	0.24	29.00	0.19	0.32	0.00	0.81	Calculated
8	P #267	YI #634	YI #635	100.00	257.20	255.70	1.5000	15.000	0.0130	0.53	0 00:05	3.55	0.47	7.91	0.07	0.18	0.00	0.22	Calculated
9	P #268	YI #635	YI #636	100.00	255.50	253.85	1.6500	15.000	0.0130	0.83	0 00:05	4.17	0.40	8.30	0.10	0.22	0.00	0.27	Calculated
10	P #269	YI #636	YI #637	165.48	253.61	252.26	0.8200	15.000	0.0130	1.08	0 00:06	3.53	0.78	5.83	0.19	0.30	0.00	0.37	Calculated
11	P #270	YI #637	FES#320	71.67	249.76	248.00	2.4600	18.000	0.0130	1.39	0 00:06	5.36	0.22	16.46	0.08	0.20	0.00	0.31	Calculated



:	CB #177	CB #178	CB #179	CB #187	CB #188	CB #189	SDMH #507	FES#315
RIM (FT):	262.33	262.33	262.38	262.30	261.03	260.40	259.32	
Invert (ft):	257.89	257.56	257.16	256.83	255.34	254.37	248.29	248.00
Min Pipe Cover (ft):							6.03	
Max HGL (ft):	258.31	258.09	257.82	257.34	255.95	254.88	249.17	248.74

Link ID:	P #247	P #248	P #249	P #259	P #260	P #261	P #261A
(FT):	25.77	40.13	26.56	114.03	68.26	108.75	58.45
(in):	15.00	15.00	18.00	24.00	24.00	30.00	30.00
@ (%):	0.50	0.50	0.50	1.13	1.12	3.29	0.50
Up Invert (ft):	257.89	257.56	257.16	256.83	255.34	254.37	248.29
Dn Invert (ft):	257.76	257.36	257.03	255.54	254.57	250.79	248.00
Max Q (cfs):	0.81	1.29	2.10	2.93	3.76	5.54	5.56
Max Vel (ft/s):	2.54	2.84	3.15	4.88	5.03	8.31	4.05
Max Depth (ft):	0.38	0.50	0.60	0.49	0.58	0.48	0.81



:	YI #634	YI #635	YI #636	YI #637	FES#320
RIM (FT):	261.61	260.27	257.75	258.50	
Invert (ft):	257.20	255.50	253.61	249.76	248.00
Min Pipe Cover (ft):					
Max HGL (ft):	257.43	255.78	253.99	250.08	248.29

Link ID:	P #267	P #268	P #269	P #270
(FT):	100.00	100.00	165.48	71.67
(in):	15.00	15.00	15.00	18.00
@ (%):	1.50	1.65	0.82	2.46
Up Invert (ft):	257.20	255.50	253.61	249.76
Dn Invert (ft):	255.70	253.85	252.26	248.00
Max Q (cfs):	0.53	0.83	1.08	1.39
Max Vel (ft/s):	3.55	4.17	3.53	5.36
Max Depth (ft):	0.22	0.27	0.37	0.31

HGL

S T O R M W A T E R AREA " F "

STORMWATER PIPING AND HYDRAULIC GRADE LINE FOR 10-YR STORM

PLAN VIEW

DRAINAGE AREA

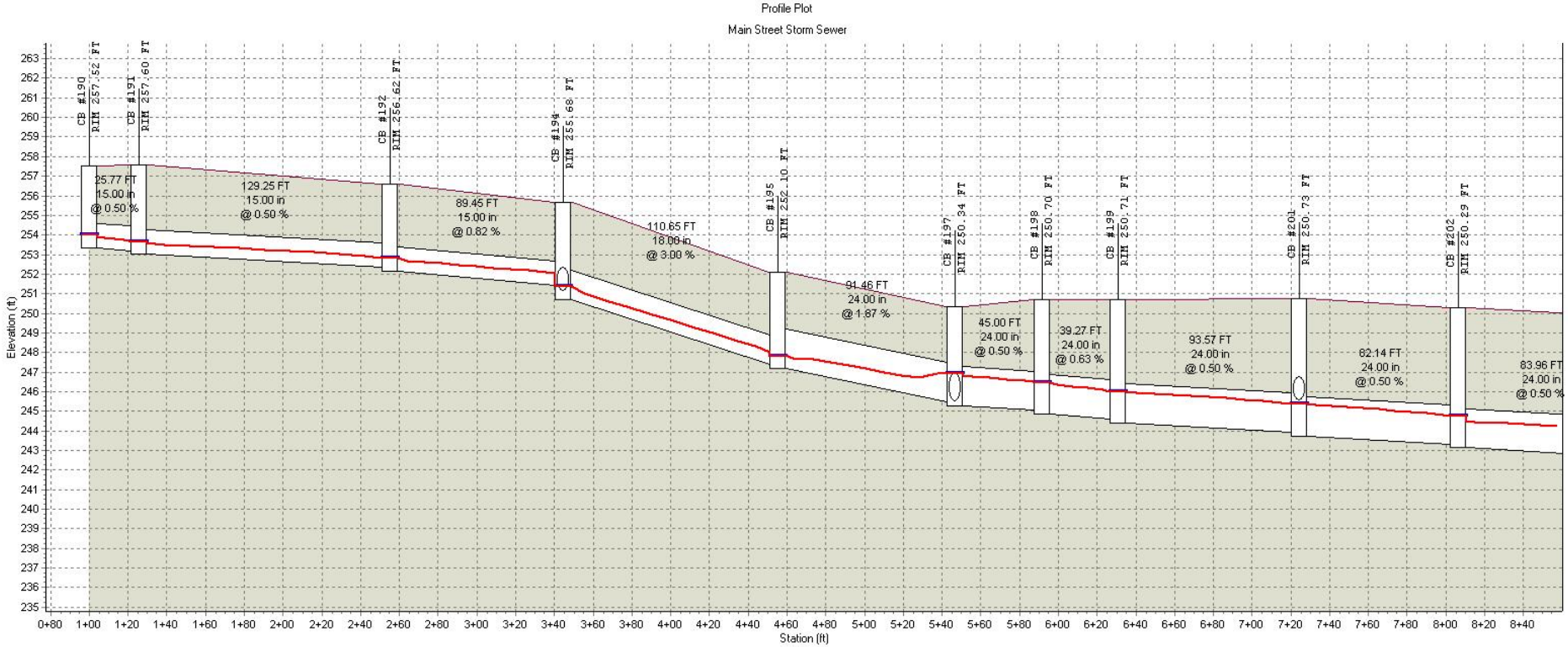
SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
1	Sub-CB#105A	0.09	CB #105A	0.8300	0.60	0.50	0.54	7.210	0 00:05:00
2	Sub-CB#190	0.50	CB #190	0.6900	0.60	0.42	2.49	7.210	0 00:05:00
3	Sub-CB#191	0.04	CB #191	0.8300	0.60	0.50	0.24	7.210	0 00:05:00
4	Sub-CB#192	0.16	CB #192	0.5400	0.60	0.32	0.62	7.210	0 00:05:00
5	Sub-CB#193	0.59	CB #193	0.7900	0.60	0.48	3.36	7.210	0 00:05:00
6	Sub-CB#194	0.13	CB #194	0.5400	0.60	0.32	0.51	7.210	0 00:05:00
7	Sub-CB#195	0.21	CB #195	0.5400	0.60	0.32	0.82	7.210	0 00:05:00
8	Sub-CB#196	0.68	CB #196	0.6900	0.60	0.42	3.38	7.210	0 00:05:00
9	Sub-CB#197	0.20	CB #197	0.5400	0.60	0.32	0.78	7.210	0 00:05:00
10	Sub-CB#198	0.07	CB #198	0.4900	0.60	0.29	0.25	7.210	0 00:05:00
11	Sub-CB#199	0.07	CB #199	0.4900	0.60	0.29	0.25	7.210	0 00:05:00
12	Sub-CB#199A	1.39	CB #199A	0.6900	0.60	0.42	6.92	7.210	0 00:05:00
13	Sub-CB#200	0.05	CB #200	0.4900	0.60	0.29	0.18	7.210	0 00:05:00
14	Sub-CB#200A	0.47	CB #200A	0.5900	0.60	0.35	2.00	7.210	0 00:05:00
15	Sub-CB#201	0.12	CB #201	0.4900	0.60	0.29	0.42	7.210	0 00:05:00
16	Sub-CB#202	0.14	CB #202	0.4900	0.60	0.29	0.50	7.210	0 00:05:00
17	Sub-CB#203	0.34	CB #203	0.5500	0.60	0.33	1.35	7.210	0 00:05:00
18	Sub-CB#204	0.34	CB #204	0.6900	0.60	0.42	1.69	7.210	0 00:05:00
19	Sub-CB#205	0.05	CB #205	0.8300	0.60	0.50	0.30	7.210	0 00:05:00
20	Sub-CB#206	0.19	CB #206	0.5900	0.60	0.35	0.81	7.210	0 00:05:00
21	Sub-CB#207	0.10	CB #207	0.4400	0.60	0.26	0.32	7.210	0 00:05:00
22	Sub-CB#208	0.27	CB #208	0.5400	0.60	0.32	1.05	7.210	0 00:05:00
23	Sub-CB#208A	0.26	CB #208A	0.5400	0.60	0.32	1.01	7.210	0 00:05:00
24	Sub-CB#209	0.15	CB #209	0.4900	0.60	0.29	0.53	7.210	0 00:05:00
25	Sub-CB#210	0.18	CB #210	0.5400	0.60	0.32	0.70	7.210	0 00:05:00
26	Sub-CB#211	0.03	CB #211	0.8300	0.60	0.50	0.18	7.210	0 00:05:00
27	Sub-CB#212	0.14	CB #212	0.8300	0.60	0.50	0.84	7.210	0 00:05:00
28	Sub-CB#213	0.10	CB #213	0.8300	0.60	0.50	0.60	7.210	0 00:05:00
29	Sub-CB#214	0.31	CB #214	0.6900	0.60	0.42	1.54	7.210	0 00:05:00
30	Sub-CB#215	0.06	CB #215	0.8300	0.60	0.50	0.36	7.210	0 00:05:00

DRAINAGE AREA

SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
31	Sub-CB#216	0.04	CB #216	0.8300	0.60	0.50	0.24	7.210	0 00:05:00
32	Sub-CB#217	0.03	CB #217	0.8300	0.60	0.50	0.18	7.210	0 00:05:00
33	Sub-CB#218	0.27	CB #218	0.5400	0.60	0.32	1.05	7.210	0 00:05:00
34	Sub-CB#219	0.32	CB #219	0.5900	0.60	0.35	1.36	7.210	0 00:05:00
35	Sub-CB#220	0.26	CB #220	0.5400	0.60	0.32	1.01	7.210	0 00:05:00
36	Sub-CB#221	0.26	CB #221	0.5400	0.60	0.32	1.01	7.210	0 00:05:00
37	Sub-CB#222	0.26	CB #222	0.5400	0.60	0.32	1.01	7.210	0 00:05:00
38	Sub-CB#223	0.30	CB #223	0.5400	0.60	0.32	1.17	7.210	0 00:05:00
39	Sub-CB#224	0.09	CB #224	0.4300	0.60	0.26	0.28	7.210	0 00:05:00
40	Sub-CB#225	0.20	CB #225	0.5400	0.60	0.32	0.78	7.210	0 00:05:00
41	Sub-CB#226	0.44	CB #226	0.8300	0.60	0.50	2.63	7.210	0 00:05:00
42	Sub-CB#227	0.28	CB #227	0.8300	0.60	0.50	1.68	7.210	0 00:05:00
43	Sub-CB#228	0.11	CB #228	0.7800	0.60	0.47	0.62	7.210	0 00:05:00
44	Sub-CB#229	0.26	CB #229	0.8300	0.60	0.50	1.56	7.210	0 00:05:00
45	Sub-CB#230	0.43	CB #230	0.7800	0.60	0.47	2.42	7.210	0 00:05:00
46	Sub-CB#231	0.04	CB #231	0.8300	0.60	0.50	0.24	7.210	0 00:05:00
47	Sub-CB#232	0.11	CB #232	0.5900	0.60	0.35	0.47	7.210	0 00:05:00
48	Sub-YI#638	0.31	YI #638	0.2100	0.60	0.13	0.47	7.210	0 00:05:00
49	Sub-YI#639	0.59	YI #639	0.2100	0.60	0.13	0.89	7.210	0 00:05:00
50	Sub-YI#640	0.29	YI #640	0.2600	0.60	0.16	0.54	7.210	0 00:05:00
51	Sub-YI#641	0.80	YI #641	0.2100	0.60	0.13	1.21	7.210	0 00:05:00
52	Sub-YI#642	0.30	YI #642	0.3100	0.60	0.19	0.67	7.210	0 00:05:00
53	Sub-YI#643	0.36	YI #643	0.3100	0.60	0.19	0.81	7.210	0 00:05:00
54	Sub-YI#644	0.35	YI #644	0.3100	0.60	0.19	0.78	7.210	0 00:05:00
55	Sub-YI#645	0.38	YI #645	0.3100	0.60	0.19	0.85	7.210	0 00:05:00
56	Sub-YI#646	0.54	YI #646	0.2600	0.60	0.16	1.01	7.210	0 00:05:00
57	Sub-YI#647	0.08	YI #647	0.8300	0.60	0.50	0.48	7.210	0 00:05:00

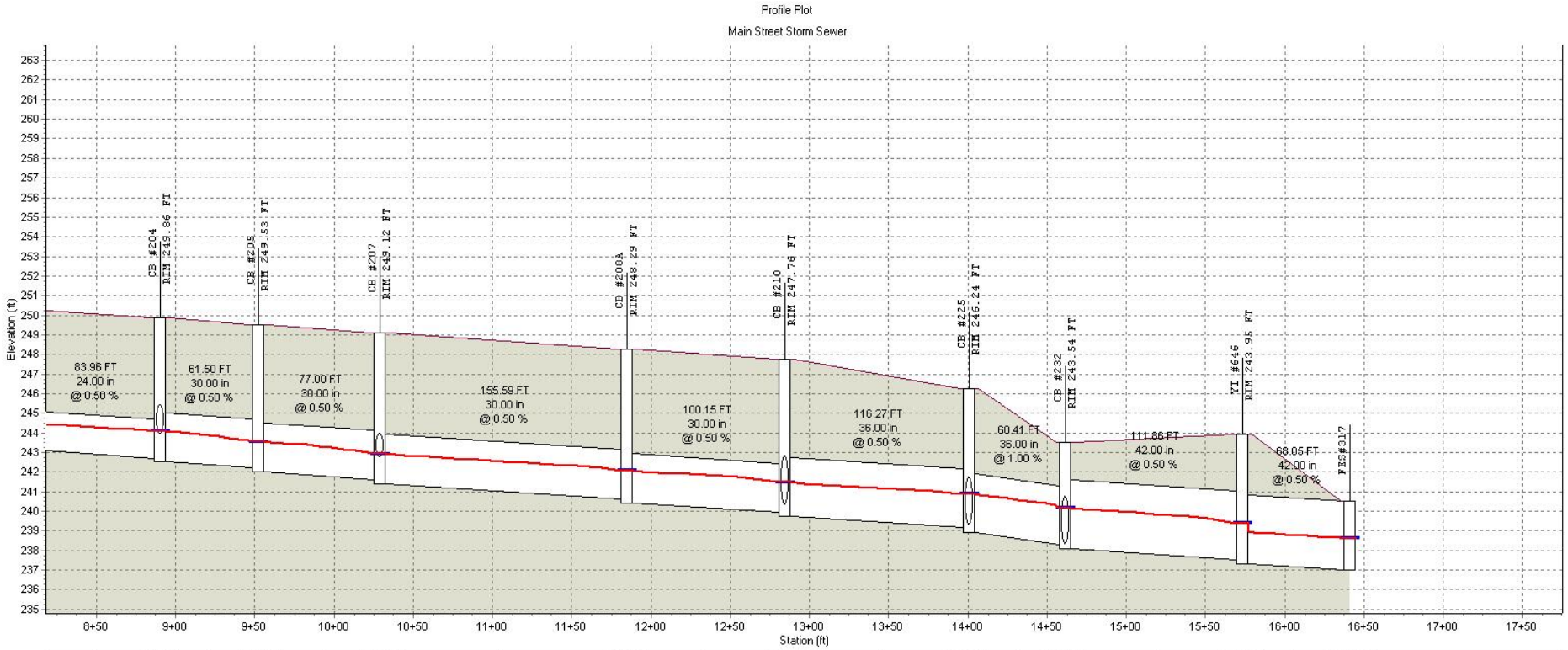
MODEL INPUT										MODEL OUTPUT									
SN	Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (inches)	Manning's Roughness	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Max Flow Velocity (ft/sec)	Travel Time (min)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged (min)	Max Flow Depth (ft)	Reported Condition
1	P #273	CB #190	CB #191	25.77	253.33	253.20	0.5000	15.000	0.0130	1.97	0 00:05	3.20	0.13	4.57	0.43	0.50	0.00	0.63	Calculated
2	P #274	CB #191	CB #192	129.25	253.00	252.36	0.5000	15.000	0.0130	2.10	0 00:05	3.51	0.61	4.57	0.46	0.49	0.00	0.62	Calculated
3	P #275	CB #192	CB #194	89.45	252.16	251.43	0.8200	15.000	0.0130	2.59	0 00:06	4.29	0.35	5.84	0.44	0.49	0.00	0.62	Calculated
4	P #276	CB #193	CB #194	25.79	251.24	251.11	0.5000	15.000	0.0130	3.13	0 00:05	3.66	0.12	4.57	0.69	0.66	0.00	0.82	Calculated
5	P #277	CB #194	CB #195	110.65	250.71	247.39	3.0000	18.000	0.0130	6.02	0 00:05	8.53	0.22	18.19	0.33	0.42	0.00	0.63	Calculated
6	P #278	CB #195	CB #197	91.46	247.19	245.49	1.8700	24.000	0.0130	6.74	0 00:05	4.63	0.33	30.92	0.22	0.52	0.00	1.05	Calculated
7	P #279	CB #196	CB #197	25.72	245.90	245.48	1.6200	18.000	0.0130	4.26	0 00:05	3.38	0.13	13.38	0.32	0.86	0.00	1.29	Calculated
8	P #280	CB #197	CB #198	45.00	245.28	245.06	0.5000	24.000	0.0130	11.17	0 00:05	4.47	0.17	16.00	0.70	0.77	0.00	1.54	Calculated
9	P #281	CB #198	CB #199	39.27	244.86	244.61	0.6300	24.000	0.0130	11.27	0 00:05	4.72	0.14	17.94	0.63	0.75	0.00	1.49	Calculated
10	P #282	CB #199	CB #201	93.57	244.41	243.95	0.5000	24.000	0.0130	11.36	0 00:06	4.58	0.34	16.00	0.71	0.75	0.00	1.50	Calculated
11	P #283	CB #199A	CB #200A	25.71	239.39	239.26	0.5000	24.000	0.0130	6.84	0 00:05	4.15	0.10	16.00	0.43	0.52	0.00	1.04	Calculated
12	P #284	CB #200	CB #201	25.74	247.51	245.52	7.7200	15.000	0.0130	0.16	0 00:05	4.40	0.10	17.95	0.01	0.07	0.00	0.09	Calculated
13	P #285	CB #201	CB #202	82.14	243.75	243.33	0.5000	24.000	0.0130	11.63	0 00:06	4.57	0.30	16.00	0.73	0.76	0.00	1.53	Calculated
14	P #286	CB #202	CB #204	83.96	243.13	242.71	0.5000	24.000	0.0130	11.90	0 00:06	4.72	0.30	16.00	0.74	0.75	0.00	1.50	Calculated
15	P #287	CB #203	CB #204	25.86	244.04	243.91	0.5000	18.000	0.0130	1.04	0 00:05	2.64	0.16	7.42	0.14	0.27	0.00	0.41	Calculated
16	P #288	CB #204	CB #205	61.50	242.51	242.21	0.5000	30.000	0.0130	13.64	0 00:06	4.67	0.22	29.00	0.47	0.58	0.00	1.45	Calculated
17	P #289	CB #205	CB #207	77.00	242.01	241.62	0.5000	30.000	0.0130	14.05	0 00:07	4.88	0.26	29.00	0.48	0.57	0.00	1.43	Calculated
18	P #290	CB #206	CB #207	26.32	243.86	242.75	4.2200	15.000	0.0130	0.96	0 00:05	5.66	0.08	13.27	0.07	0.20	0.00	0.24	Calculated
19	P #291	CB #207	CB #208A	155.59	241.42	240.64	0.5000	30.000	0.0130	14.81	0 00:07	4.95	0.52	29.00	0.51	0.59	0.00	1.48	Calculated
20	P #292	CB #208A	CB #210	100.15	240.44	239.94	0.5000	30.000	0.0130	15.22	0 00:07	4.84	0.34	29.00	0.52	0.64	0.00	1.59	Calculated
21	P #293	CB #208	CB #209	64.48	241.00	240.68	0.5000	24.000	0.0130	4.28	0 00:05	3.83	0.28	16.00	0.27	0.41	0.00	0.82	Calculated
22	P #294	CB #209	CB #210	29.97	240.48	240.33	0.5000	30.000	0.0130	4.74	0 00:05	3.62	0.14	29.00	0.16	0.44	0.00	1.11	Calculated
23	P #295	CB #210	CB #225	116.27	239.74	239.16	0.5000	36.000	0.0130	19.57	0 00:07	5.24	0.37	47.16	0.41	0.58	0.00	1.74	Calculated
24	P #296	CB #211	CB #212	81.77	261.63	257.68	4.8400	15.000	0.0130	0.63	0 00:05	5.68	0.24	14.21	0.04	0.15	0.00	0.18	Calculated
25	P #297	YI #647	CB #211	31.64	262.22	261.83	1.2400	15.000	0.0130	0.47	0 00:05	3.06	0.17	7.19	0.07	0.18	0.00	0.23	Calculated
26	P #298	CB #212	CB #213	40.41	257.48	255.42	5.1000	15.000	0.0130	1.42	0 00:05	6.92	0.10	14.58	0.10	0.22	0.00	0.28	Calculated
27	P #299	CB #213	CB #214	108.34	255.05	253.58	1.3600	15.000	0.0130	1.96	0 00:05	3.84	0.47	7.52	0.26	0.43	0.00	0.54	Calculated
28	P #300	CB #214	CB #215	25.67	253.38	253.25	0.5000	18.000	0.0130	3.07	0 00:05	3.48	0.12	7.44	0.41	0.50	0.00	0.75	Calculated
29	P #301	CB #215	CB #216	51.86	253.05	252.79	0.5200	18.000	0.0130	3.36	0 00:05	3.70	0.23	7.54	0.45	0.51	0.00	0.77	Calculated
30	P #302	CB #217	CB #216	27.75	253.14	252.72	1.5000	15.000	0.0130	0.18	0 00:05	2.08	0.22	7.91	0.02	0.17	0.00	0.21	Calculated

