APPENDIX G-1

DRAINAGE REPORT

DRAFT ENVIRONMENTAL IMPACT REPORT

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Drainage Study

Brar Farms
3425 Marshall Road
West Sacramento, CA 95691
(APN # 045-260-008, 009, 010, 045-270-001, & 002)

Date: April 25, 2026

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Introduction

This report includes a comparison of pre and post construction stormwater flows and provides recommendations for the on-site drainage infrastructure to convey the stormwater runoff to the proposed detention pond and further into the existing public storm water drainage systems located east of the project site at Otis Ave. The SCS TR-20 Method is used for comparison of Pre and Post Development flows for entire project site. While, Post Development flows for individual DMA are calculated using Sacramento Method and Nolte Method outlined in the Section 4 of City of West Sacramento Design Standards. The calculations provided in this report confirm that proposed storm drainage infrastructure has adequate capacity to collect and drain entire on-site runoff for 100-year design storm.

Project Description

The Project site is located at 3425 Marshall Road, West Sacramento, CA 95691. The Assessor's Parcel Numbers (APNs) are 045-260-008, 009, 010, 045-270-001, & 002. The site is bounded by Marshall Road on the north, Otis Ave along east, Residential Subdivision and Drainage Pond at south and west respectively. The site is square in shape and covers an area of approx. 60 acres.

The existing site consists of a bare land. The project involves the development of residential sub-division with 259 residential lots, a detention basin, walkways, parklet and landscape areas. A detention pond of surface area of approx. 4.0 acres with a storage capacity of 21.090 acre-feet (af) is proposed for the detention of runoff of the entire property area.

Pre and Post Development Peak Flow Calculations

The project site is considered a single DMA for calculating total runoff generated during both Pre-Development and Post-Development conditions. The runoff calculations are performed using the SCS TR-20 method. The site generates a peak flow of 46.30 cfs under Pre-Development conditions and 142.70 cfs under Post-Development conditions. Detailed peak flow calculations are provided in Attachment-F.

The project site is divided into multiple onsite DMAs that collect runoff through street inlet drains and direct it to the onsite detention pond. Post-construction peak flows for each DMA have been calculated using the Sacramento Method and Nolte Method (Attachment-A). Approximately 55% of the

proposed development area will be covered by residential units, walkways, roads, and other paved surfaces.

Peak flows for the 10-year and 100-year events have been calculated using the equations outlined in Section 4.02 for the Sacramento Method, while Nolte Method peak flows have been obtained from the Design Chart (Figure 4-5) in the Design Standards. Detailed calculations and the DMA map exhibit are provided in Attachment-B and Civil Improvement Plans (Exhibit-A), respectively. The Post-Development peak flow for the entire site, calculated using the SCS TR-20 method, is 142.70 cfs. While, the total cumulative peak flows for each DMA, calculated using the Sacramento Method is 142.61 cfs. Peak flows are nearly identical, indicating consistency between the two methods.

Detention Pond Sizing Calculations

The sizing of the proposed detention pond was determined by considering the maximum post-development 100-year peak flow values. These peak flows were determined by considering cumulative peak flows from each DMA obtained from the Sacramento Method Analysis and conducting a full-site analysis with the SCS TR-20 Method. The post-development runoff is 142.61 cfs using the Sacramento Method and 142.70 cfs using the SCS TR-20 Method. Therefore, the detention pond is sized based on the peak flow value obtained from the SCS TR-20 Method.

The SCS TR-20 Method analysis and the detention pond sizing calculations were performed using HydroCAD. The proposed detention pond has a depth of 6.00 ft, with the base at 5.00 ft and the top at 11.00 ft elevation. The peak elevation reached for the 100-year flow is 8.61 feet, providing a pond storage freeboard of 2.39 feet. The SCS TR-2s0 method analysis and detention pond sizing calculations are provided in Attachment-F.

The hydrological soil group for the site is D, obtained from NRCS Web Soil Survey (Attachment-G). Precipitation depth for 24hr-100year storm is taken from NOAA NWS Web (Attachment-H). The curve Number for hydrologic soil group D is taken from the Curve number table (Attachment-I) and the Rainfall distribution map (Attachment-J) is taken from Urban Hydrology for Small Watersheds TR-55 manual. The time of concentration (Tc) value for post-construction is taken as 18 mins for SCS TR-20 method.

Outlet Orifice Structure

The collected storm water in the pond is drained to the existing 24 inch public storm drainage located at Otis Ave in a controlled way using an outlet orifice structure. The outflow from orifice structure is pumped to required elevation using a pumping station. This structure contains an 8.0-inch vertical orifice at an elevation of 5.50 ft and 18 inch horizontal grate located at 8.00 ft.

Hydraulic design reports generated using the HydroCAD Stormwater Modeling software for pre and post development flows is included as an Attachment-F. The analysis confirms that the proposed outlet structure has adequate capacity to convey runoff to the existing storm drain in a controlled way. The design detail of the outlet structure is provided below as well as in Civil Improvement Plans. Considering pre-development drainage conditions, the project site generates 46.30 cfs peak flow and 142.70 cfs peak flow under post development condition for 100-year rainfall. Whereas, the proposed outlet orifice structure drains a controlled flow of 9.42 cfs. Therefore, it can be concluded that the existing drainage pattern is followed and the proposed drainage structure is sufficient to handle 100yr storm peak flow while mitigating peak flows to be less than pre development flows.