MODEL INPUT										MODEL OUTPUT									
SN	Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (inches)	Manning's Roughness	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Max Flow Velocity (ft/sec)	Travel Time (min)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged (min)	Max Flow Depth (ft)	Reported Condition
31	P #303	CB #216	CB #219	150.37	252.52	248.50	2.6700	18.000	0.0130	3.71	0 00:06	7.39	0.34	17.17	0.22	0.33	0.00	0.49	Calculated
32	P #304	CB #218	CB #219	25.74	249.46	248.94	2.0000	15.000	0.0130	0.94	0 00:05	4.27	0.10	9.13	0.10	0.24	0.00	0.29	Calculated
33	P #305	CB #219	CB #221	134.57	248.30	244.57	2.7800	18.000	0.0130	5.55	0 00:05	7.09	0.32	17.50	0.32	0.47	0.00	0.71	Calculated
34	P #306	CB #220	CB #221	25.74	245.35	245.22	0.5000	15.000	0.0130	1.00	0 00:05	2.68	0.16	4.57	0.22	0.34	0.00	0.43	Calculated
35	P #307	CB #221	CB #223	159.82	244.37	242.60	1.1000	18.000	0.0130	7.41	0 00:06	6.22	0.43	11.03	0.67	0.64	0.00	0.96	Calculated
36	P #308	CB #222	CB #223	26.17	243.56	243.25	1.1600	15.000	0.0130	1.00	0 00:05	3.58	0.12	6.95	0.14	0.28	0.00	0.35	Calculated
37	P #309	CB #223	CB #224	55.08	242.40	240.43	3.5800	24.000	0.0130	9.19	0 00:06	9.20	0.10	42.82	0.21	0.36	0.00	0.72	Calculated
38	P #310	CB #224	CB #225	25.93	240.23	239.27	3.7000	30.000	0.0130	9.60	0 00:06	6.88	0.06	78.90	0.12	0.48	0.00	1.19	Calculated
39	P #311	CB #225	CB #232	60.41	238.90	238.30	1.0000	36.000	0.0130	28.13	0 00:07	5.90	0.17	66.70	0.42	0.64	0.00	1.92	Calculated
40	P #312	CB #227	CB #229	141.32	240.55	238.16	1.6900	15.000	0.0130	3.84	0 00:05	6.32	0.37	8.40	0.46	0.50	0.00	0.62	Calculated
41	P #313	CB #226	CB #227	159.11	245.74	240.75	3.1400	15.000	0.0130	2.01	0 00:05	6.31	0.42	11.44	0.18	0.32	0.00	0.40	Calculated
42	P #314	CB #105A	CB #228	59.71	236.92	236.62	0.5000	18.000	0.0130	5.86	0 00:05	4.16	0.24	7.43	0.79	0.76	0.00	1.14	Calculated
43	P #315	CB #231	CB #232	31.49	238.46	238.30	0.5000	30.000	0.0130	1.91	0 00:05	2.21	0.24	29.00	0.07	0.71	0.00	1.77	Calculated
44	P #316	YI #646	FES#317	68.05	237.34	237.00	0.5000	42.000	0.0130	30.58	0 00:07	6.04	0.19	71.14	0.43	0.52	0.00	1.82	Calculated
45	P #317	YI #638	YI #639	127.22	244.91	242.96	1.5300	15.000	0.0130	0.45	0 00:05	2.93	0.72	8.00	0.06	0.19	0.00	0.24	Calculated
46	P #318	YI #639	YI #641	119.97	242.76	242.16	0.5000	15.000	0.0130	1.29	0 00:05	2.80	0.71	4.57	0.28	0.40	0.00	0.50	Calculated
47	P #319	YI #640	YI #641	153.42	248.39	243.41	3.2400	15.000	0.0130	0.51	0 00:05	4.70	0.54	11.63	0.04	0.14	0.00	0.18	Calculated
48	P #320	YI #641	YI #642	90.63	241.96	241.51	0.5000	18.000	0.0130	2.83	0 00:06	3.63	0.42	7.43	0.38	0.45	0.00	0.68	Calculated
49	P #321	YI #642	CB #208	22.18	241.31	241.20	0.5000	24.000	0.0130	3.40	0 00:06	3.44	0.11	16.00	0.21	0.35	0.00	0.70	Calculated
50	P #322	YI #643	YI #644	170.44	249.76	245.96	2.2300	15.000	0.0130	0.75	0 00:05	4.60	0.62	9.65	0.08	0.19	0.00	0.24	Calculated
51	P #323	YI #644	YI #645	168.05	245.69	240.78	2.9200	18.000	0.0130	1.47	0 00:05	5.98	0.47	17.95	0.08	0.20	0.00	0.29	Calculated
52	P #324	YI #645	CB #231	21.66	238.78	238.66	0.5700	24.000	0.0130	2.07	0 00:05	2.86	0.13	17.07	0.12	0.72	0.00	1.44	Calculated
53	P #327	CB #232	YI #646	111.86	238.10	237.54	0.5000	42.000	0.0130	30.05	0 00:07	5.47	0.34	71.14	0.42	0.56	0.00	1.95	Calculated
54	P #328	CB #228	CB #230	108.29	236.42	235.88	0.5000	18.000	0.0130	6.23	0 00:06	4.48	0.40	7.43	0.84	0.74	0.00	1.10	Calculated
55	P #329	CB #230	EX. GTI	136.94	235.68	235.00	0.5000	24.000	0.0130	8.10	0 00:06	4.68	0.49	16.00	0.51	0.54	0.00	1.08	Calculated
56	P #330	CB #200A	FES#319	60.40	239.06	238.51	0.9000	24.000	0.0130	8.84	0 00:05	5.68	0.18	21.48	0.41	0.50	0.00	1.00	Calculated
57	P #331	CB #229	CB #105A	40.93	237.32	237.12	0.5000	18.000	0.0130	5.18	0 00:05	3.79	0.18	7.43	0.70	0.75	0.00	1.12	Calculated
58	P #333	EX. GTI	OUT-PIPE#333	18.55	234.80	234.65	0.7800	24.000	0.0130	8.11	0 00:06	5.00	0.06	20.01	0.41	0.51	0.00	1.02	Calculated



:	CB #190	CB #191	CB #192	CB #194	CB #195	CB #197	CB #198	CB #199	CB #201	CB #202	
RIM (FT):	257.52	257.60	256.62	255.68	252.10	250.34	250.70	250.71	250.73	250.29	
Invert (ft):	253.33	253.00	252.16	250.71	247.19	245.28	244.86	244.41	243.75	243.13	
Min Pipe Cover (ft):											
Max HGL (ft):	254.03	253.66	252.81	251.38	247.83	246.94	246.47	245.99	245.37	244.76	

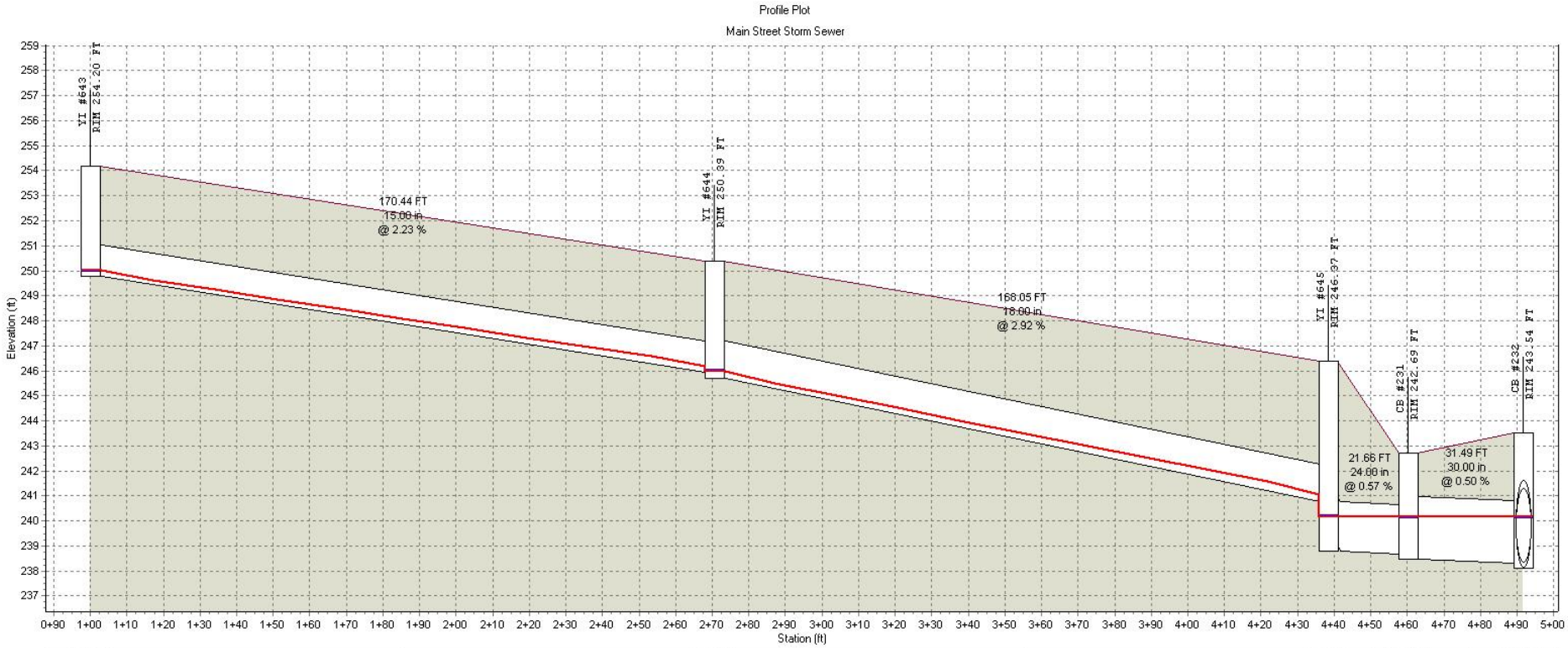
Link ID:	P #273	P #274	P #275	P #277	P #278	P #280	P #281	P #282	P #285	P #286
(FT):	25.77	129.25	89.45	110.65	91.46	45.00	39.27	93.57	82.14	83.96
(in):	15.00	15.00	15.00	18.00	24.00	24.00	24.00	24.00	24.00	24.00
@ (%):	0.50	0.50	0.82	3.00	1.87	0.50	0.63	0.50	0.50	0.50
Up Invert (ft):	253.33	253.00	252.16	250.71	247.19	245.28	244.86	244.41	243.75	243.13
Dn Invert (ft):	253.20	252.36	251.43	247.39	245.49	245.06	244.61	243.95	243.33	242.71
Max Q (cfs):	1.97	2.10	2.59	6.02	6.74	11.17	11.27	11.36	11.63	11.90
Max Vel (ft/s):	3.20	3.51	4.29	8.53	4.63	4.47	4.72	4.58	4.57	4.72
Max Depth (ft):	0.63	0.62	0.62	0.63	1.05	1.54	1.49	1.50	1.53	1.50



	CB #204	CB #205	CB #207	CB #208A	CB #210	CB #225	CB #232	YI #646	FES#317
RIM (FT):	249.86	249.53	249.12	248.29	247.76	246.24	243.54	243.95	
Invert (ft):	242.51	242.01	241.42	240.44	239.74	238.90	238.10	237.34	237.00
Min Pipe Cover (ft):									
Max HGL (ft):	244.08	243.55	242.93	242.09	241.48	240.90	240.15	239.38	238.60

Link ID:	P #286	P #288	P #289	P #291	P #292	P #295	P #311	P #327	P #316
(FT):	83.96	61.50	77.00	155.59	100.15	116.27	60.41	111.86	68.05
(in):	24.00	30.00	30.00	30.00	30.00	36.00	36.00	42.00	42.00
@ (%):	0.50	0.50	0.50	0.50	0.50	0.50	1.00	0.50	0.50
Up Invert (ft):	243.13	242.51	242.01	241.42	240.44	239.74	238.90	238.10	237.34
Dn Invert (ft):	242.71	242.21	241.62	240.64	239.94	239.16	238.30	237.54	237.00
Max Q (cfs):	11.90	13.64	14.05	14.81	15.22	19.57	28.13	30.05	30.58
Max Vel (ft/s):	4.72	4.67	4.88	4.95	4.84	5.24	5.90	5.47	6.04
Max Depth (ft):	1.50	1.45	1.43	1.48	1.59	1.74	1.92	1.95	1.82

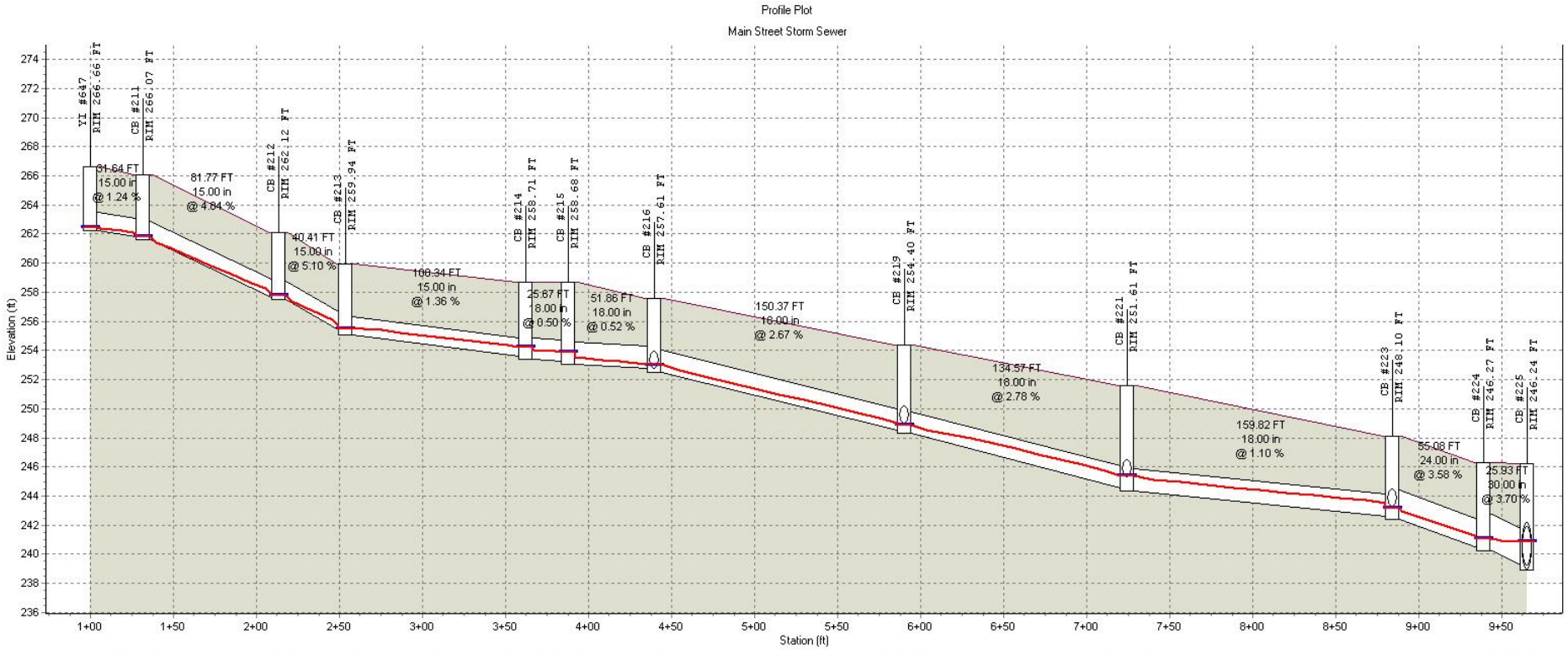
HGL



	YI #643	YI #644	YI #645	CB #231	CB #232
RIM (FT):	254.20	250.39	246.37	242.69	243.54
Invert (ft):	249.76	245.69	238.78	238.46	238.10
Min Pipe Cover (ft):					
Max HGL (ft):	250.00	245.99	240.16	240.15	240.15

Link ID:	P #322	P #323	P #324	P #315
(FT):	170.44	168.05	21.66	31.49
(in):	15.00	18.00	24.00	30.00
@ (%):	2.23	2.92	0.57	0.50
Up Invert (ft):	249.76	245.69	238.78	238.46
Dn Invert (ft):	245.96	240.78	238.66	238.30
Max Q (cfs):	0.75	1.47	2.07	1.91
Max Vel (ft/s):	4.60	5.98	2.86	2.21
Max Depth (ft):	0.24	0.29	1.44	1.77

HGL

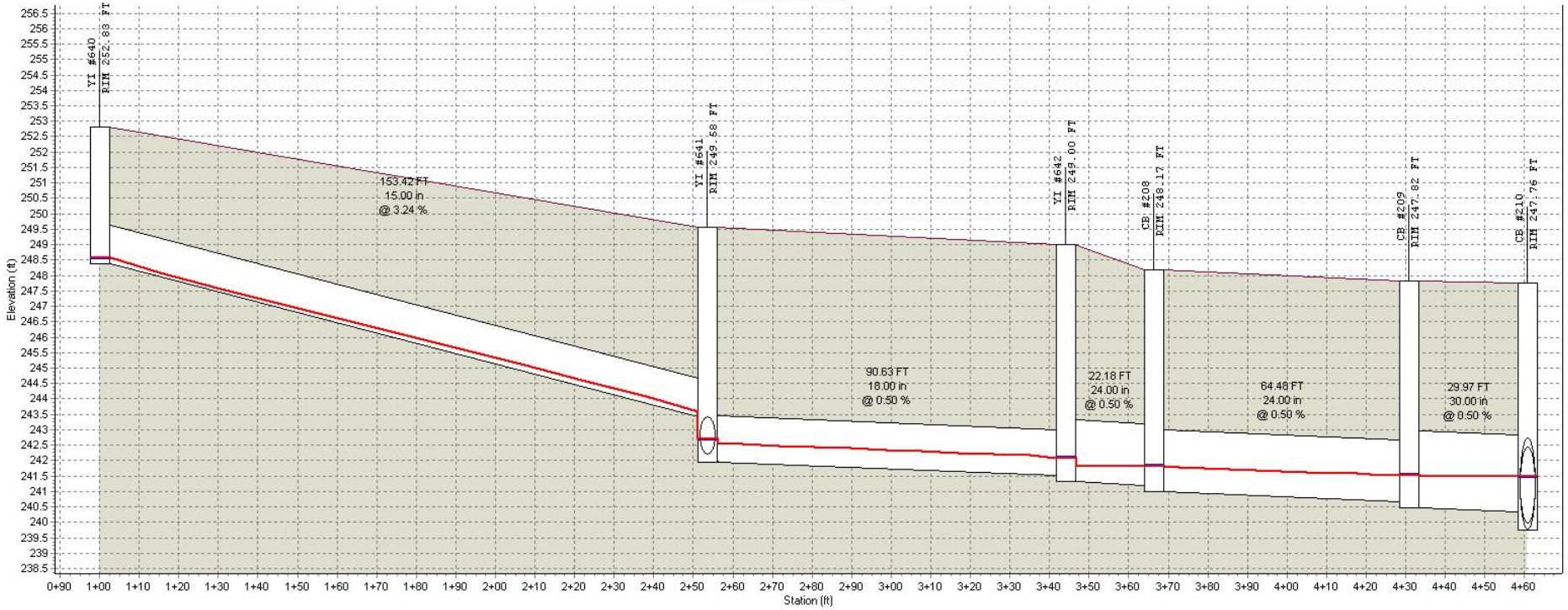


:	YI #647	CB #211	CB #212	CB #213	CB #214	CB #215	CB #216	CB #219	CB #221	CB #223	CB #224	CB #225
RIM (FT):	266.66	266.07	262.12	259.94	258.71	258.68	257.61	254.40	251.61	248.10	246.27	246.24
Invert (ft):	262.22	261.63	257.48	255.05	253.38	253.05	252.52	248.30	244.37	242.40	240.23	238.90
Min Pipe Cover (ft):												
Max HGL (ft):	262.46	261.82	257.77	255.51	254.21	253.89	253.02	248.90	245.39	243.19	241.09	240.90

Link ID:	P #297	P #296	P #298	P #299	P #300	P #301	P #303	P #305	P #307	P #309	P #310
(FT):	31.64	81.77	40.41	108.34	25.67	51.86	150.37	134.57	159.82	55.08	25.93
(in):	15.00	15.00	15.00	15.00	18.00	18.00	18.00	18.00	18.00	24.00	30.00
@ (%):	1.24	4.84	5.10	1.36	0.50	0.52	2.67	2.78	1.10	3.58	3.70
Up Invert (ft):	262.22	261.63	257.48	255.05	253.38	253.05	252.52	248.30	244.37	242.40	240.23
Dn Invert (ft):	261.83	257.68	255.42	253.58	253.25	252.79	248.50	244.57	242.60	240.43	239.27
Max Q (cfs):	0.47	0.63	1.42	1.96	3.07	3.36	3.71	5.55	7.41	9.19	9.60
Max Vel (ft/s):	3.06	5.68	6.92	3.84	3.48	3.70	7.39	7.09	6.22	9.20	6.88
Max Depth (ft):	0.23	0.18	0.28	0.54	0.75	0.77	0.49	0.71	0.96	0.72	1.19

Profile Plot

Main Street Storm Sewer



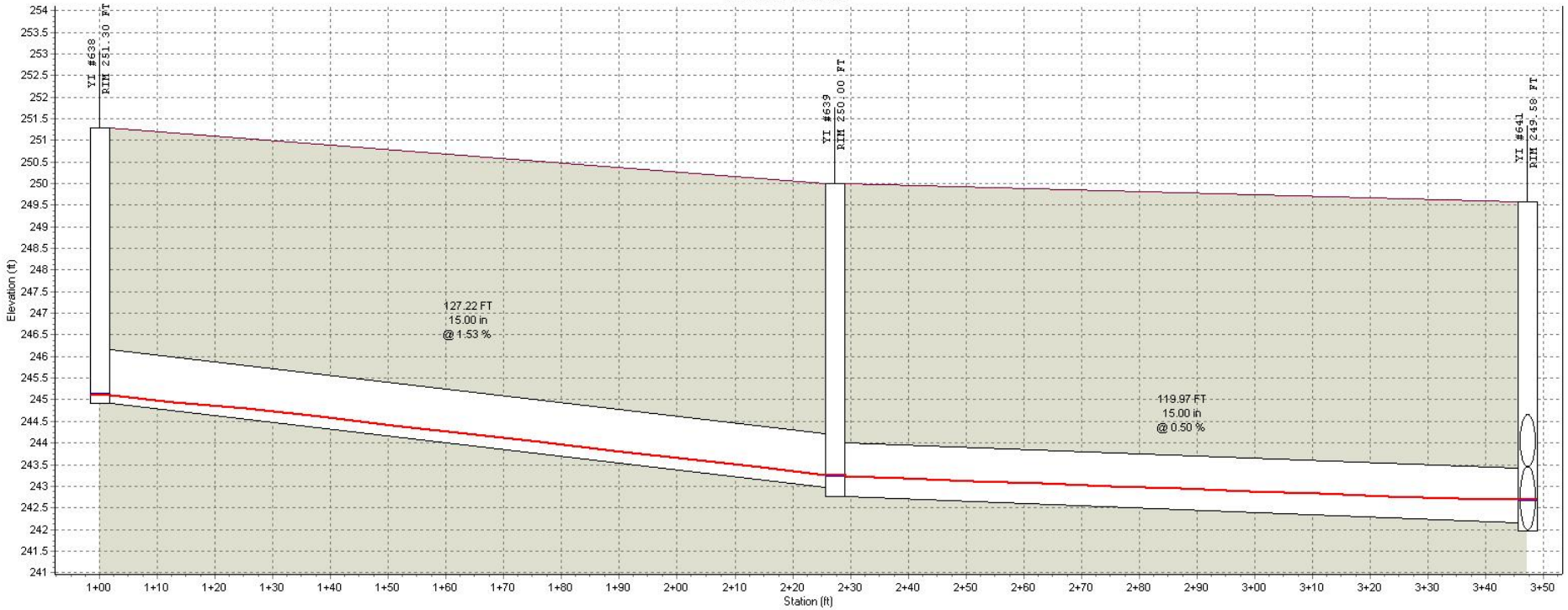
:	YI #640	YI #641	YI #642	CB #208	CB #209	CB #210
RIM (FT):	252.83	249.58	249.00	248.17	247.82	247.76
Invert (ft):	248.39	241.96	241.31	241.00	240.48	239.74
Min Pipe Cover (ft):						
Max HGL (ft):	248.57	242.69	242.09	241.83	241.53	241.48

Link ID:	P #319	P #320	P #321	P #293	P #294
(FT):	153.42	90.63	22.18	64.48	29.97
(in):	15.00	18.00	24.00	24.00	30.00
@ (%):	3.24	0.50	0.50	0.50	0.50
Up Invert (ft):	248.39	241.96	241.31	241.00	240.48
Dn Invert (ft):	243.41	241.51	241.20	240.68	240.33
Max Q (cfs):	0.51	2.83	3.40	4.28	4.74
Max Vel (ft/s):	4.70	3.63	3.44	3.83	3.62
Max Depth (ft):	0.18	0.68	0.70	0.82	1.11

HGL

Profile Plot

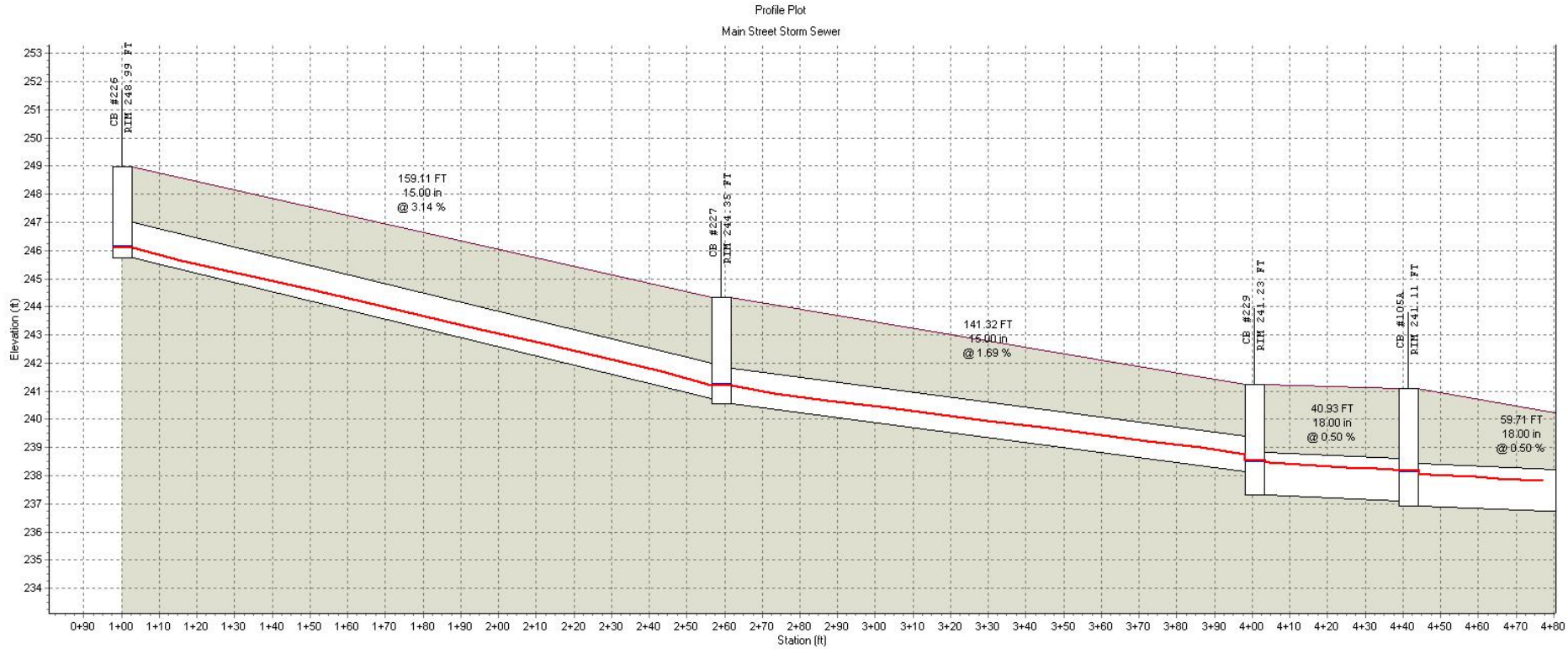
Main Street Storm Sewer



:	YI #638	YI #639	YI #641
RIM (FT):	251.30	250.00	249.58
Invert (ft):	244.91	242.76	241.96
Min Pipe Cover (ft):			
Max HGL (ft):	245.11	243.24	242.69

Link ID:	P #317	P #318
(FT):	127.22	119.97
(in):	15.00	15.00
@ (%):	1.53	0.50
Up Invert (ft):	244.91	242.76
Dn Invert (ft):	242.96	242.16
Max Q (cfs):	0.45	1.29
Max Vel (ft/s):	2.93	2.80
Max Depth (ft):	0.24	0.50

HGL



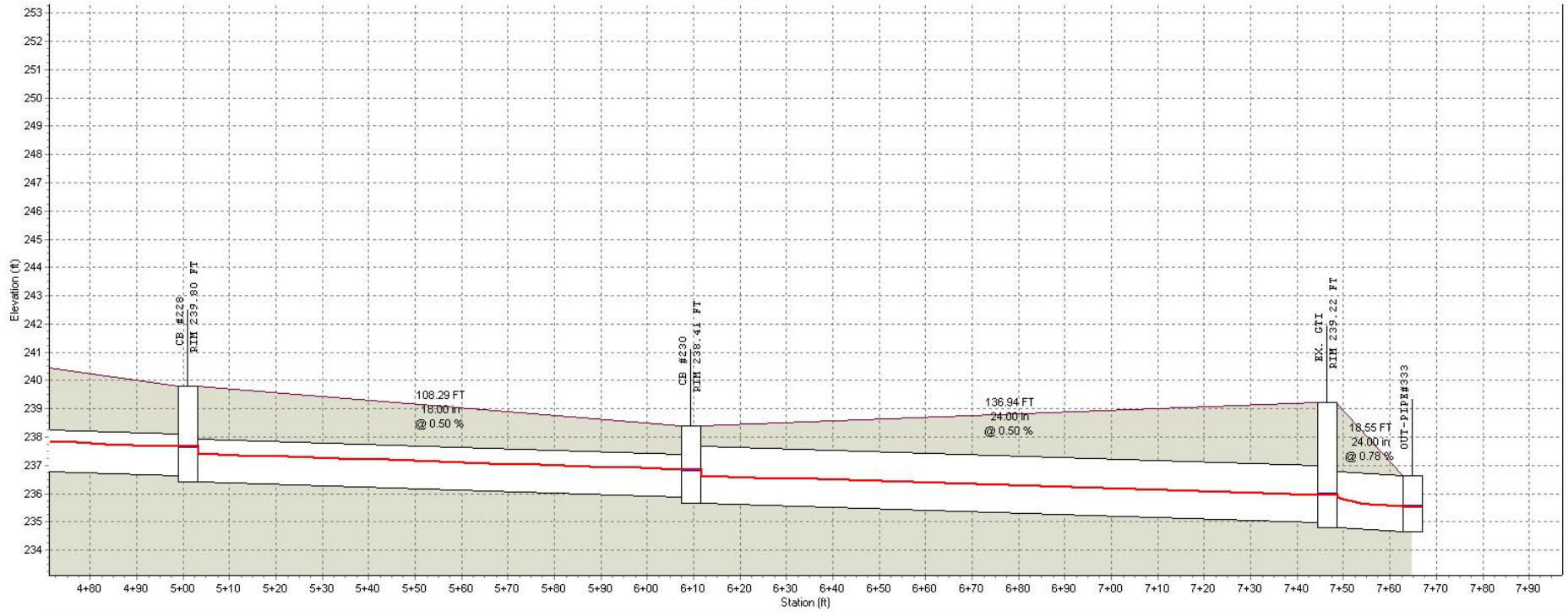
	CB #226	CB #227	CB #229	CB #105A	
RIM (FT):	248.99	244.35	241.23	241.11	
Invert (ft):	245.74	240.55	237.32	236.92	
Min Pipe Cover (ft):					
Max HGL (ft):	246.10	241.20	238.53	238.17	