Gutter Spread Analysis

The overland Gutter Spread analysis for peak flows is conducted using Hydraulic Toolbox. For analysis, the maximum flow from all DMAs passing through the curb-gutter drainage inlet is considered for Nolte flow calculations, while the maximum flooded overflow is used for the 100-year Sacramento Method analysis. The Sacramento Method yields a peak flow of 2.38 cfs through the inlet, resulting in a spread width of 9.25 ft and a gutter depth of 5.07 inches at the curb. While, the peak Nolte flow of 0.160

cfs produces a spread width of 1.16 ft and a gutter depth of 2.04 inches at the curb. Detailed calculations are included in this report as Attachment-K.

Storm Drain Sizing Calculations

The proposed storm drainage pipe network has been modeled and analyzed using Autodesk Storm and Sanitary Analysis software. The onsite storm drains are reinforced concrete pipes (RCP), with a Manning's roughness coefficient (n) of 0.015 used for analysis purposes. The analysis was conducted using peak flow values obtained from the Sacramento Method and the Nolte Method.

For the detention pond outfalls, the boundary condition in the Nolte analysis is set to the storm drain outlet elevation for each outfall. In contrast, the Sacramento Method uses a time-series–based boundary condition obtained from the HydroCAD corresponding to the 100-yr storm pond elevation. The corresponding time-series elevation data is included in the HydroCAD results section. The layout of the modeled storm sewer network is shown in Attachment-C. Detailed analysis results and storm drainage system profiles for the Nolte Method and the Sacramento Method are provided in Attachment-D and Attachment-E respectively.

In the 100-year event, hydraulic grade line elevations at some junctions at or near manhole rim elevations, indicating that excess flows manifest as shallow surface ponding. Surface ponding is governed by roadway gutter elevations and cross slope and is expected to be on the order of the calculated gutter spread depth (approximately 5 inches) presented in this report. Under the SSA Nolte Method analysis with the modeled fixed outfall boundary condition, no surface overflow above manhole rim elevations is indicated. These results are consistent with City standards distinguishing Type 1 and Type 2 drainage facilities, wherein the detention pond (Type 1) is designed to convey and store the 100-year storm event using the Sacramento Method, and the storm drain pipe system (Type 2) is designed using the Nolte Method and is not required to convey the 100-year event without surcharge.

Summary

The calculations included in this report shows that the proposed storm drainage system is efficient to handle peak flow conditions effectively. The detention pond has been sized to manage post development 100-year storm events, based on peak flow calculations. The outlet orifice structure effectively drains the Post-Development flow from the detention pond into the public storm sewer system. Gutter Spread analysis confirms that overland flow remains within acceptable limits. Overall, the system is designed to manage stormwater efficiently under peak flow conditions.

Attachments

Attachment-A: Design Guidelines Per Section-4 of City Design Standards.

Attachment-B: Peak Flow Calculations using Sacramento Method and Nolte Method.

Attachment-C: Modeled Storm Sewer Network Exhibit.

Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

Attachment-F: SCS TR-20 Method Analysis and Detention Pond Sizing Calculations.

Attachment-G: Hydrological soil group from NRCS Soil Web.

Attachment-H: Precipitation depth charts from NOAA NWS Web.

Attachment-I: Curve Number Table as per Urban Hydrology for Small Watersheds TR-55 manual.

Attachment-J: Rainfall Distribution Map as per Urban Hydrology for Small Watersheds TR-55 manual.

Attachment-K: Gutter Spread Analysis.

Exhibits

Exhibit-A: Civil Improvement Plans (17x11 Scale-N.T.S.).

SECTION 4
STORM DRAINAGE

4.01 GENERAL

These standards shall provide minimum requirements for the design of Storm Drainage and related appurtenances within the City of West Sacramento rights of way and easements. The design criteria of proposed improvements not included in these standards shall be subject to the approval of the City Engineer.

4.02 HYDROLOGY

A. General

1. The methods and storm recurrence intervals indicated below shall be used in determination of runoff quantities, assuming ultimate development of the upstream watershed.

2. Hydrologic calculations shall be submitted to the City Engineer along with watershed maps, which indicate area distributions within the watershed and other information pertinent to the determination of storm runoff.

3. Drainage facilities to be located within the Southport Area shall be designed in accordance with the Southport Drainage Master Plan.

4. These standards assume two categories of drainage facilities:

   a. ***Type 1 Drainage Facilities*** include the following:
      - Channels
      - Culverts associated with channels
      - Bridges
      - Detention ponds
      - Drainage pump stations

   b. ***Type 2 Drainage Facilities*** include the following:
      - Roadside ditches
      - Culverts associated with roadside ditches
      - Pipe systems
      - Overland conveyance systems

B. Design Criteria

5. The "Sacramento Method"

   a. The *Sacramento Method* shall be used assuming a 100-year storm event in the design of *Type 1 Drainage Facilities and overland conveyance systems*. At the discretion of the City Engineer, these facilities shall also be evaluated assuming a 10-year storm event.

   b. The *Sacramento Method* may be applied through the use of design charts included in these Standards or through the use of the

SACPRE and HEC-1 computer programs at the design engineers discretion. A copy of the SACPRE program is available from the City of West Sacramento Community Development Department.

c. Computational Procedure Utilizing Design Charts

1. Delineate the subbasin contributing drainage to the point or node of interest.

2. Identify the area, by land use, within the subbasin.

3. Determine the percent impervious for the various land uses within the subbasin in accordance with Table 4-1.

4. Calculate an area-weighted effective percent impervious for the subbasin.

5. Calculate the *Sacramento Method* peak design flow using the equations below or read the *Sacramento Method* peak design flow from Figure 4-1 through Figure 4-4.

$$Q_{Design} = KA^n$$

Where:

Q_{Design} = peak flow (cfs)

Ac = cumulative drainage area (acres)

K = coefficient (see equations below)

n = coefficient (see equations below)

PI = percent impervious

$$K_{10\text{-year}} = 1.0647 + 0.018920 * PI - 8.453 \times 10^{-5} * PI^2$$

$$K_{100\text{-year}} = 1.7637 + 0.020999 * PI - 4.562 \times 10^{-5} * PI^2$$

$$n_{10\text{-year}} = 0.7531 + 0.001509 * PI - 0.863 \times 10^{-5} * PI^2$$

$$n_{100\text{-year}} = 0.7531 + 0.001278 * PI - 0.902 \times 10^{-5} * PI^2$$

d. Computational Procedure Utilizing SACPRE and HEC-1

1. Delineate the subbasin contributing drainage to the point or node of interest.
2. Identify the area, by land use, within the subbasin.

account for flows exceeding pipe capacities causing temporary flooding in streets and thereby increasing lag times.

1. Use the HEC-1 preprocessor computer program, SACPRE to develop an input file for HEC-1. Running the HEC-1 computer program will produce a runoff hydrograph. The *Sacramento Method* hydrologic Zone 2 shall be used.
2. Unsteady State Conditions
   a. Where unsteady state conditions exist, using an unsteady state model such as UNET may be necessary to design "*Type 1 drainage facilities"* in lieu of the *Sacramento Method.* When UNET is used to evaluate flooding, runoff hydrographs used within UNET should be developed using SACPRE and HEC-1, or other methods as approved by the City Engineer.
3. The "*Nolte Method*"
   a. The "*Nolte Method*" shall be used in the design of *Type 2 Drainage Facilities, except for overland conveyance systems.*
   b. The Nolte Design Charts included herein as Figures 4-5 through 4-8 vary the precipitation recurrence interval with the size of the drainage basin. For basins less than 30 acres, the recurrence interval is 2 years. For basins between 30 and 100 acres, the recurrence interval is 2 to 5 years. For basins greater 100 acres, the recurrence interval is 5 to 10 years.
   c. Computational Procedure
      1. Delineate the subbasin contributing drainage to the point or node of interest.
2. Identify the area, by land use, within the subbasin.
3. Determine the Nolte Formula Classification and associated Land Use Parameter, "I", for the various land uses within the subbasin in accordance with Table 4-6.
4. Calculate the *Nolte Method* peak design flow using the following equations:

   - For drainage areas having the Nolte Formula Classification, **R,** the following formula shall be used:

     $$Q_{design} = Q_r$$

   - For drainage areas having the Nolte Formula Classification, **C,** the following formula shall be used:

     $$Q_{design} = Q_c$$

   - For drainage areas having the Nolte Formula Classification, **M,** the following formula shall be used:

TABLE 4-6

NOLTE FORMULA CLASSIFICATIONS AND LAND USE PARAMETERS, I, BY LAND USE

Land Use Description	Nolte Formula Classification	Land Use Parameter, I
Rural Estates	R	-
Rural Residential	R	-
Low Density Residential	R	-
Medium Density Residential	R	-
High Density Residential	M	80
High Rise Residential	M	90
Neighborhood Commercial	C	-
Community Commercial	C	-
Highway Service Commercial	C	-
Water-related Commercial	C	-
General Commercial	C	-
Office	C	-
Business Park	C	-
Mixed Use	C	-
Riverfront Mixed Use	C	-
Mixed Commercial/Industrial	C	-
Light Industrial	C	-
Heavy Industrial	C	-
Water-related Industrial	C	-
Public/Quasi-public	M	60
Recreation and Park	R	-
Open Space	R	-
Agriculture	R	-

TABLE 4-7

MANNING'S "n" BY CONVEYANCE SYSTEM TYPE

Conveyance Type	Manning's "n"
Concrete Pipe	0.015
Corrugated Metal Pipe	0.024
Concrete-lined Channels	0.015
Earth Channel (Straight/Smooth)	0.022
Earth Channel (Dredged)	0.028
Mowed Grass-lined Channel	0.035
Natural Channel (Clean/Some Pools)	0.040
Natural Channel (Winding/Some Vegetation)	0.048
Natural Channel (Winding/Stoney/Partial Vegetation)	0.060
Natural Channel (Debris/Pools/Rocks/Full Vegetation)	0.070
Floodplain (Isolated Trees/Mowed Grass)	0.040
Floodplain (Isolated Trees/High Grass)	0.050
Floodplain (Few Trees/Shrubs/Weeds)	0.080
Floodplain (Scattered Trees/Shrubs)	0.120
Floodplain (Numerous Trees/Dense Vines)	0.200

Source: Sacramento City/County Drainage Manual, Hydrology Standards, Volume II, December 1996.

FIG. 4-5

SOURCE:

"SACRAMENTO CITY/COUNTY DRAINAGE MANUAL
VOLUME 1, HYDROLOGY STANDARDS," DECEMBER 1996.