Link ID:	P #313	P #312	P #331	P #314
(FT):	159.11	141.32	40.93	59.71
(in):	15.00	15.00	18.00	18.00
@ (%):	3.14	1.69	0.50	0.50
Up Invert (ft):	245.74	240.55	237.32	236.92
Dn Invert (ft):	240.75	238.16	237.12	236.62
Max Q (cfs):	2.01	3.84	5.18	5.86
Max Vel (ft/s):	6.31	6.32	3.79	4.16
Max Depth (ft):	0.40	0.62	1.12	1.14

HGL

Profile Plot

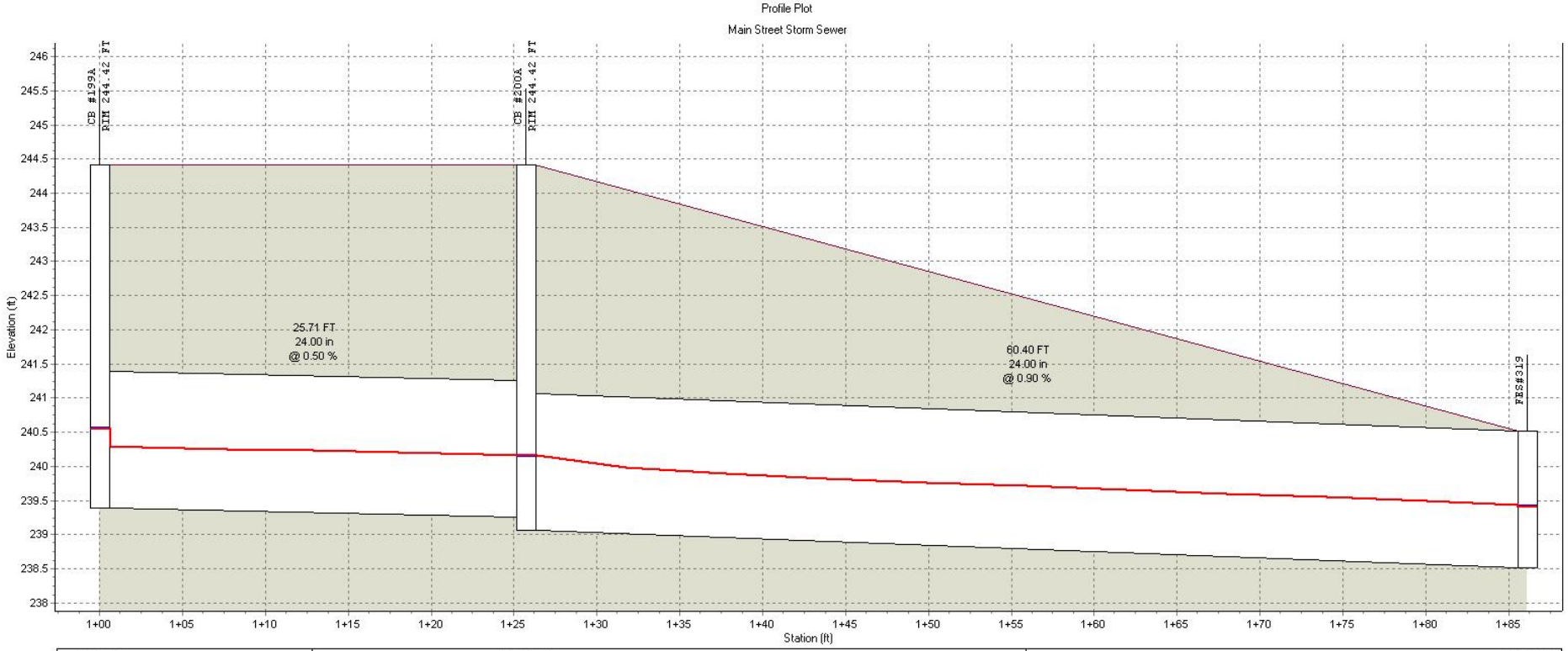
Main Street Storm Sewer



	CB #228	CB #230	EX. GTI	OUT-PIPE#333
RIM (FT):	239.80	238.41	239.22	
Invert (ft):	236.42	235.68	234.80	234.65
Min Pipe Cover (ft):				
Max HGL (ft):	237.66	236.84	235.96	235.54

Link ID:	P #328	P #329	P #333	
(FT):	108.29	136.94	18.55	
(in):	18.00	24.00	24.00	
@ (%):	0.50	0.50	0.78	
Up Invert (ft):	236.42	235.68	234.80	
Dn Invert (ft):	235.88	235.00	234.65	
Max Q (cfs):	6.23	8.10	8.11	
Max Vel (ft/s):	4.48	4.68	5.00	
Max Depth (ft):	1.10	1.08	1.02	

HGL

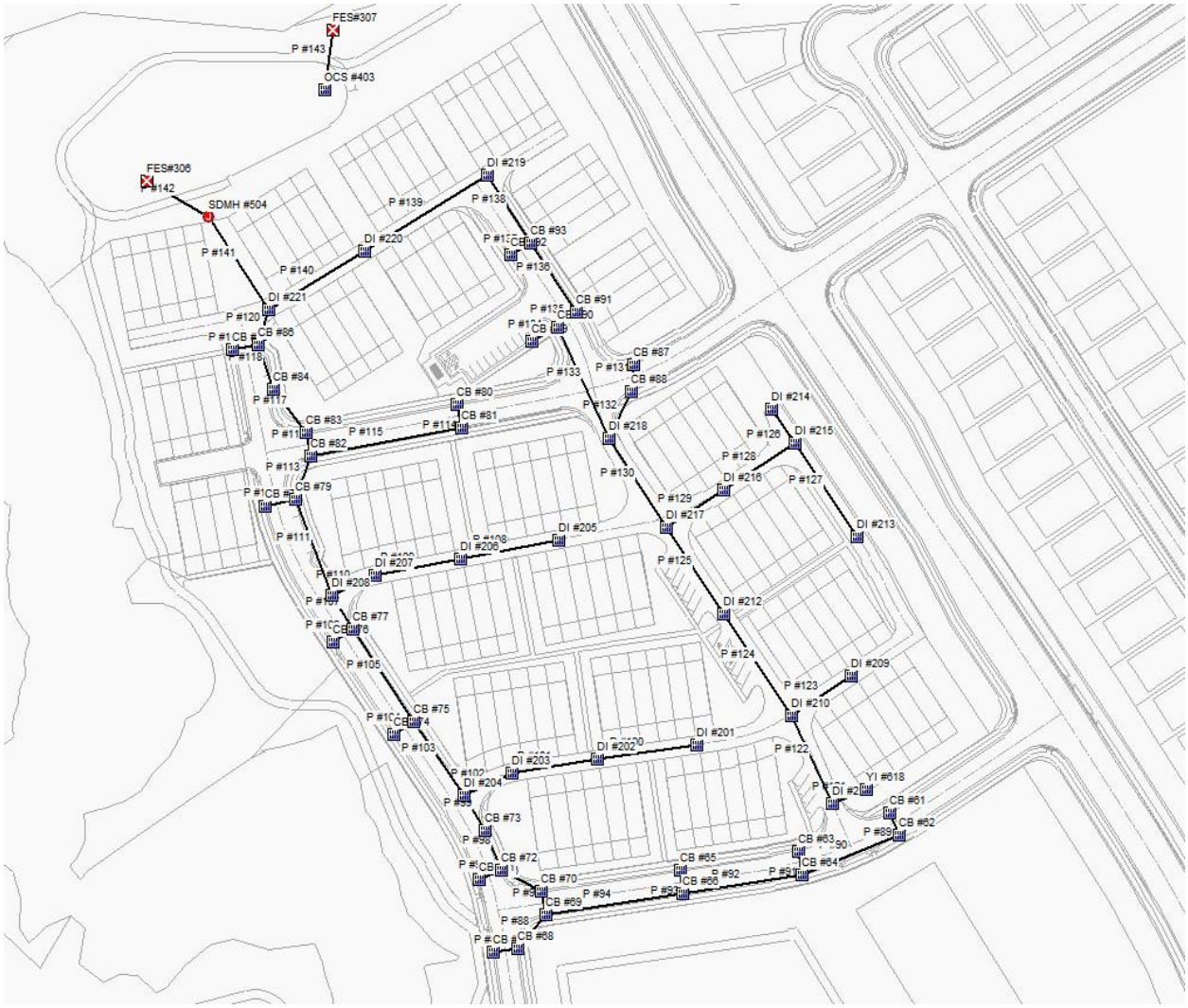


:	CB #199A		CB #200A		FES#319
RIM (FT):	244.42		244.42		
Invert (ft):	239.39		239.06		238.51
Min Pipe Cover (ft):					
Max HGL (ft):	240.55		240.16		239.41
Link ID:		P #283		P #330	
(FT):		25.71		60.40	
(in):		24.00		24.00	
@ (%):		0.50		0.90	
Up Invert (ft):		239.39		239.06	
Dn Invert (ft):		239.26		238.51	
Max Q (cfs):		6.84		8.84	
Max Vel (ft/s):		4.15		5.68	
Max Depth (ft):		1.04		1.00	

HGL

S T O R M W A T E R AREA " G "

STORMWATER PIPING AND HYDRAULIC GRADE LINE FOR 10-YR STORM



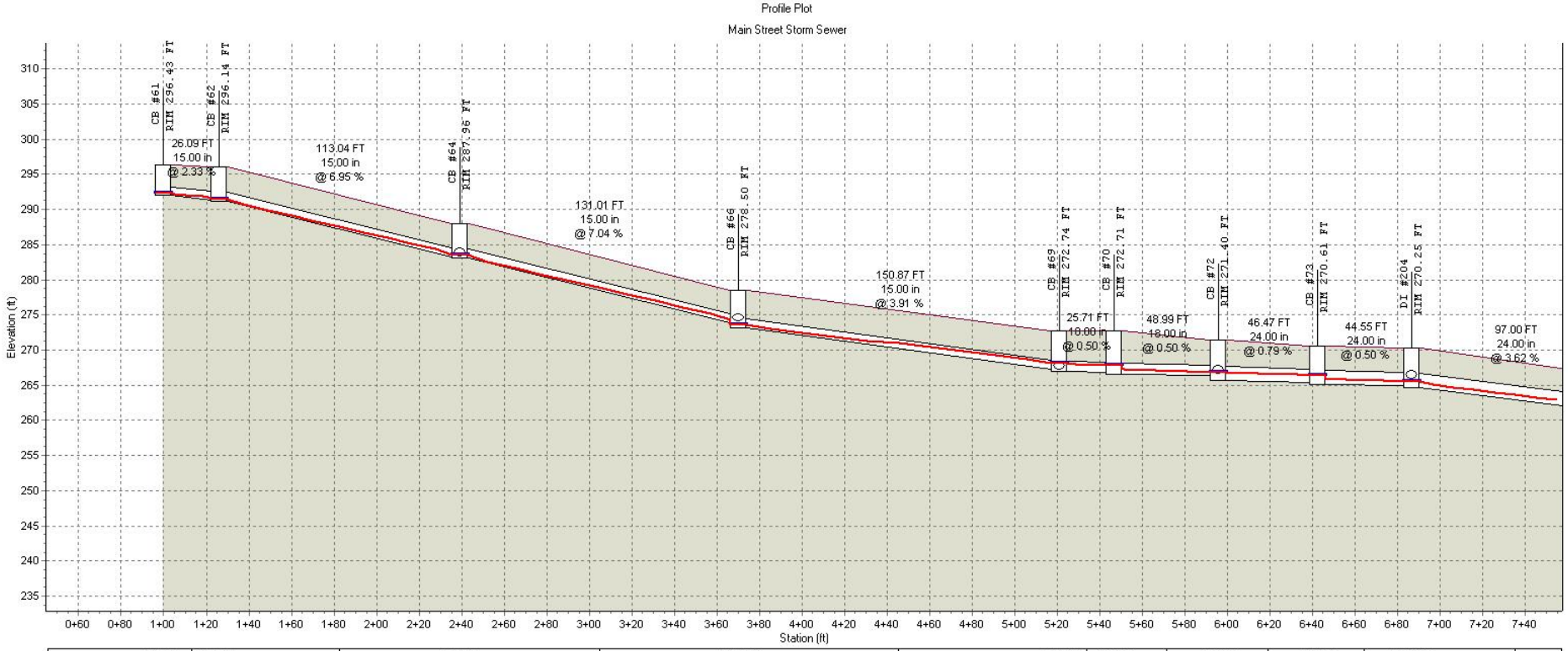
PLAN VIEW

DRAINAGE AREA

SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
1	Sub-CB#61	0.16	CB #61	0.8300	0.60	0.50	0.96	7.210	0 00:05:00
2	Sub-CB#62	0.19	CB #62	0.8300	0.60	0.50	1.14	7.210	0 00:05:00
3	Sub-CB#63	0.06	CB #63	0.8300	0.60	0.50	0.36	7.210	0 00:05:00
4	Sub-CB#64	0.12	CB #64	0.7800	0.60	0.47	0.68	7.210	0 00:05:00
5	Sub-CB#65	0.10	CB #65	0.8300	0.60	0.50	0.60	7.210	0 00:05:00
6	Sub-CB#66	0.07	CB #66	0.8300	0.60	0.50	0.42	7.210	0 00:05:00
7	Sub-CB#67	0.07	CB #67	0.8300	0.60	0.50	0.42	7.210	0 00:05:00
8	Sub-CB#68	0.11	CB #68	0.8300	0.60	0.50	0.66	7.210	0 00:05:00
9	Sub-CB#69	0.09	CB #69	0.8300	0.60	0.50	0.54	7.210	0 00:05:00
10	Sub-CB#70	0.09	CB #70	0.8300	0.60	0.50	0.54	7.210	0 00:05:00
11	Sub-CB#71	0.05	CB #71	0.8300	0.60	0.50	0.30	7.210	0 00:05:00
12	Sub-CB#72	0.40	CB #72	0.5900	0.60	0.35	1.70	7.210	0 00:05:00
13	Sub-CB#73	0.06	CB #73	0.8300	0.60	0.50	0.36	7.210	0 00:05:00
14	Sub-CB#74	0.11	CB #74	0.8300	0.60	0.50	0.66	7.210	0 00:05:00
15	Sub-CB#75	0.08	CB #75	0.8300	0.60	0.50	0.48	7.210	0 00:05:00
16	Sub-CB#76	0.07	CB #76	0.8300	0.60	0.50	0.42	7.210	0 00:05:00
17	Sub-CB#77	0.27	CB #77	0.5900	0.60	0.35	1.15	7.210	0 00:05:00
18	Sub-CB#78	0.09	CB #78	0.8300	0.60	0.50	0.54	7.210	0 00:05:00
19	Sub-CB#79	0.25	CB #79	0.5900	0.60	0.35	1.06	7.210	0 00:05:00
20	Sub-CB#80	0.10	CB #80	0.8300	0.60	0.50	0.60	7.210	0 00:05:00
21	Sub-CB#81	0.40	CB #81	0.5900	0.60	0.35	1.70	7.210	0 00:05:00
22	Sub-CB#82	0.39	CB #82	0.5900	0.60	0.35	1.66	7.210	0 00:05:00
23	Sub-CB#83	0.11	CB #83	0.8300	0.60	0.50	0.66	7.210	0 00:05:00
24	Sub-CB#84	0.05	CB #84	0.8300	0.60	0.50	0.30	7.210	0 00:05:00
25	Sub-CB#85	0.10	CB #85	0.8300	0.60	0.50	0.60	7.210	0 00:05:00
26	Sub-CB#86	0.04	CB #86	0.8300	0.60	0.50	0.24	7.210	0 00:05:00
27	Sub-CB#87	0.09	CB #87	0.8300	0.60	0.50	0.54	7.210	0 00:05:00
28	Sub-CB#88	0.38	CB #88	0.5900	0.60	0.35	1.62	7.210	0 00:05:00
29	Sub-CB#89	0.14	CB #89	0.8300	0.60	0.50	0.84	7.210	0 00:05:00
30	Sub-CB#90	0.01	CB #90	0.8300	0.60	0.50	0.06	7.210	0 00:05:00
31	Sub-CB#91	0.12	CB #91	0.5900	0.60	0.35	0.51	7.210	0 00:05:00
32	Sub-CB#92	0.12	CB #92	0.8300	0.60	0.50	0.72	7.210	0 00:05:00
33	Sub-CB#93	0.16	CB #93	0.5400	0.60	0.32	0.62	7.210	0 00:05:00
34	Sub-DI#201	0.22	DI #201	0.5400	0.60	0.32	0.86	7.210	0 00:05:00
35	Sub-DI#202	0.28	DI #202	0.4800	0.60	0.29	0.97	7.210	0 00:05:00
36	Sub-DI#203	0.23	DI #203	0.4800	0.60	0.29	0.80	7.210	0 00:05:00
37	Sub-DI#204	0.16	DI #204	0.5300	0.60	0.32	0.61	7.210	0 00:05:00
38	Sub-DI#205	0.43	DI #205	0.6400	0.60	0.39	1.98	7.210	0 00:05:00
39	Sub-DI#206	0.48	DI #206	0.5200	0.60	0.31	1.80	7.210	0 00:05:00
40	Sub-DI#207	0.41	DI #207	0.5200	0.60	0.31	1.54	7.210	0 00:05:00
41	Sub-DI#208	0.12	DI #208	0.8300	0.60	0.50	0.72	7.210	0 00:05:00
42	Sub-DI#209	0.16	DI #209	0.5400	0.60	0.32	0.62	7.210	0 00:05:00
43	Sub-DI#210	0.35	DI #210	0.4800	0.60	0.29	1.21	7.210	0 00:05:00
44	Sub-DI#211	0.06	DI #211	0.8300	0.60	0.50	0.36	7.210	0 00:05:00
45	Sub-DI#212	0.32	DI #212	0.5900	0.60	0.35	1.36	7.210	0 00:05:00
46	Sub-DI#213	0.32	DI #213	0.8300	0.60	0.50	1.92	7.210	0 00:05:00
47	Sub-DI#214	0.05	DI #214	0.8300	0.60	0.50	0.30	7.210	0 00:05:00
48	Sub-DI#215	0.18	DI #215	0.8300	0.60	0.50	1.08	7.210	0 00:05:00
49	Sub-DI#216	0.20	DI #216	0.5400	0.60	0.32	0.78	7.210	0 00:05:00
50	Sub-DI#217	0.63	DI #217	0.6900	0.60	0.42	3.13	7.210	0 00:05:00
51	Sub-DI#218	0.06	DI #218	0.8300	0.60	0.50	0.36	7.210	0 00:05:00
52	Sub-DI#219	0.31	DI #219	0.5900	0.60	0.35	1.32	7.210	0 00:05:00
53	Sub-DI#220	0.37	DI #220	0.5900	0.60	0.35	1.57	7.210	0 00:05:00
54	Sub-DI#221	1.19	DI #221	0.6900	0.60	0.42	5.92	7.210	0 00:05:00
55	Sub-YI#618	0.14	YI #618	0.5900	0.60	0.35	0.60	7.210	0 00:05:00