FIGURE 4-5

CITY OF WEST SACRAMENTO
DRAINAGE DESIGN FLOW STANDARDS

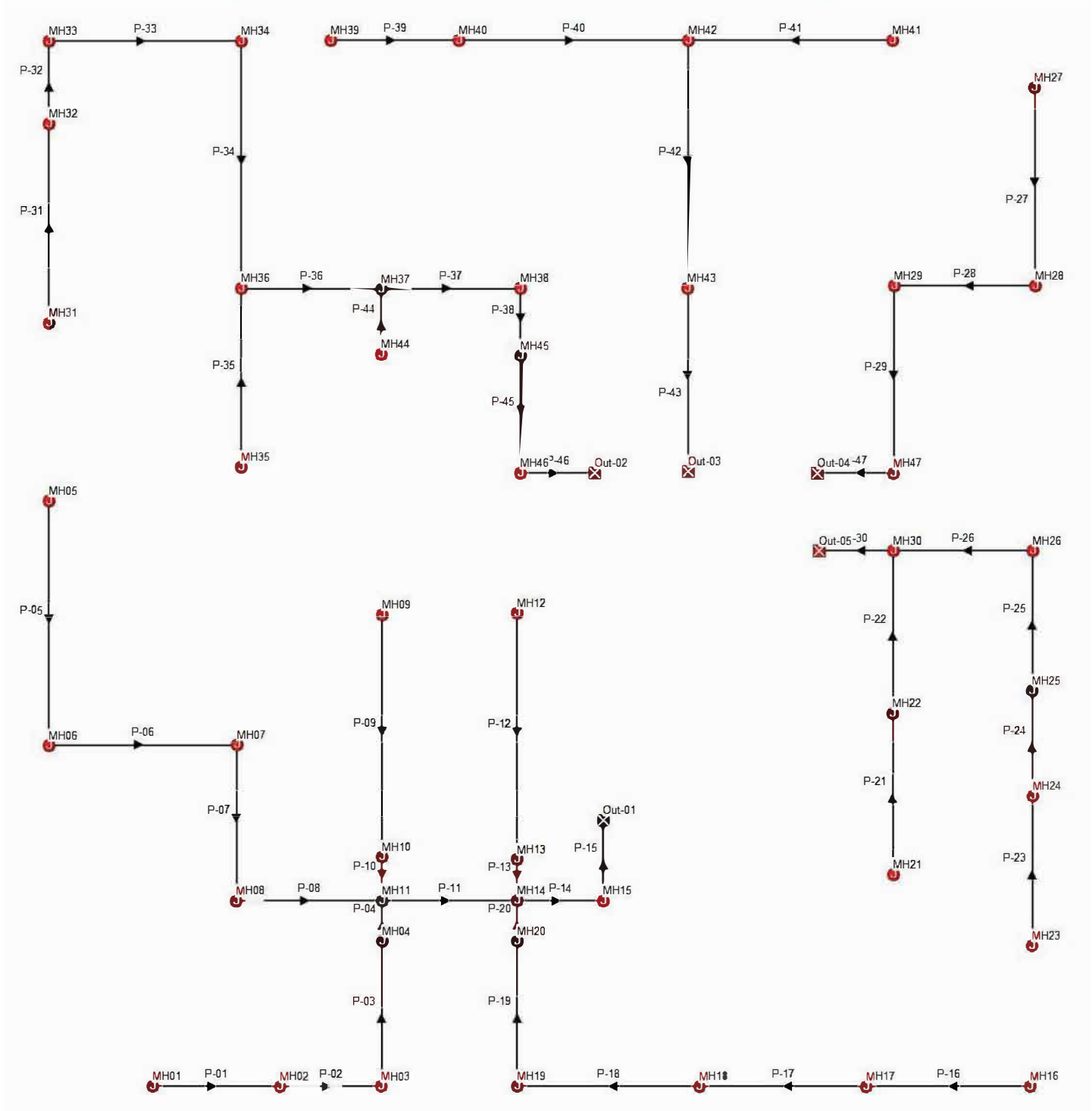
DESIGN RUNOFF
NOLTE METHOD
DRAINAGE AREAS, <50 ACRES

Attachment-B: Peak Flow Calculations using Sacramento Method and Nolte Method.