MODEL INPUT										MODEL OUTPUT									
SN	Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (inches)	Manning's Roughness	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Max Flow Velocity (ft/sec)	Travel Time (min)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged (min)	Max Flow Depth (ft)	Reported Condition
1	P #100	DI #201	DI #202	108.13	274.23	270.74	3.2300	15.000	0.0130	0.83	0 00:05	5.33	0.34	11.61	0.07	0.18	0.00	0.23	Calculated
2	P #101	DI #202	DI #203	93.47	270.54	267.72	3.0100	15.000	0.0130	1.75	0 00:05	6.33	0.25	11.21	0.16	0.28	0.00	0.35	Calculated
3	P #102	DI #203	DI #204	58.16	267.52	265.82	2.9300	15.000	0.0130	2.51	0 00:05	6.64	0.15	11.06	0.23	0.35	0.00	0.43	Calculated
4	P #103	DI #204	CB #75	97.00	264.70	261.19	3.6200	24.000	0.0130	10.54	0 00:06	10.13	0.16	43.02	0.25	0.37	0.00	0.73	Calculated
5	P #104	CB #74	CB #75	24.86	261.91	261.79	0.5200	15.000	0.0130	0.65	0 00:05	2.41	0.17	4.65	0.14	0.27	0.00	0.34	Calculated
6	P #105	CB #75	CB #77	119.40	260.99	253.64	6.1600	24.000	0.0130	11.53	0 00:06	12.11	0.16	56.13	0.21	0.34	0.00	0.69	Calculated
7	P #106	CB #76	CB #77	25.73	254.46	254.33	0.5000	15.000	0.0130	0.41	0 00:05	2.14	0.20	4.57	0.09	0.21	0.00	0.27	Calculated
8	P #107	CB #77	DI #208	43.63	253.44	250.97	5.6600	24.000	0.0130	12.83	0 00:06	11.30	0.06	53.83	0.24	0.39	0.00	0.78	Calculated
9	P #108	DI #205	DI #206	107.29	256.03	253.94	1.9500	15.000	0.0130	1.97	0 00:05	4.82	0.37	9.02	0.22	0.38	0.00	0.47	Calculated
10	P #109	DI #206	DI #207	94.54	253.74	252.62	1.1800	15.000	0.0130	3.72	0 00:05	4.80	0.33	7.01	0.53	0.61	0.00	0.76	Calculated
11	P #110	DI #207	DI #208	51.61	252.42	251.79	1.2300	15.000	0.0130	5.14	0 00:05	5.56	0.15	7.17	0.72	0.71	0.00	0.88	Calculated
12	P #111	DI #208	CB #79	110.84	250.39	245.22	4.6700	30.000	0.0130	18.50	0 00:05	7.13	0.26	88.61	0.21	0.57	0.00	1.42	Calculated
13	P #112	CB #78	CB #79	33.72	246.80	246.63	0.5100	15.000	0.0130	0.53	0 00:05	2.26	0.25	4.59	0.11	0.46	0.00	0.57	Calculated
14	P #113	CB #79	CB #82	49.58	245.02	244.77	0.5000	30.000	0.0130	19.84	0 00:06	4.44	0.19	29.00	0.68	0.86	0.00	2.14	Calculated
15	P #114	CB #80	CB #81	25.62	250.87	250.74	0.5000	15.000	0.0130	0.57	0 00:05	2.32	0.18	4.57	0.12	0.25	0.00	0.32	Calculated
16	P #115	CB #81	CB #82	166.52	250.54	246.42	2.4700	18.000	0.0130	1.89	0 00:05	6.03	0.46	16.52	0.11	0.23	0.00	0.35	Calculated
17	P #116	CB #82	CB #83	25.74	244.57	244.44	0.5000	30.000	0.0130	22.84	0 00:06	5.63	0.08	29.00	0.79	0.77	0.00	1.93	Calculated
18	P #117	CB #83	CB #84	59.02	244.24	242.63	2.7300	30.000	0.0130	23.34	0 00:06	7.67	0.13	67.80	0.34	0.61	0.00	1.52	Calculated
19	P #118	CB #84	CB #86	51.80	242.39	241.81	1.1200	30.000	0.0130	23.54	0 00:06	6.73	0.13	43.38	0.54	0.68	0.00	1.71	Calculated
20	P #119	CB #85	CB #86	28.32	243.66	243.51	0.5500	15.000	0.0130	0.57	0 00:05	2.39	0.20	4.79	0.12	0.25	0.00	0.31	Calculated
21	P #120	CB #86	DI #221	39.96	241.61	240.80	2.0400	36.000	0.0130	24.15	0 00:06	5.01	0.13	95.17	0.25	0.67	0.00	2.00	Calculated
22	P #121	YI #618	DI #211	39.48	278.86	278.67	0.5000	15.000	0.0130	0.58	0 00:05	2.38	0.28	4.57	0.13	0.25	0.00	0.31	Calculated
23	P #122	DI #211	DI #210	104.64	278.47	277.75	0.6800	15.000	0.0130	0.89	0 00:06	3.10	0.56	5.34	0.17	0.29	0.00	0.36	Calculated
24	P #123	DI #209	DI #210	78.10	280.26	277.75	3.2200	15.000	0.0130	0.61	0 00:05	4.83	0.27	11.58	0.05	0.16	0.00	0.20	Calculated
25	P #124	DI #210	DI #212	132.27	277.55	268.14	7.1100	15.000	0.0130	2.58	0 00:05	9.74	0.23	17.23	0.15	0.27	0.00	0.34	Calculated
26	P #125	DI #212	DI #217	112.22	267.60	262.26	4.7600	15.000	0.0130	3.89	0 00:05	8.51	0.22	14.09	0.28	0.42	0.00	0.52	Calculated
27	P #126	DI #214	DI #215	43.95	272.53	272.31	0.5000	15.000	0.0130	0.29	0 00:05	1.94	0.38	4.57	0.06	0.18	0.00	0.23	Calculated
28	P #127	DI #213	DI #215	122.71	279.45	274.43	4.0900	15.000	0.0130	1.86	0 00:05	7.28	0.28	13.07	0.14	0.26	0.00	0.33	Calculated
29	P #128	DI #215	DI #216	91.42	272.10	267.59	4.9400	15.000	0.0130	3.18	0 00:05	8.83	0.17	14.35	0.22	0.33	0.00	0.42	Calculated
30	P #129	DI #216	DI #217	75.06	267.33	262.54	6.3800	15.000	0.0130	3.92	0 00:05	10.09	0.12	16.31	0.24	0.35	0.00	0.44	Calculated

MODEL INPUT										MODEL OUTPUT									
SN	Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (inches)	Manning's Roughness	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Max Flow Velocity (ft/sec)	Travel Time (min)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged (min)	Max Flow Depth (ft)	Reported Condition
31	P #130	DI #217	DI #218	114.75	261.87	258.35	3.0700	18.000	0.0130	10.70	0 00:05	9.73	0.20	18.39	0.58	0.60	0.00	0.90	Calculated
32	P #131	CB #87	CB #88	28.76	260.31	259.45	3.0000	18.000	0.0130	0.53	0 00:05	3.50	0.14	18.18	0.03	0.15	0.00	0.22	Calculated
33	P #132	CB #88	DI #218	56.37	259.25	258.52	1.2900	18.000	0.0130	1.98	0 00:05	4.34	0.22	11.92	0.17	0.33	0.00	0.49	Calculated
34	P #133	DI #218	CB #90	132.70	258.06	252.81	3.9600	18.000	0.0130	12.88	0 00:05	11.28	0.20	20.89	0.62	0.62	0.00	0.92	Calculated
35	P #134	CB #89	CB #90	32.17	252.76	252.60	0.5000	15.000	0.0130	0.78	0 00:06	2.16	0.25	4.57	0.17	0.69	0.00	0.86	Calculated
36	P #135	CB #90	CB #91	26.11	251.70	251.57	0.5000	24.000	0.0130	13.65	0 00:05	5.12	0.08	16.00	0.85	0.79	0.00	1.58	Calculated
37	P #136	CB #91	CB #93	89.40	251.37	250.06	1.4700	24.000	0.0130	14.09	0 00:06	7.64	0.20	27.42	0.51	0.57	0.00	1.14	Calculated
38	P #137	CB #92	CB #93	25.70	250.82	250.70	0.5000	15.000	0.0130	0.69	0 00:05	2.44	0.18	4.57	0.15	0.28	0.00	0.35	Calculated
39	P #138	CB #93	DI #219	87.13	249.73	246.63	3.5600	24.000	0.0130	15.19	0 00:06	10.77	0.13	42.68	0.36	0.46	0.00	0.92	Calculated
40	P #139	DI #219	DI #220	156.57	244.13	242.95	0.7500	30.000	0.0130	16.20	0 00:06	6.43	0.41	35.58	0.46	0.51	0.00	1.28	Calculated
41	P #140	DI #220	DI #221	120.83	242.40	241.45	0.7800	36.000	0.0130	17.36	0 00:06	5.79	0.35	58.96	0.29	0.49	0.00	1.48	Calculated
42	P #141	DI #221	SDMH #504	118.84	240.60	239.74	0.7200	42.000	0.0130	45.50	0 00:06	6.76	0.29	85.36	0.53	0.66	0.00	2.31	Calculated
43	P #142	SDMH #504	FES#306	77.61	239.54	239.00	0.6900	42.000	0.0130	45.50	0 00:07	7.53	0.17	83.68	0.54	0.60	0.00	2.11	Calculated
44	P #87	CB #67	CB #68	25.72	268.28	267.55	2.8300	15.000	0.0130	0.41	0 00:05	3.36	0.13	10.87	0.04	0.31	0.00	0.39	Calculated
45	P #88	CB #68	CB #69	47.54	267.35	267.11	0.5000	15.000	0.0130	1.08	0 00:06	1.69	0.47	4.57	0.24	0.74	0.00	0.92	Calculated
46	P #89	CB #61	CB #62	26.09	291.99	291.38	2.3300	15.000	0.0130	0.94	0 00:05	4.52	0.10	9.87	0.09	0.23	0.00	0.28	Calculated
47	P #90	CB #62	CB #64	113.04	291.18	283.33	6.9500	15.000	0.0130	2.01	0 00:05	8.97	0.21	17.03	0.12	0.24	0.00	0.30	Calculated
48	P #91	CB #63	CB #64	25.86	283.66	283.33	1.2700	15.000	0.0130	0.35	0 00:05	2.85	0.15	7.29	0.05	0.16	0.00	0.20	Calculated
49	P #92	CB #64	CB #66	131.01	283.13	273.91	7.0400	15.000	0.0130	2.99	0 00:05	10.08	0.22	17.13	0.17	0.29	0.00	0.36	Calculated
50	P #93	CB #65	CB #66	25.76	274.09	273.96	0.5000	15.000	0.0130	0.58	0 00:05	2.34	0.18	4.57	0.13	0.26	0.00	0.32	Calculated
51	P #94	CB #66	CB #69	150.87	273.15	267.25	3.9100	15.000	0.0130	3.95	0 00:05	7.00	0.36	12.78	0.31	0.54	0.00	0.68	Calculated
52	P #95	CB #69	CB #70	25.71	266.91	266.78	0.5000	18.000	0.0130	5.22	0 00:06	3.75	0.11	7.43	0.70	0.74	0.00	1.11	Calculated
53	P #96	CB #70	CB #72	48.99	266.58	266.34	0.5000	18.000	0.0130	5.66	0 00:06	4.25	0.19	7.43	0.76	0.70	0.00	1.06	Calculated
54	P #97	CB #71	CB #72	25.84	266.68	266.55	0.5000	15.000	0.0130	0.29	0 00:05	1.98	0.22	4.57	0.06	0.18	0.00	0.22	Calculated
55	P #98	CB #72	CB #73	46.47	265.69	265.32	0.7900	24.000	0.0130	7.03	0 00:06	4.27	0.18	20.10	0.35	0.52	0.00	1.05	Calculated
56	P #99	CB #73	DI #204	44.55	265.12	264.90	0.5000	24.000	0.0130	7.66	0 00:06	4.35	0.17	16.00	0.48	0.55	0.00	1.10	Calculated

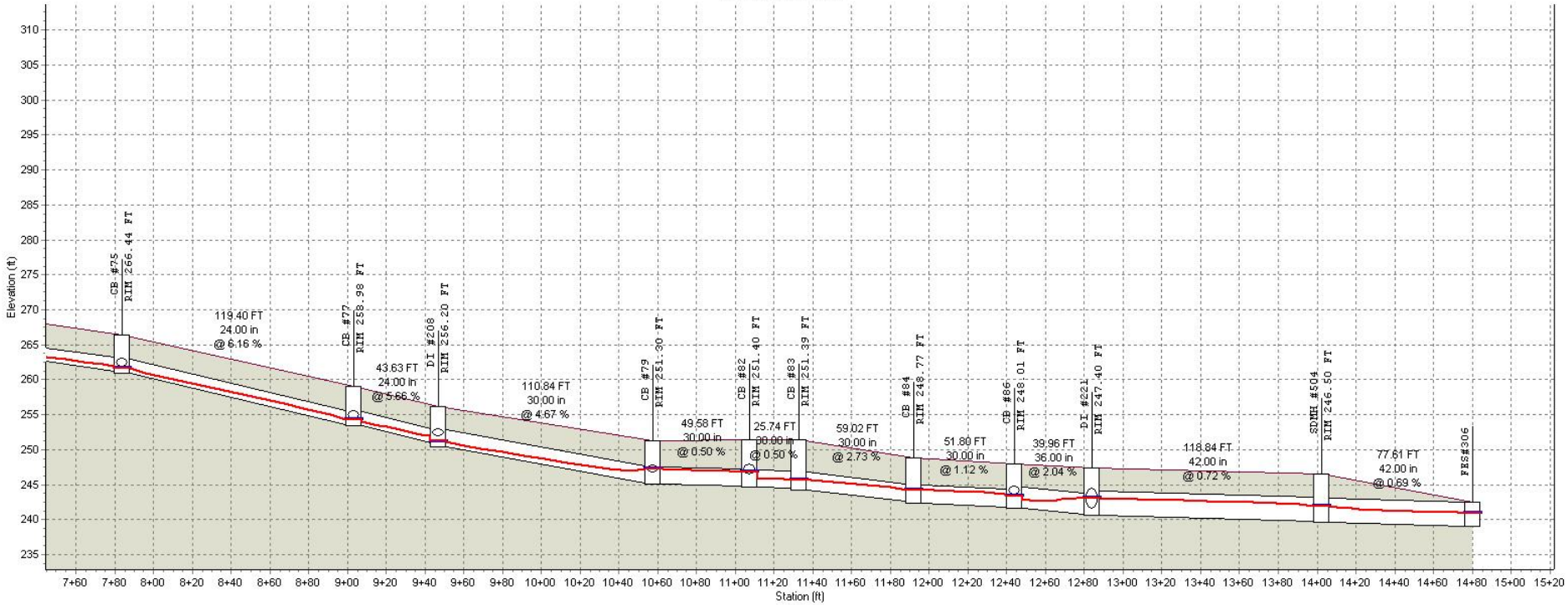


:	CB #61	CB #62	CB #64	CB #66	CB #69	CB #70	CB #72	CB #73	DI #204	
RIM (FT):	296.43	296.14	287.96	278.50	272.74	272.71	271.40	270.61	270.25	
Invert (ft):	291.99	291.18	283.13	273.15	266.91	266.58	265.69	265.12	264.70	
Min Pipe Cover (ft):										
Max HGL (ft):	292.29	291.49	283.50	273.63	268.13	267.78	266.77	266.34	265.49	

Link ID:	P #89	P #90	P #92	P #94	P #95	P #96	P #98	P #99	P #103
(FT):	26.09	113.04	131.01	150.87	25.71	48.99	46.47	44.55	97.00
(in):	15.00	15.00	15.00	15.00	18.00	18.00	24.00	24.00	24.00
@ (%):	2.33	6.95	7.04	3.91	0.50	0.50	0.79	0.50	3.62
Up Invert (ft):	291.99	291.18	283.13	273.15	266.91	266.58	265.69	265.12	264.70
Dn Invert (ft):	291.38	283.33	273.91	267.25	266.78	266.34	265.32	264.90	261.19
Max Q (cfs):	0.94	2.01	2.99	3.95	5.22	5.66	7.03	7.66	10.54
Max Vel (ft/s):	4.52	8.97	10.08	7.00	3.75	4.25	4.27	4.35	10.13
Max Depth (ft):	0.28	0.30	0.36	0.68	1.11	1.06	1.05	1.10	0.73