Peak Flow Calculations using Sacramento Method and Nolte Method

DMA ID	Contibution Node	DMA Area		Sacramento Method Peak Flow							Nolte Method Peak Flow
		Sqft	Ac	PI	K10	K100	N10	N100	Q10 (cfs)	Q100 (cfs)	Qn (cfs)
DMA-1	MH-1	82851	1.902	55	1.850	2.781	0.810	0.796	**3.113**	**4.639**	0.32
DMA-2	MH-2	63039	1.447	55	1.850	2.781	0.810	0.796	**2.495**	**3.732**	0.25
DMA-3	MH-3	64068	1.471	55	1.850	2.781	0.810	0.796	**2.528**	**3.780**	0.25
DMA-4	MH-4	34173	0.785	55	1.850	2.781	0.810	0.796	**1.520**	**2.292**	0.13
DMA-5	MH-5	42559	0.977	55	1.850	2.781	0.810	0.796	**1.815**	**2.730**	0.17
DMA-6	MH-6	46290	1.063	55	1.850	2.781	0.810	0.796	**1.943**	**2.919**	0.18
DMA-7	MH-7	74756	1.716	55	1.850	2.781	0.810	0.796	**2.865**	**4.274**	0.29
DMA-8	MH-8	75046	1.723	55	1.850	2.781	0.810	0.796	**2.874**	**4.288**	0.29
DMA-9	MH-9	74604	1.713	55	1.850	2.781	0.810	0.796	**2.860**	**4.268**	0.29
DMA-10	MH-10	54293	1.246	55	1.850	2.781	0.810	0.796	**2.211**	**3.314**	0.21
DMA-11	MH-12	53885	1.237	55	1.850	2.781	0.810	0.796	**2.197**	**3.294**	0.21
DMA-12	MH-13	39608	0.909	55	1.850	2.781	0.810	0.796	**1.712**	**2.578**	0.15
DMA-13	MH-16	91478	2.100	55	1.850	2.781	0.810	0.796	**3.373**	**5.020**	0.36
DMA-14	MH-17	58342	1.339	55	1.850	2.781	0.810	0.796	**2.343**	**3.509**	0.23
DMA-15	MH-18	58723	1.348	55	1.850	2.781	0.810	0.796	**2.356**	**3.527**	0.23
DMA-16	MH-19	49627	1.139	55	1.850	2.781	0.810	0.796	**2.056**	**3.085**	0.19
DMA-17	MH-20	43348	0.995	55	1.850	2.781	0.810	0.796	**1.842**	**2.770**	0.17
DMA-18	MH-21	74522	1.711	55	1.850	2.781	0.810	0.796	**2.857**	**4.264**	0.29
DMA-19	MH-22	35962	0.826	55	1.850	2.781	0.810	0.796	**1.584**	**2.387**	0.14
DMA-20	MH-23	42017	0.965	55	1.850	2.781	0.810	0.796	**1.796**	**2.702**	0.16
DMA-21	MH-24	42600	0.978	55	1.850	2.781	0.810	0.796	**1.817**	**2.732**	0.17
DMA-22	MH-25	42636	0.979	55	1.850	2.781	0.810	0.796	**1.818**	**2.734**	0.17
DMA-23	MH-26	66102	1.517	55	1.850	2.781	0.810	0.796	**2.593**	**3.876**	0.26
DMA-24	MH-27	62127	1.426	55	1.850	2.781	0.810	0.796	**2.466**	**3.689**	0.24
DMA-25	MH-28	64308	1.476	55	1.850	2.781	0.810	0.796	**2.536**	**3.792**	0.25
DMA-26	MH-29	60825	1.396	55	1.850	2.781	0.810	0.796	**2.424**	**3.627**	0.24
DMA-27	MH-30	39776	0.913	55	1.850	2.781	0.810	0.796	**1.718**	**2.587**	0.16
DMA-28	MH-31	42829	0.983	55	1.850	2.781	0.810	0.796	**1.824**	**2.743**	0.17
DMA-29	MH-32	42652	0.979	55	1.850	2.781	0.810	0.796	**1.818**	**2.734**	0.17
DMA-30	MH-34	41763	0.959	55	1.850	2.781	0.810	0.796	**1.788**	**2.689**	0.16
DMA-31	MH-35	62709	1.440	55	1.850	2.781	0.810	0.796	**2.485**	**3.716**	0.24
DMA-32	MH-36	66423	1.525	55	1.850	2.781	0.810	0.796	**2.603**	**3.891**	0.26
DMA-33	MH-37	34146	0.784	55	1.850	2.781	0.810	0.796	**1.519**	**2.291**	0.13
DMA-34	MH-44	64802	1.488	55	1.850	2.781	0.810	0.796	**2.552**	**3.815**	0.25
DMA-35	MH-38	29527	0.678	55	1.850	2.781	0.810	0.796	**1.350**	**2.040**	0.12
DMA-36	MH-45	36620	0.841	55	1.850	2.781	0.810	0.796	**1.607**	**2.422**	0.14
DMA-37	MH-39	65324	1.500	55	1.850	2.781	0.810	0.796	**2.568**	**3.839**	0.26
DMA-38	MH-40	65101	1.495	55	1.850	2.781	0.810	0.796	**2.561**	**3.829**	0.25
DMA-39	MH-41	52596	1.207	55	1.850	2.781	0.810	0.796	**2.155**	**3.231**	0.21
DMA-40	MH-42	78101	1.793	55	1.850	2.781	0.810	0.796	**2.968**	**4.426**	0.30
DMA-41	MH-43	37567	0.862	55	1.850	2.781	0.810	0.796	**1.641**	**2.472**	0.15
DMA-42	Detention Pond	216628	4.973	2	1.102	1.806	0.756	0.756	**3.707**	**6.067**	0.85
∑	--	**2474353**	**56.803**	--	--	--	--	--	**94.856**	**142.610**	**9.66**

Attachment-C: Modeled Storm Sewer Network Exhibit.



Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.

Project Description

File Name	ONSITE STORM DRAIN - NOLTE METHOD.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	EPA SWMM
EPA SWMM Infiltration Method	SCS Curve Number
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Number of Elements