Profile Plot

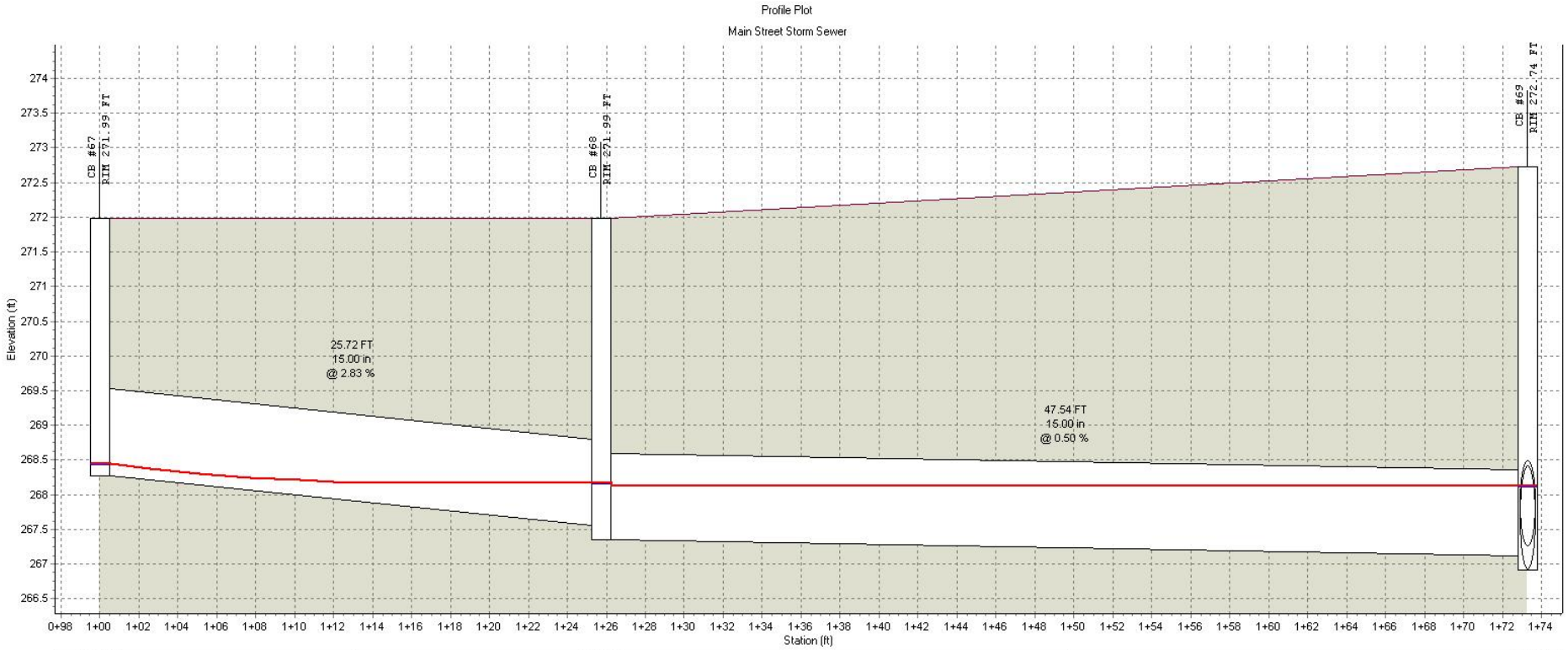
Main Street Storm Sewer



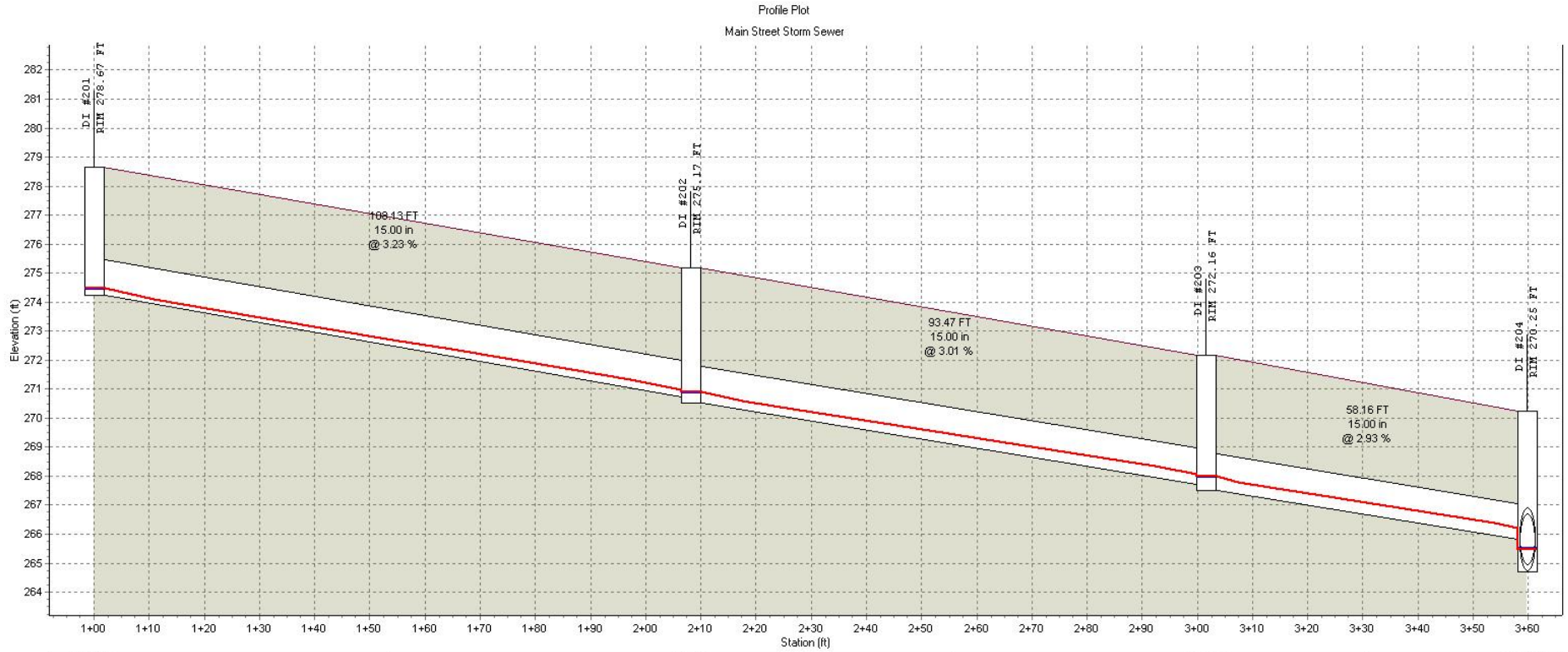
:	CB #75	CB #77	DI #208	CB #79	CB #82	CB #83	CB #84	CB #86	DI #221	SDMH #504	FES#306
RIM (FT):	266.44	258.98	256.20	251.30	251.40	251.39	248.77	248.01	247.40	246.50	
Invert (ft):	260.99	253.44	250.39	245.02	244.57	244.24	242.39	241.61	240.60	239.54	239.00
Min Pipe Cover (ft):										3.26	
Max HGL (ft):	261.67	254.34	251.20	247.27	246.80	245.66	244.25	243.36	243.04	241.91	240.84

Link ID:	P #105	P #107	P #111	P #113	P #116	P #117	P #118	P #120	P #141	P #142
(FT):	119.40	43.63	110.84	49.58	25.74	59.02	51.80	39.96	118.84	77.61
(in):	24.00	24.00	30.00	30.00	30.00	30.00	30.00	36.00	42.00	42.00
@ (%):	6.16	5.66	4.67	0.50	0.50	2.73	1.12	2.04	0.72	0.69
Up Invert (ft):	260.99	253.44	250.39	245.02	244.57	244.24	242.39	241.61	240.60	239.54
Dn Invert (ft):	253.64	250.97	245.22	244.77	244.44	242.63	241.81	240.80	239.74	239.00
Max Q (cfs):	11.53	12.83	18.50	19.84	22.84	23.34	23.54	24.15	45.50	45.50
Max Vel (ft/s):	12.11	11.30	7.13	4.44	5.63	7.67	6.73	5.01	6.76	7.53
Max Depth (ft):	0.69	0.78	1.42	2.14	1.93	1.52	1.71	2.00	2.31	2.11

HGL



	CB #67		CB #68		CB #69
RIM (FT):	271.99		271.99		272.74
Invert (ft):	268.28		267.35		266.91
Min Pipe Cover (ft):					
Max HGL (ft):	268.44		268.17		268.13
Link ID:		P #87		P #88	
(FT):		25.72		47.54	
(in):		15.00		15.00	
@ (%):		2.83		0.50	
Up Invert (ft):		268.28		267.35	
Dn Invert (ft):		267.55		267.11	
Max Q (cfs):		0.41		1.08	
Max Vel (ft/s):		3.36		1.69	
Max Depth (ft):		0.39		0.92	

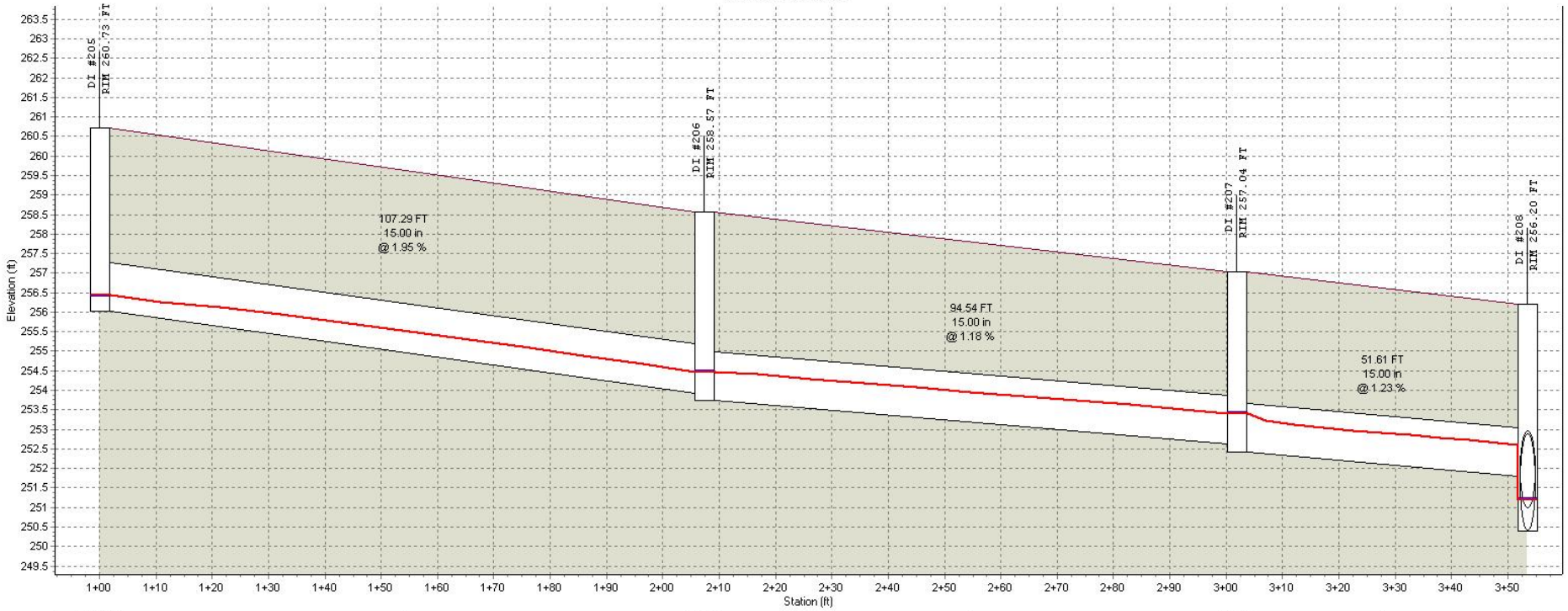


:	DI #201	DI #202	DI #203	DI #204
RIM (FT):	278.67	275.17	272.16	270.25
Invert (ft):	274.23	270.54	267.52	264.70
Min Pipe Cover (ft):				
Max HGL (ft):	274.46	270.89	267.98	265.49

Link ID:	P #100	P #101	P #102
(FT):	108.13	93.47	58.16
(in):	15.00	15.00	15.00
@ (%):	3.23	3.01	2.93
Up Invert (ft):	274.23	270.54	267.52
Dn Invert (ft):	270.74	267.72	265.82
Max Q (cfs):	0.83	1.75	2.51
Max Vel (ft/s):	5.33	6.33	6.64
Max Depth (ft):	0.23	0.35	0.43

Profile Plot

Main Street Storm Sewer



:	DI #205	DI #206	DI #207	DI #208
RIM (FT):	260.73	258.57	257.04	256.20
Invert (ft):	256.03	253.74	252.42	250.39
Min Pipe Cover (ft):				
Max HGL (ft):	256.43	254.48	253.41	251.20

Link ID:	P #108	P #109	P #110
(FT):	107.29	94.54	51.61
(in):	15.00	15.00	15.00
@ (%):	1.95	1.18	1.23
Up Invert (ft):	256.03	253.74	252.42
Dn Invert (ft):	253.94	252.62	251.79
Max Q (cfs):	1.97	3.72	5.14
Max Vel (ft/s):	4.82	4.80	5.56
Max Depth (ft):	0.47	0.76	0.88

HGL

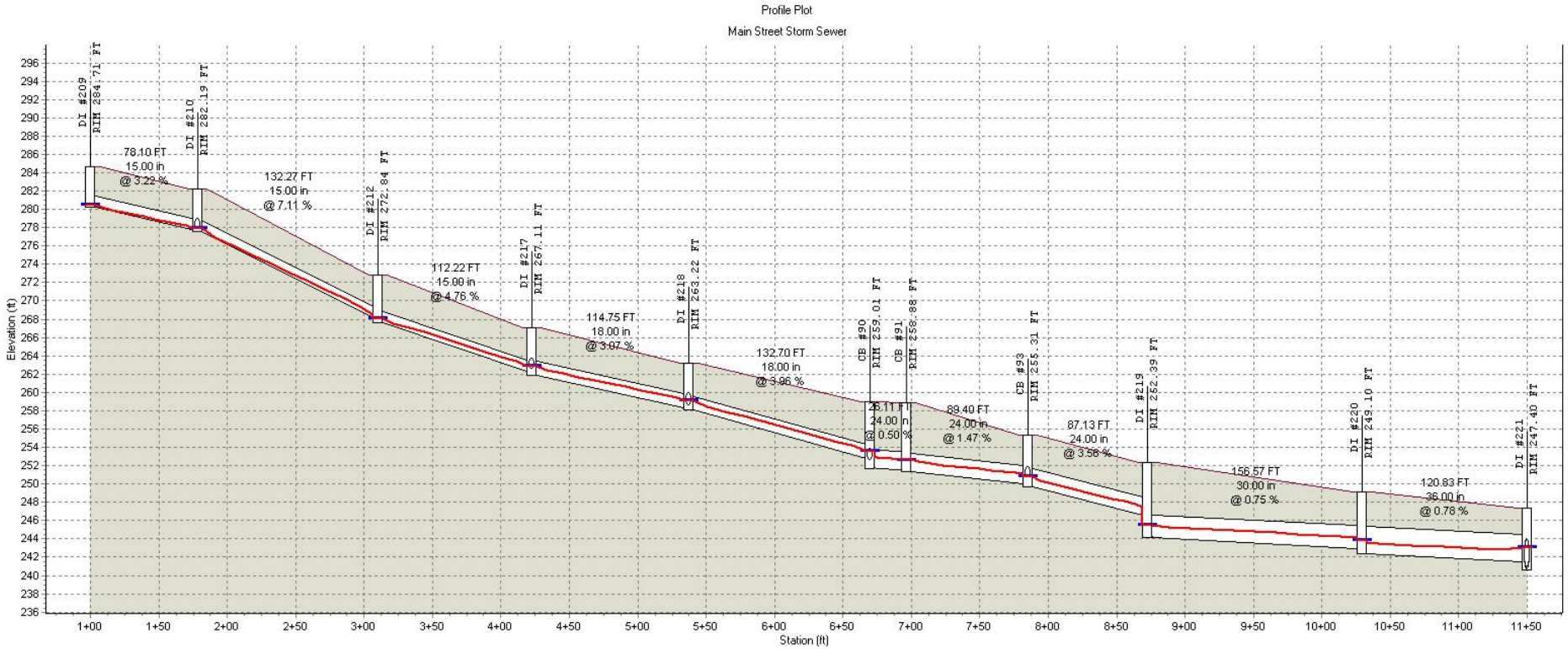
Profile Plot

Main Street Storm Sewer

	CB #80	CB #81	CB #82
RIM (FT):	255.33	255.32	251.40
Invert (ft):	250.87	250.54	244.57
Min Pipe Cover (ft):			
Max HGL (ft):	251.21	250.90	246.80

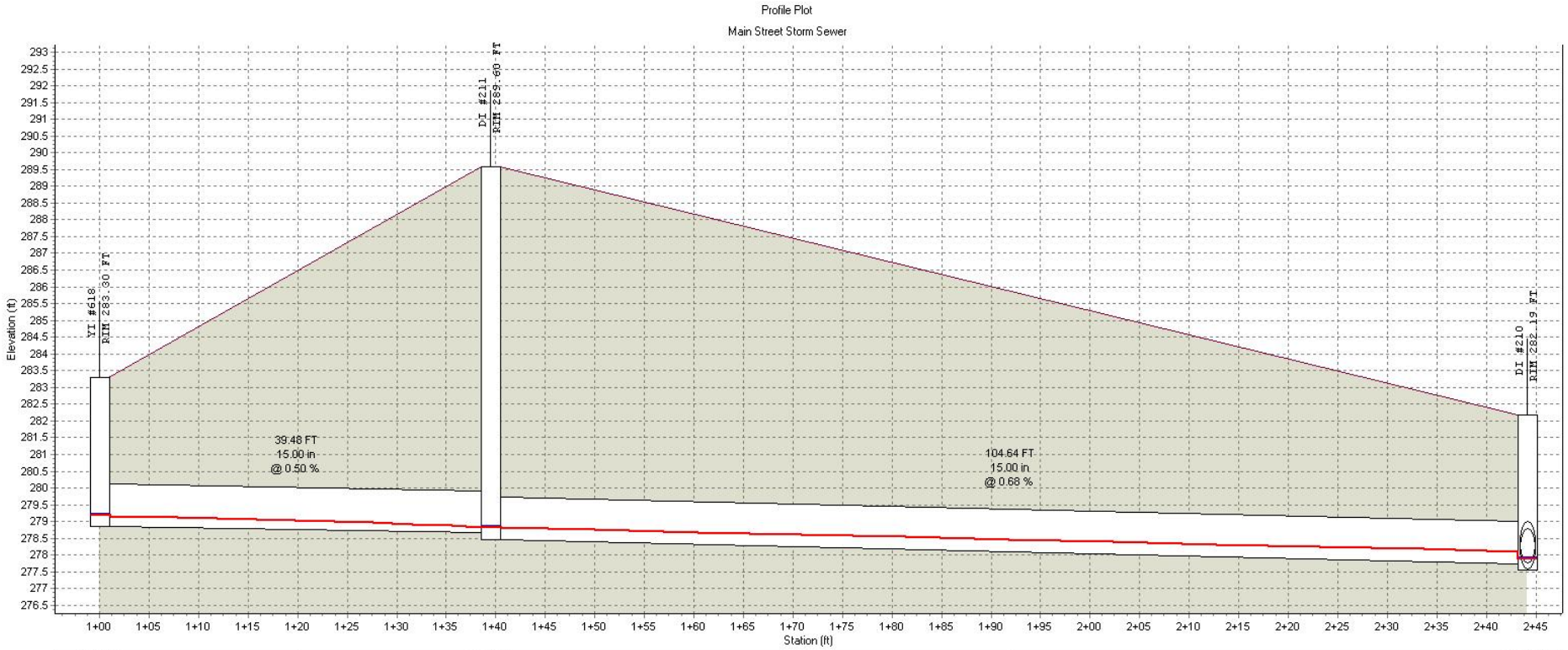
Link ID:	P #114	P #115
(FT):	25.62	166.52
(in):	15.00	18.00
@ (%):	0.50	2.47
Up Invert (ft):	250.87	250.54
Dn Invert (ft):	250.74	246.42
Max Q (cfs):	0.57	1.89
Max Vel (ft/s):	2.32	6.03
Max Depth (ft):	0.32	0.35

HGL



:	DI #209	DI #210	DI #212	DI #217	DI #218	CB #90	CB #91	CB #93	DI #219	DI #220	DI #221
RIM (FT):	284.71	282.19	272.84	267.11	263.22	259.01	258.88	255.31	252.39	249.10	247.40
Invert (ft):	280.26	277.55	267.60	261.87	258.06	251.70	251.37	249.73	244.13	242.40	240.60
Min Pipe Cover (ft):											
Max HGL (ft):	280.46	277.89	268.07	262.84	259.06	253.54	252.63	250.75	245.50	243.78	243.04

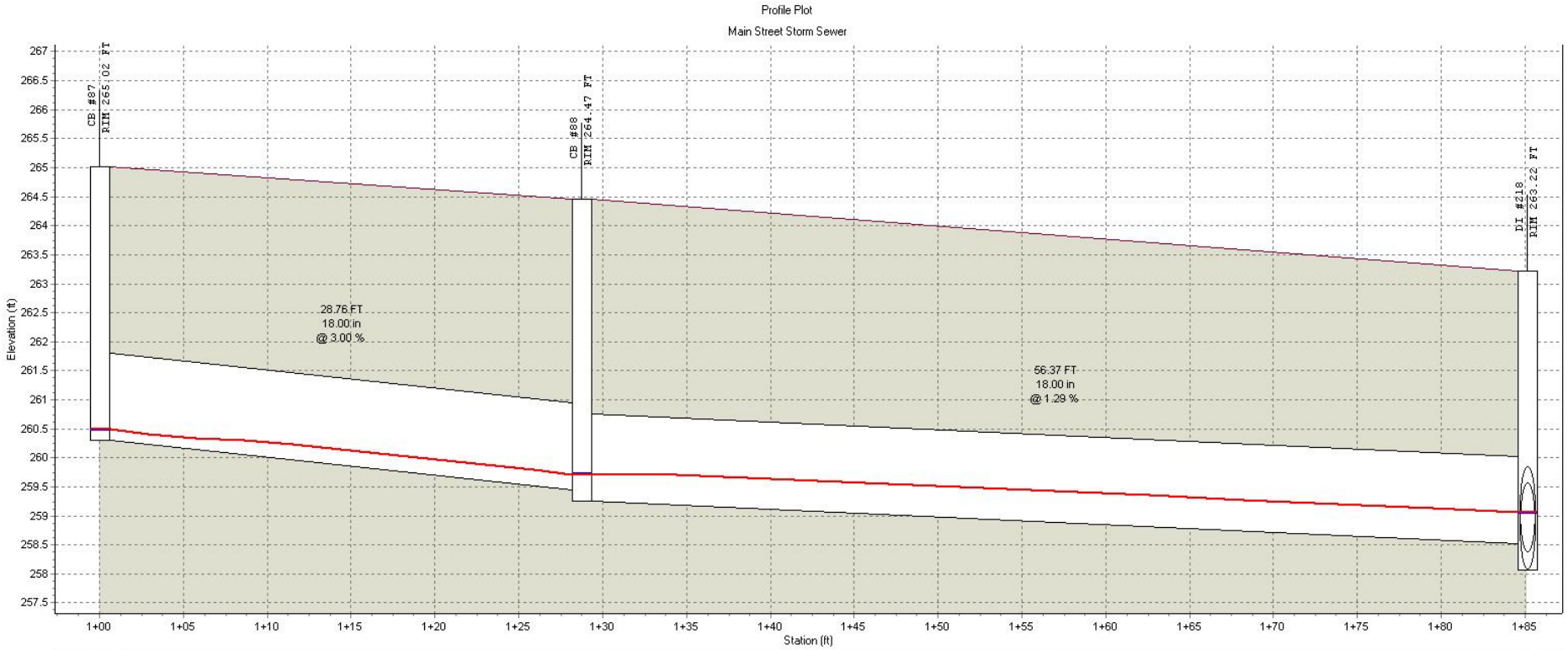
Link ID:	P #123	P #124	P #125	P #130	P #133	P #135	P #136	P #138	P #139	P #140
(FT):	78.10	132.27	112.22	114.75	132.70	26.11	89.40	87.13	156.57	120.83
(in):	15.00	15.00	15.00	18.00	18.00	24.00	24.00	24.00	30.00	36.00
@ (%):	3.22	7.11	4.76	3.07	3.96	0.50	1.47	3.56	0.75	0.78
Up Invert (ft):	280.26	277.55	267.60	261.87	258.06	251.70	251.37	249.73	244.13	242.40
Dn Invert (ft):	277.75	268.14	262.26	258.35	252.81	251.57	250.06	246.63	242.95	241.45
Max Q (cfs):	0.61	2.58	3.89	10.70	12.88	13.65	14.09	15.19	16.20	17.36
Max Vel (ft/s):	4.83	9.74	8.51	9.73	11.28	5.12	7.64	10.77	6.43	5.79
Max Depth (ft):	0.20	0.34	0.52	0.90	0.92	1.58	1.14	0.92	1.28	1.48



:	YI #618	DI #211	DI #210
RIM (FT):	283.30	289.60	282.19
Invert (ft):	278.86	278.47	277.55
Min Pipe Cover (ft):			
Max HGL (ft):	279.20	278.83	277.89

Link ID:	P #121	P #122
(FT):	39.48	104.64
(in):	15.00	15.00
@ (%):	0.50	0.68
Up Invert (ft):	278.86	278.47
Dn Invert (ft):	278.67	277.75
Max Q (cfs):	0.58	0.89
Max Vel (ft/s):	2.38	3.10
Max Depth (ft):	0.31	0.36

HGL



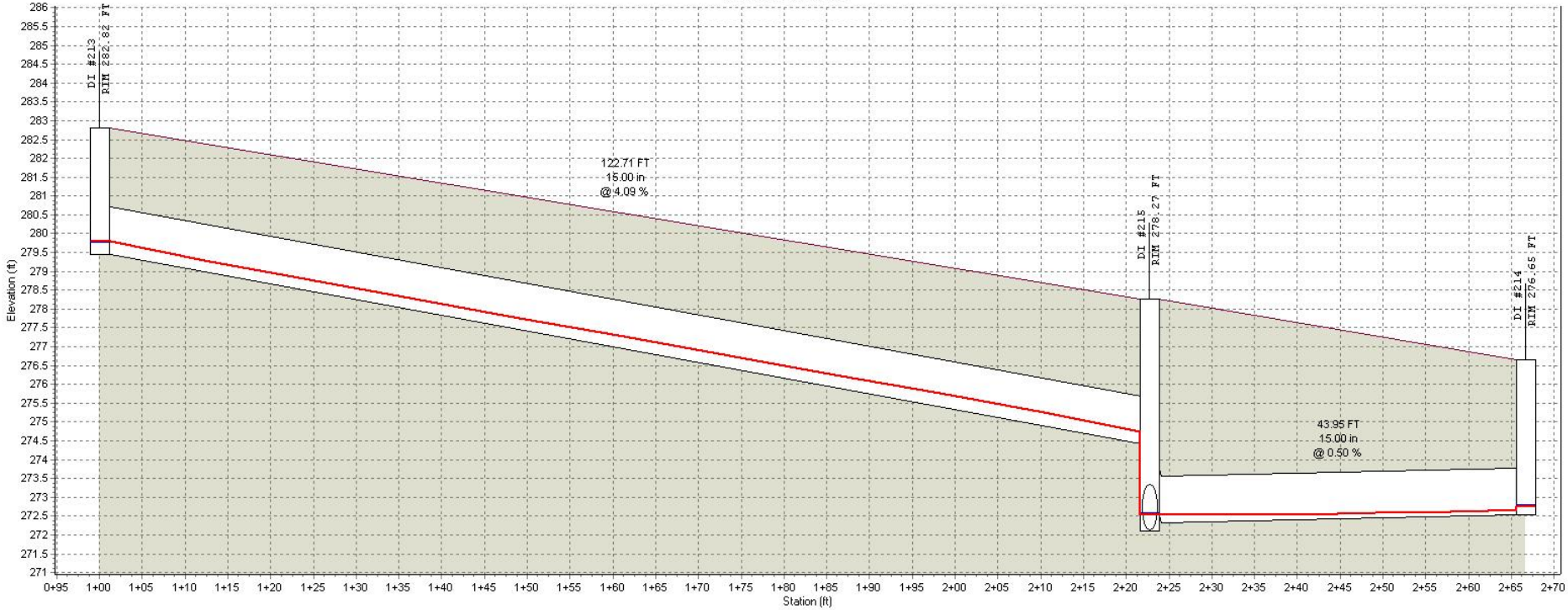
	CB #87		CB #88		DI #218
RIM (FT):	265.02		264.47		263.22
Invert (ft):	260.31		259.25		258.06
Min Pipe Cover (ft):					
Max HGL (ft):	260.49		259.72		259.06
Link ID:		P #131		P #132	
(FT):		28.76		56.37	
(in):		18.00		18.00	
@ (%):		3.00		1.29	
Up Invert (ft):		260.31		259.25	
Dn Invert (ft):		259.45		258.52	
Max Q (cfs):		0.53		1.98	
Max Vel (ft/s):		3.50		4.34	
Max Depth (ft):		0.22		0.49	

:	DI #215	DI #216	DI #217
RIM (FT):	278.27	272.00	267.11
Invert (ft):	272.10	267.33	261.87
Min Pipe Cover (ft):			
Max HGL (ft):	272.54	267.80	262.84

Link ID:	P #128	P #129
(FT):	91.42	75.06
(in):	15.00	15.00
@ (%):	4.94	6.38
Up Invert (ft):	272.10	267.33
Dn Invert (ft):	267.59	262.54
Max Q (cfs):	3.18	3.92
Max Vel (ft/s):	8.83	10.09
Max Depth (ft):	0.42	0.44

Profile Plot

Main Street Storm Sewer

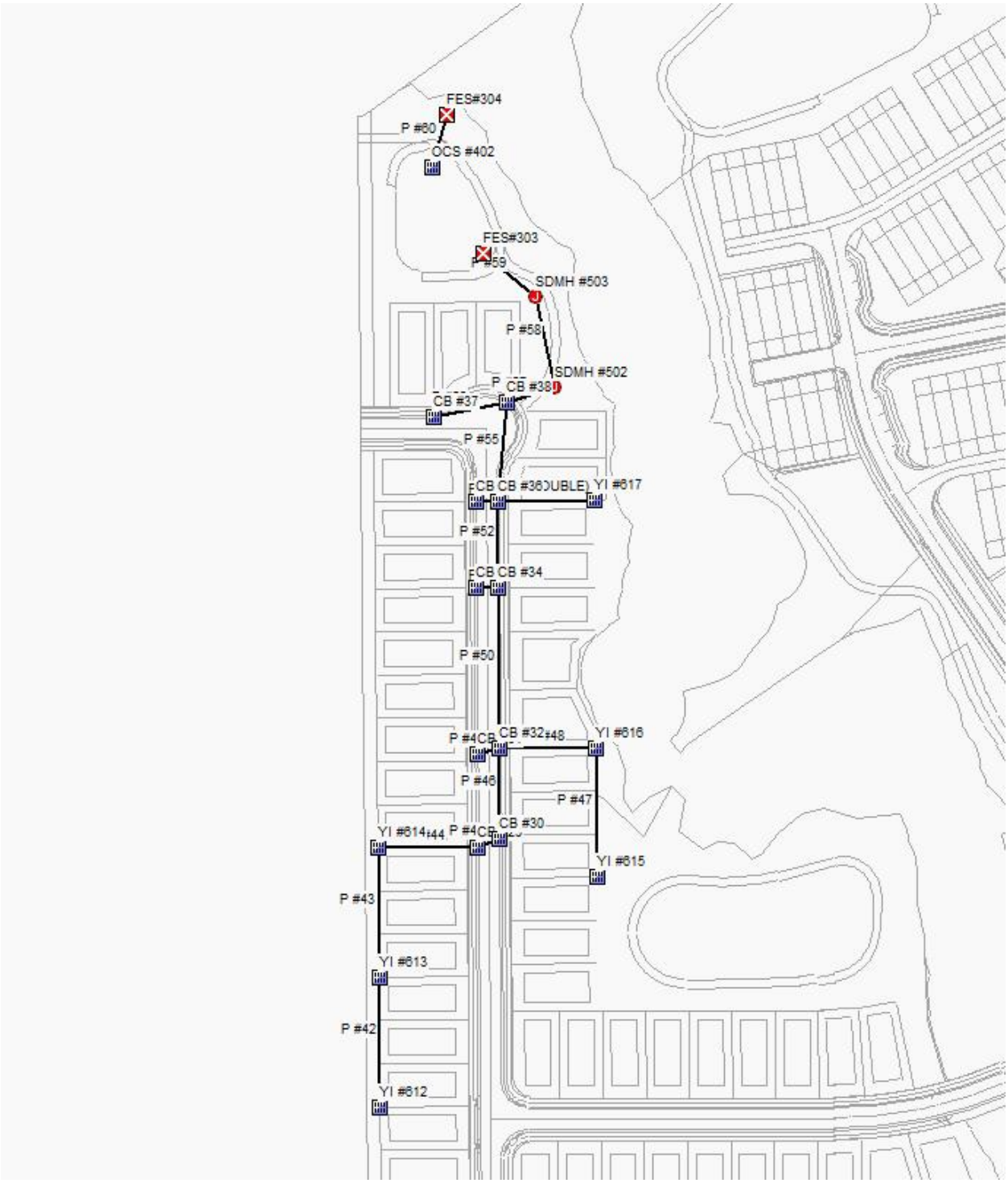


	DI #213		DI #215		DI #214
RIM (FT):	282.82		278.27		276.65
Invert (ft):	279.45		272.10		272.53
Min Pipe Cover (ft):					
Max HGL (ft):	279.79		272.54		272.76
Link ID:		P #127		P #126	
(FT):		122.71		43.95	
(in):		15.00		15.00	
@ (%):		4.09		0.50	
Up Invert (ft):		279.45		272.53	
Dn Invert (ft):		274.43		272.31	
Max Q (cfs):		1.86		0.29	
Max Vel (ft/s):		7.28		1.94	
Max Depth (ft):		0.33		0.23	

HGL

S T O R M W A T E R AREA " H "

STORMWATER PIPING AND HYDRAULIC GRADE LINE FOR 10-YR STORM



PLAN VIEW

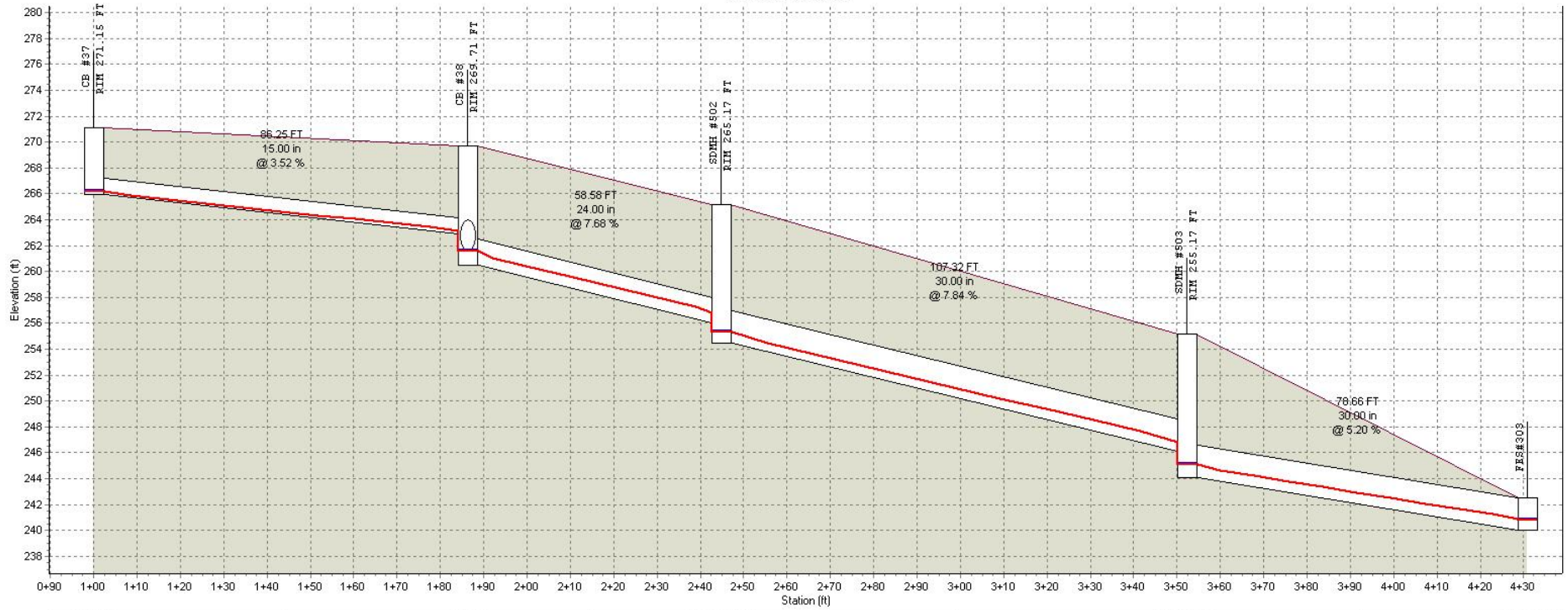
DRAINAGE AREA

SN	Element ID	Area (acres)	Drainage Node ID	Weighted Runoff Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
1	Sub-CB#29	0.64	CB #29	0.5400	0.60	0.32	2.49	7.210	0 00:05:00
2	Sub-CB#30	0.57	CB #30	0.5900	0.60	0.35	2.43	7.210	0 00:05:00
3	Sub-CB#31	0.37	CB #31	0.6400	0.60	0.39	1.71	7.210	0 00:05:00
4	Sub-CB#32	0.18	CB #32	0.5400	0.60	0.32	0.70	7.210	0 00:05:00
5	Sub-CB#33	0.46	CB #33	0.6900	0.60	0.42	2.29	7.210	0 00:05:00
6	Sub-CB#34	0.34	CB #34	0.5400	0.60	0.32	1.32	7.210	0 00:05:00
7	Sub-CB#35(DOUBLE)	0.63	CB #35 (DOUBLE)	0.6900	0.60	0.42	3.13	7.210	0 00:05:00
8	Sub-CB#36	0.39	CB #36	0.5900	0.60	0.35	1.66	7.210	0 00:05:00
9	Sub-CB#37	0.20	CB #37	0.7900	0.60	0.48	1.14	7.210	0 00:05:00
10	Sub-CB#38	0.33	CB #38	0.7900	0.60	0.48	1.88	7.210	0 00:05:00
11	Sub-YI#612	0.18	YI #612	0.5400	0.60	0.32	0.70	7.210	0 00:05:00
12	Sub-YI#613	0.22	YI #613	0.5900	0.60	0.35	0.94	7.210	0 00:05:00
13	Sub-YI#614	0.25	YI #614	0.5400	0.60	0.32	0.97	7.210	0 00:05:00
14	Sub-YI#615	0.09	YI #615	0.5400	0.60	0.32	0.35	7.210	0 00:05:00
15	Sub-YI#616	0.27	YI #616	0.5900	0.60	0.35	1.15	7.210	0 00:05:00
16	Sub-YI#617	0.40	YI #617	0.5900	0.60	0.35	1.70	7.210	0 00:05:00