	Qty
Rain Gages	0
Subbasins	0
Nodes	52
Junctions	47
Outfalls	5
Flow Diversions	0
Inlets	0
Storage Nodes	0
Links	47
Channels	0
Pipes	47
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft^2)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)
1	MH01	Junction	5.86	10.73	5.86	10.73	0.00	0.32	6.23	0.00	4.50
2	MH02	Junction	5.63	10.64	5.63	10.64	0.00	0.57	6.19	0.00	4.45
3	MH03	Junction	5.42	10.87	5.42	10.87	0.00	0.82	6.16	0.00	4.71
4	MH04	Junction	5.25	10.64	5.25	10.64	0.00	0.95	6.13	0.00	4.51
5	MH05	Junction	6.27	10.67	6.27	10.67	0.00	0.17	6.49	0.00	4.18
6	MH06	Junction	5.94	10.85	5.94	10.85	0.00	0.35	6.26	0.00	4.59
7	MH07	Junction	5.60	10.89	5.60	10.89	0.00	0.64	6.18	0.00	4.71
8	MH08	Junction	5.36	10.67	5.36	10.67	0.00	0.93	6.15	0.00	4.52
9	MH09	Junction	5.78	10.83	5.78	10.83	0.00	0.29	6.15	0.00	4.68
10	MH10	Junction	5.26	10.81	5.26	10.81	0.00	0.50	6.13	0.00	4.68
11	MH11	Junction	5.21	10.83	5.21	10.83	0.00	2.38	6.12	0.00	4.71
12	MH12	Junction	5.65	10.79	5.65	10.79	0.00	0.21	6.03	0.00	4.76
13	MH13	Junction	5.13	10.81	5.13	10.81	0.00	0.36	6.02	0.00	4.79
14	MH14	Junction	5.08	11.07	5.08	11.07	0.00	3.92	6.02	0.00	5.05
15	MH15	Junction	5.04	11.18	5.04	11.18	0.00	3.92	5.86	0.00	5.32
16	MH16	Junction	5.91	10.37	5.91	10.37	0.00	0.36	6.24	0.00	4.13
17	MH17	Junction	5.58	10.68	5.58	10.68	0.00	0.61	6.13	0.00	4.55
18	MH18	Junction	5.41	10.68	5.41	10.68	0.00	0.82	6.09	0.00	4.59
19	MH19	Junction	5.28	10.74	5.28	10.74	0.00	1.01	6.06	0.00	4.68
20	MH20	Junction	5.12	10.64	5.12	10.64	0.00	1.18	6.03	0.00	4.61
21	MH21	Junction	5.66	10.42	5.66	10.42	0.00	0.29	5.98	0.00	4.44
22	MH22	Junction	5.32	10.42	5.32	10.42	0.00	0.46	5.68	0.00	4.74
23	MH23	Junction	5.97	10.04	5.97	10.04	0.00	0.16	6.19	0.00	3.85
24	MH24	Junction	5.76	10.12	5.76	10.12	0.00	0.33	6.07	0.00	4.05
25	MH25	Junction	5.55	10.20	5.55	10.20	0.00	0.50	5.93	0.00	4.27
26	MH26	Junction	5.32	10.45	5.32	10.45	0.00	0.76	5.79	0.00	4.66
27	MH27	Junction	5.81	11.21	5.81	11.21	0.00	0.24	6.07	0.00	5.14
28	MH28	Junction	5.47	10.84	5.47	10.84	0.00	0.49	5.84	0.00	5.00
29	MH29	Junction	5.18	10.81	5.18	10.81	0.00	0.73	5.65	0.00	5.16
30	MH30	Junction	5.03	11.20	5.03	11.20	0.00	1.35	5.58	0.00	5.62
31	MH31	Junction	7.27	10.80	7.27	10.80	0.00	0.17	7.49	0.00	3.31
32	MH32	Junction	6.93	10.90	6.93	10.90	0.00	0.34	7.26	0.00	3.64
33	MH33	Junction	6.88	11.04	6.88	11.04	0.00	0.34	7.20	0.00	3.84
34	MH34	Junction	6.66	11.20	6.66	11.20	0.00	0.50	7.10	0.00	4.10
35	MH35	Junction	6.26	11.03	6.26	11.03	0.00	0.24	6.58	0.00	4.45
36	MH36	Junction	5.94	10.94	5.94	10.94	0.00	1.00	6.55	0.00	4.39
37	MH37	Junction	5.78	10.62	5.78	10.62	0.00	1.38	6.46	0.00	4.16
38	MH38	Junction	5.63	10.64	5.63	10.64	0.00	1.50	6.33	0.00	4.31
39	MH39	Junction	7.79	11.10	7.79	11.10	0.00	0.26	8.08	0.00	3.02
40	MH40	Junction	7.40	11.23	7.40	11.23	0.00	0.54	7.85	0.00	3.38
41	MH41	Junction	7.99	11.49	7.99	11.49	0.00	0.21	8.29	0.00	3.20
42	MH42	Junction	6.53	11.53	6.53	11.53	0.00	1.02	7.10	0.00	4.43
43	MH43	Junction	6.37	11.18	6.37	11.18	0.00	1.17	6.97	0.00	4.21
44	MH44	Junction	6.77	10.62	6.77	10.62	0.00	0.25	6.96	0.00	3.66
45	MH45	Junction	5.60	10.62	5.60	10.62	0.00	1.64	6.29	0.00	4.33
46	MH46	Junction	5.53	11.21	5.53	11.21	0.00	1.64	6.16	0.00	5.05
47	MH47	Junction	5.05	10.93	5.05	10.93	0.00	0.73	5.48	0.00	5.45
48	Out-01	Outfall	5.01					3.92	5.58		
49	Out-02	Outfall	5.47					1.64	5.86		
50	Out-03	Outfall	6.27					1.17	6.60		
51	Out-04	Outfall	5.00					0.73	5.27		
52	Out-05	Outfall	5.00					1.35	5.36		

Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	(ft)	
1	P-01	Pipe	MH01	MH02	214.00	5.86	5.63	0.11	24.0	0.015	0.32	6.43	0.05	1.03	0.46	0.23
2	P-02	Pipe	MH02	MH03	192.00	5.63	5.42	0.11	24.0	0.015	0.57	6.48	0.09	1.14	0.65	0.32
3	P-03	Pipe	MH03	MH04	213.00	5.42	5.25	0.08	30.0	0.015	0.82	10.04	0.08	1.11	0.81	0.32
4	P-04	Pipe	MH04	MH11	49.00	5.25	5.21	0.08	30.0	0.015	0.95	10.16	0.09	1.05	0.90	0.36
5	P-05	Pipe	MH05	MH06	257.00	6.27	5.94	0.13	21.0	0.015	0.17	4.92	0.03	0.91	0.27	0.16
6	P-06	Pipe	MH06	MH07	261.00	5.94	5.60	0.13	21.0	0.015	0.35	4.96	0.07	0.94	0.45	0.26
7	P-07	Pipe	MH07	MH08	217.00	5.60	5.36	0.11	24.0	0.015	0.64	6.52	0.10	1.08	0.69	0.34
8	P-08	Pipe	MH08	MH11	262.00	5.36	5.21	0.06	36.0	0.015	0.93	13.83	0.07	0.90	0.85	0.28
9	P-09	Pipe	MH09	MH10	327.00	5.78	5.26	0.16	18.0	0.015	0.29	3.63	0.08	1.12	0.62	0.41
10	P-10	Pipe	MH10	MH11	37.00	5.26	5.21	0.14	21.0	0.015	0.50	5.05	0.10	1.98	0.89	0.51
11	P-11	Pipe	MH11	MH14	262.00	5.21	5.08	0.05	42.0	0.015	2.38	19.42	0.12	1.17	0.93	0.26
12	P-12	Pipe	MH12	MH13	327.00	5.65	5.13	0.16	18.0	0.015	0.21	3.63	0.06	0.97	0.64	0.42
13	P-13	Pipe	MH13	MH14	37.00	5.13	5.08	0.14	21.0	0.015	0.36	5.05	0.07	1.29	0.91	0.52
14	P-14	Pipe	MH14	MH15	88.00	5.08	5.04	0.05	48.0	0.015	3.92	26.54	0.15	1.91	0.88	0.22
15	P-15	Pipe	MH15	Out-01	57.00	5.04	5.01	0.05	48.0	0.015	3.92	28.56	0.14	2.68	0.69	0.17
16	P-16	Pipe	MH16	MH17	301.00	5.91	5.58	0.11	24.0	0.015	0.38	6.49	0.06	1.11	0.43	0.22
17	P-17	Pipe	MH17	MH18	207.00	5.58	5.41	0.08	30.0	0.015	0.59	10.19	0.06	0.97	0.62	0.25
18	P-18	Pipe	MH18	MH19	157.00	5.41	5.28	0.08	30.0	0.015	0.82	10.23	0.08	1.07	0.73	0.29
19	P-19	Pipe	MH19	MH20	213.00	5.28	5.12	0.08	30.0	0.015	1.01	9.74	0.10	0.97	0.85	0.34
20	P-20	Pipe	MH20	MH14	49.00	5.12	5.08	0.08	30.0	0.015	1.18	10.16	0.12	1.10	0.93	0.37
21	P-21	Pipe	MH21	MH22	216.00	5.66	5.32	0.16	18.0	0.015	0.32	3.61	0.09	1.26	0.32	0.22
22	P-22	Pipe	MH22	MH30	222.00	5.32	5.03	0.13	21.0	0.015	0.43	4.96	0.09	1.09	0.46	0.26
23	P-23	Pipe	MH23	MH24	163.00	5.97	5.76	0.13	21.0	0.015	0.16	4.93	0.03	0.85	0.26	0.15
24	P-24	Pipe	MH24	MH25	163.00	5.76	5.55	0.13	21.0	0.015	0.33	4.93	0.07	1.07	0.35	0.20
25	P-25	Pipe	MH25	MH26	212.00	5.55	5.32	0.11	24.0	0.015	0.50	6.46	0.08	1.07	0.43	0.21
26	P-26	Pipe	MH26	MH30	264.00	5.32	5.03	0.11	24.0	0.015	0.76	6.50	0.12	1.20	0.51	0.26
27	P-27	Pipe	MH27	MH28	214.00	5.81	5.47	0.16	18.0	0.015	0.24	3.63	0.07	1.13	0.32	0.21
28	P-28	Pipe	MH28	MH29	263.00	5.47	5.18	0.11	24.0	0.015	0.49	6.51	0.08	1.03	0.42	0.21
29	P-29	Pipe	MH29	MH47	172.00	5.18	5.05	0.08	30.0	0.015	0.73	9.77	0.07	1.21	0.45	0.18
30	P-30	Pipe	MH30	Out-05	58.00	5.03	5.00	0.06	36.0	0.015	1.35	14.00	0.10	2.00	0.45	0.15
31	P-31	Pipe	MH31	MH32	215.00	7.27	6.93	0.16	18.0	0.015	0.17	3.62	0.05	0.81	0.28	0.18
32	P-32	Pipe	MH32	MH33	54.00	6.93	6.88	0.09	27.0	0.015	0.34	8.17	0.04	1.49	0.33	0.14
33	P-33	Pipe	MH33	MH34	244.00	6.88	6.66	0.09	27.0	0.015	0.34	8.06	0.04	0.97	0.38	0.17
34	P-34	Pipe	MH34	MH36	264.00	6.66	6.44	0.08	30.0	0.015	0.50	10.26	0.05	1.28	0.33	0.13
35	P-35	Pipe	MH35	MH36	246.00	6.26	5.94	0.13	21.0	0.015	0.24	4.95	0.05	1.02	0.46	0.26
36	P-36	Pipe	MH36	MH37	268.00	5.94	5.78	0.06	36.0	0.015	1.00	14.12	0.07	0.91	0.64	0.21
37	P-37	Pipe	MH37	MH38	256.00	5.78	5.63	0.06	36.0	0.015	1.38	13.99	0.10	1.12	0.69	0.23
38	P-38	Pipe	MH38	MH45	49.00	5.63	5.60	0.06	36.0	0.015	1.50	14.30	0.10	1.21	0.70	0.23
39	P-39	Pipe	MH39	MH40	247.00	7.79	7.40	0.16	18.0	0.015	0.29	3.62	0.08	1.20	0.36	0.24
40	P-40	Pipe	MH40	MH42	284.00	7.40	7.03	0.13	21.0	0.015	0.51	4.96	0.10	1.48	0.35	0.20
41	P-41	Pipe	MH41	MH42	250.00	7.99	7.59	0.16	18.0	0.015	0.21	3.64	0.06	1.21	0.23	0.15
42	P-42	Pipe	MH42	MH43	263.00	6.53	6.37	0.06	36.0	0.015	1.02	14.26	0.07	1.06	0.58	0.19
43	P-43	Pipe	MH43	Out-03	167.00	6.37	6.27	0.06	36.0	0.015	1.17	14.15	0.08	1.69	0.46	0.15
44	P-44	Pipe	MH44	MH37	49.00	6.77	5.78	2.02	12.0	0.015	0.29	4.39	0.07	4.43	0.42	0.42
45	P-45	Pipe	MH45	MH46	120.00	5.60	5.53	0.06	36.0	0.015	1.64	13.96	0.12	1.43	0.66	0.22
46	P-46	Pipe	MH46	Out-02	95.00	5.53	5.47	0.06	36.0	0.015	1.64	14.53	0.11	2.04	0.51	0.17
47	P-47	Pipe	MH47	Out-04	58.00	5.05	5.00	0.09	30.0	0.015	0.73	10.44	0.07	1.74	0.35	0.14