MODEL INPUT										MODEL OUTPUT									
SN	Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (inches)	Manning's Roughness	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Max Flow Velocity (ft/sec)	Travel Time (min)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged (min)	Max Flow Depth (ft)	Reported Condition
1	P #42	YI #612	YI #613	150.00	275.39	273.75	1.1000	15.000	0.0130	0.65	0 00:05	3.41	0.73	6.76	0.10	0.21	0.00	0.27	Calculated
2	P #43	YI #613	YI #614	150.00	273.55	269.38	2.7800	15.000	0.0130	1.53	0 00:05	4.77	0.52	10.77	0.14	0.33	0.00	0.41	Calculated
3	P #44	YI #614	CB #29	115.75	269.18	268.60	0.5000	15.000	0.0130	2.37	0 00:05	3.08	0.63	4.57	0.52	0.60	0.00	0.75	Calculated
4	P #45	CB #29	CB #30	27.68	268.40	268.26	0.5000	18.000	0.0130	4.20	0 00:05	3.82	0.12	7.43	0.57	0.60	0.00	0.90	Calculated
5	P #46	CB #30	CB #32	104.02	268.06	265.55	2.4100	18.000	0.0130	6.03	0 00:05	7.82	0.22	16.32	0.37	0.45	0.00	0.68	Calculated
6	P #47	YI #615	YI #616	150.00	271.06	265.90	3.4400	15.000	0.0130	0.34	0 00:05	3.03	0.83	11.99	0.03	0.17	0.00	0.21	Calculated
7	P #48	YI #616	CB #32	112.15	265.70	265.14	0.5000	15.000	0.0130	1.39	0 00:05	2.21	0.85	4.57	0.30	0.52	0.00	0.65	Calculated
8	P #49	CB #31	CB #32	26.71	266.15	265.55	2.2400	15.000	0.0130	2.00	0 00:05	5.25	0.08	9.67	0.21	0.35	0.00	0.44	Calculated
9	P #50	CB #32	CB #34	186.49	264.94	262.96	1.0600	24.000	0.0130	10.12	0 00:05	5.38	0.58	23.31	0.43	0.58	0.00	1.16	Calculated
10	P #51	CB #33	CB #34	25.78	264.25	264.12	0.5100	15.000	0.0130	2.05	0 00:05	3.25	0.13	4.61	0.45	0.51	0.00	0.64	Calculated
11	P #52	CB #34	CB #36	99.32	262.76	262.26	0.5000	30.000	0.0130	12.79	0 00:06	4.15	0.40	28.96	0.44	0.62	0.00	1.56	Calculated
12	P #53	YI #617	CB #36	112.15	263.77	263.21	0.5000	15.000	0.0130	1.64	0 00:05	3.17	0.59	4.57	0.36	0.47	0.00	0.58	Calculated
13	P #54	CB #35 (DOUBLE)	CB #36	25.71	263.68	263.55	0.5000	15.000	0.0130	3.51	0 00:05	3.80	0.11	4.57	0.77	0.71	0.00	0.88	Calculated
14	P #55	CB #36	CB #38	114.92	262.06	261.49	0.5000	30.000	0.0130	18.76	0 00:06	5.54	0.35	29.00	0.65	0.65	0.00	1.63	Calculated
15	P #56	CB #37	CB #38	86.25	265.92	262.89	3.5200	15.000	0.0130	1.05	0 00:05	5.83	0.25	12.12	0.09	0.20	0.00	0.26	Calculated
16	P #57	CB #38	SDMH #502	58.58	260.50	256.00	7.6800	24.000	0.0130	21.01	0 00:06	14.58	0.07	62.70	0.34	0.47	0.00	0.94	Calculated
17	P #58	SDMH #502	SDMH #503	107.32	254.50	246.09	7.8400	30.000	0.0130	21.01	0 00:06	15.83	0.11	114.82	0.18	0.32	0.00	0.79	Calculated
18	P #59	SDMH #503	FES#303	78.66	244.09	240.00	5.2000	30.000	0.0130	21.02	0 00:06	13.00	0.10	93.55	0.22	0.36	0.00	0.91	Calculated

Profile Plot

Main Street Storm Sewer



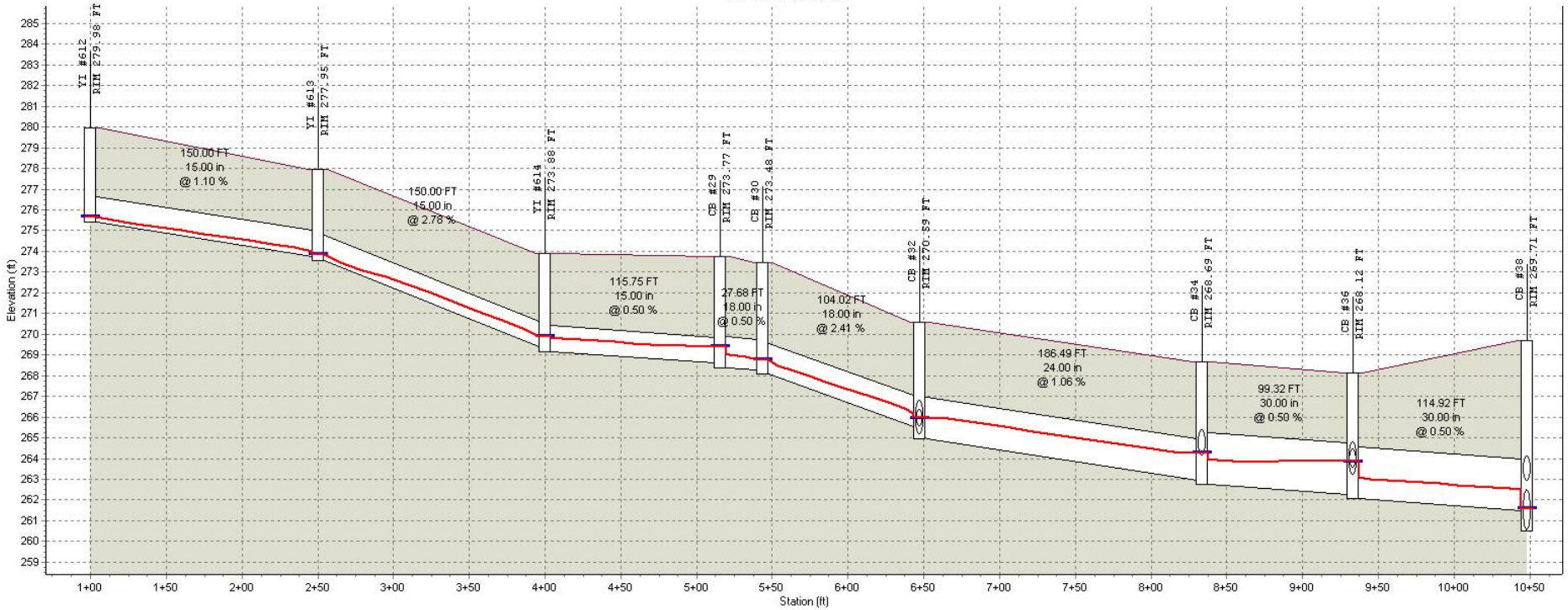
:	CB #37	CB #38	SDMH #502	SDMH #503	FES#303
RIM (FT):	271.15	269.71	265.17	255.17	
Invert (ft):	265.92	260.50	254.50	244.09	240.00
Min Pipe Cover (ft):			7.17	6.58	
Max HGL (ft):	266.19	261.57	255.35	245.11	240.81

Link ID:	P #56	P #57	P #58	P #59
(FT):	86.25	58.58	107.32	78.66
(in):	15.00	24.00	30.00	30.00
@ (%):	3.52	7.68	7.84	5.20
Up Invert (ft):	265.92	260.50	254.50	244.09
Dn Invert (ft):	262.89	256.00	246.09	240.00
Max Q (cfs):	1.05	21.01	21.01	21.02
Max Vel (ft/s):	5.83	14.58	15.83	13.00
Max Depth (ft):	0.26	0.94	0.79	0.91

HGL

Profile Plot

Main Street Storm Sewer



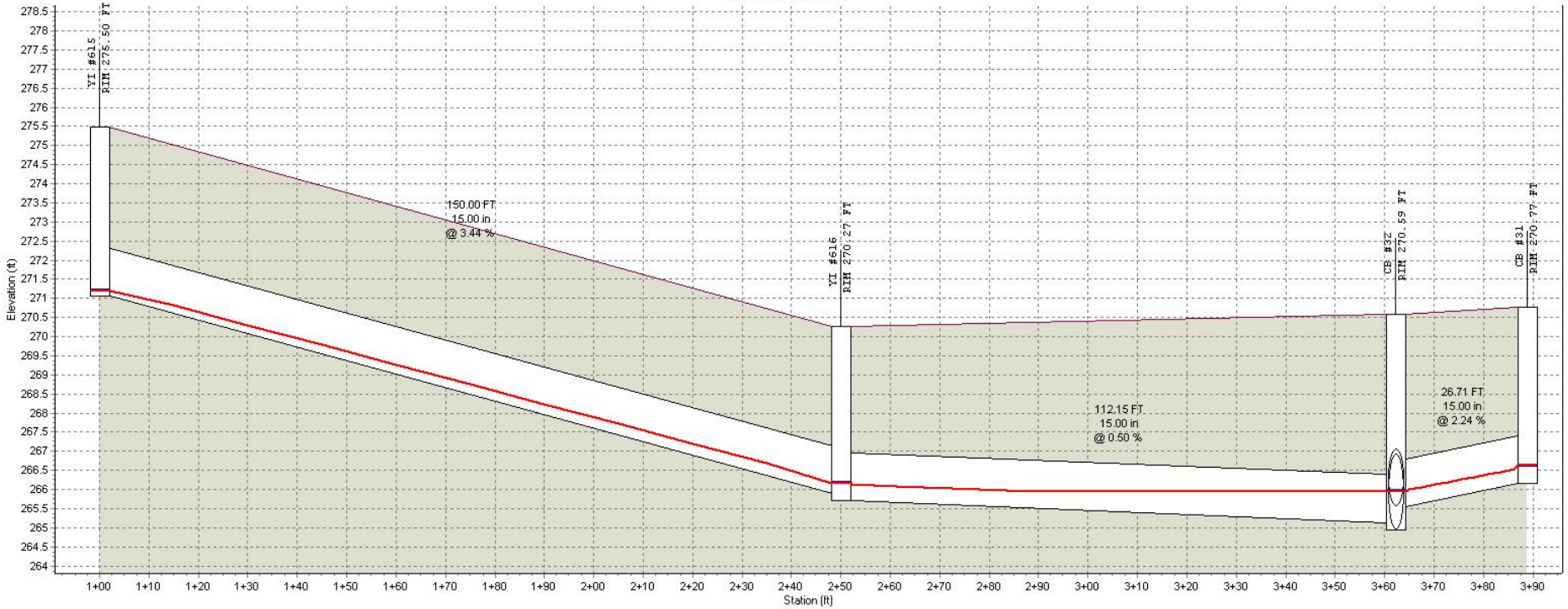
:	YI #612	YI #613	YI #614	CB #29	CB #30	CB #32	CB #34	CB #36	CB #38
RIM (FT):	279.98	277.95	273.88	273.77	273.48	270.59	268.69	268.12	269.71
Invert (ft):	275.39	273.55	269.18	268.40	268.06	264.94	262.76	262.06	260.50
Min Pipe Cover (ft):									
Max HGL (ft):	275.66	273.87	269.88	269.40	268.78	265.96	264.28	263.86	261.57

Link ID:	P #42	P #43	P #44	P #45	P #46	P #50	P #52	P #55
(FT):	150.00	150.00	115.75	27.68	104.02	186.49	99.32	114.92
(in):	15.00	15.00	15.00	18.00	18.00	24.00	30.00	30.00
@ (%):	1.10	2.78	0.50	0.50	2.41	1.06	0.50	0.50
Up Invert (ft):	275.39	273.55	269.18	268.40	268.06	264.94	262.76	262.06
Dn Invert (ft):	273.75	269.38	268.60	268.26	265.55	262.96	262.26	261.49
Max Q (cfs):	0.65	1.53	2.37	4.20	6.03	10.12	12.79	18.76
Max Vel (ft/s):	3.41	4.77	3.08	3.82	7.82	5.38	4.15	5.54
Max Depth (ft):	0.27	0.41	0.75	0.90	0.68	1.16	1.56	1.63

HGL

Profile Plot

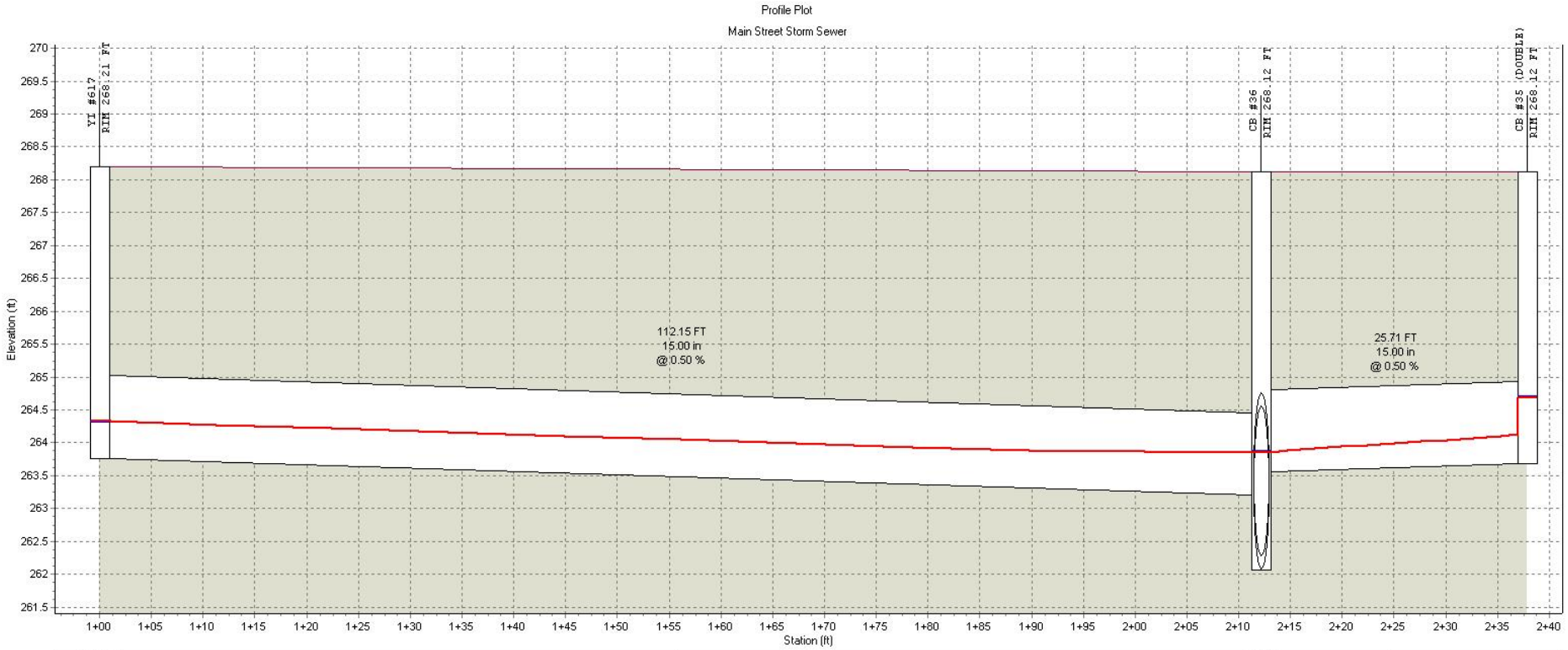
Main Street Storm Sewer



:	YI #615	YI #616	CB #32	CB #31
RIM (FT):	275.50	270.27	270.59	270.77
Invert (ft):	271.06	265.70	264.94	266.15
Min Pipe Cover (ft):				
Max HGL (ft):	271.21	266.17	265.96	266.63

Link ID:	P #47	P #48	P #49
(FT):	150.00	112.15	26.71
(in):	15.00	15.00	15.00
@ (%):	3.44	0.50	2.24
Up Invert (ft):	271.06	265.70	266.15
Dn Invert (ft):	265.90	265.14	265.55
Max Q (cfs):	0.34	1.39	2.00
Max Vel (ft/s):	3.03	2.21	5.25
Max Depth (ft):	0.21	0.65	0.44

HGL



	YI #617		CB #36	
RIM (FT):	268.21		268.12	268.12
Invert (ft):	263.77		262.06	263.68
Min Pipe Cover (ft):				
Max HGL (ft):	264.33		263.86	264.69
Link ID:		P #53	P #54	
(FT):		112.15	25.71	
(in):		15.00	15.00	
@ (%):		0.50	0.50	
Up Invert (ft):		263.77	263.68	
Dn Invert (ft):		263.21	263.55	
Max Q (cfs):		1.64	3.51	
Max Vel (ft/s):		3.17	3.80	
Max Depth (ft):		0.58	0.88	