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft^2)	Minimum Pipe Cover (in)
1	MH01	5.86	10.73	4.87	5.86	0.00	10.73	0.00	0.00	0.00
2	MH02	5.63	10.64	5.01	5.63	0.00	10.64	0.00	0.00	0.00
3	MH03	5.42	10.87	5.45	5.42	0.00	10.87	0.00	0.00	0.00
4	MH04	5.25	10.64	5.39	5.25	0.00	10.64	0.00	0.00	0.00
5	MH05	6.27	10.67	4.40	6.27	0.00	10.67	0.00	0.00	0.00
6	MH06	5.94	10.85	4.91	5.94	0.00	10.85	0.00	0.00	0.00
7	MH07	5.60	10.89	5.29	5.60	0.00	10.89	0.00	0.00	0.00
8	MH08	5.36	10.67	5.31	5.36	0.00	10.67	0.00	0.00	0.00
9	MH09	5.78	10.83	5.05	5.78	0.00	10.83	0.00	0.00	0.00
10	MH10	5.26	10.81	5.55	5.26	0.00	10.81	0.00	0.00	0.00
11	MH11	5.21	10.83	5.62	5.21	0.00	10.83	0.00	0.00	0.00
12	MH12	5.65	10.79	5.14	5.65	0.00	10.79	0.00	0.00	0.00
13	MH13	5.13	10.81	5.68	5.13	0.00	10.81	0.00	0.00	0.00
14	MH14	5.08	11.07	5.99	5.08	0.00	11.07	0.00	0.00	0.00
15	MH15	5.04	11.18	6.14	5.04	0.00	11.18	0.00	0.00	0.00
16	MH16	5.91	10.37	4.46	5.91	0.00	10.37	0.00	0.00	0.00
17	MH17	5.58	10.68	5.10	5.58	0.00	10.68	0.00	0.00	0.00
18	MH18	5.41	10.68	5.27	5.41	0.00	10.68	0.00	0.00	0.00
19	MH19	5.28	10.74	5.46	5.28	0.00	10.74	0.00	0.00	0.00
20	MH20	5.12	10.64	5.52	5.12	0.00	10.64	0.00	0.00	0.00
21	MH21	5.66	10.42	4.76	5.66	0.00	10.42	0.00	0.00	0.00
22	MH22	5.32	10.42	5.10	5.32	0.00	10.42	0.00	0.00	0.00
23	MH23	5.97	10.04	4.07	5.97	0.00	10.04	0.00	0.00	0.00
24	MH24	5.76	10.12	4.36	5.76	0.00	10.12	0.00	0.00	0.00
25	MH25	5.55	10.20	4.65	5.55	0.00	10.20	0.00	0.00	0.00
26	MH26	5.32	10.45	5.13	5.32	0.00	10.45	0.00	0.00	0.00
27	MH27	5.81	11.21	5.40	5.81	0.00	11.21	0.00	0.00	0.00
28	MH28	5.47	10.84	5.37	5.47	0.00	10.84	0.00	0.00	0.00
29	MH29	5.18	10.81	5.63	5.18	0.00	10.81	0.00	0.00	0.00
30	MH30	5.03	11.20	6.17	5.03	0.00	11.20	0.00	0.00	0.00
31	MH31	7.27	10.80	3.53	7.27	0.00	10.80	0.00	0.00	0.00
32	MH32	6.93	10.90	3.97	6.93	0.00	10.90	0.00	0.00	0.00
33	MH33	6.88	11.04	4.16	6.88	0.00	11.04	0.00	0.00	0.00
34	MH34	6.66	11.20	4.54	6.66	0.00	11.20	0.00	0.00	0.00
35	MH35	6.26	11.03	4.77	6.26	0.00	11.03	0.00	0.00	0.00
36	MH36	5.94	10.94	5.00	5.94	0.00	10.94	0.00	0.00	0.00
37	MH37	5.78	10.62	4.84	5.78	0.00	10.62	0.00	0.00	0.00
38	MH38	5.63	10.64	5.01	5.63	0.00	10.64	0.00	0.00	0.00
39	MH39	7.79	11.10	3.31	7.79	0.00	11.10	0.00	0.00	0.00
40	MH40	7.40	11.23	3.83	7.40	0.00	11.23	0.00	0.00	0.00
41	MH41	7.99	11.49	3.50	7.99	0.00	11.49	0.00	0.00	0.00
42	MH42	6.53	11.53	5.00	6.53	0.00	11.53	0.00	0.00	0.00
43	MH43	6.37	11.18	4.81	6.37	0.00	11.18	0.00	0.00	0.00
44	MH44	6.77	10.62	3.85	6.77	0.00	10.62	0.00	0.00	0.00
45	MH45	5.60	10.62	5.02	5.60	0.00	10.62	0.00	0.00	0.00
46	MH46	5.53	11.21	5.68	5.53	0.00	11.21	0.00	0.00	0.00
47	MH47	5.05	10.93	5.88	5.05	0.00	10.93	0.00	0.00	0.00

Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)
1	MH01	0.32	0.32	6.23	0.37	0.00	4.50	6.23	0.37
2	MH02	0.57	0.25	6.19	0.56	0.00	4.45	6.19	0.56
3	MH03	0.82	0.25	6.16	0.74	0.00	4.71	6.15	0.73
4	MH04	0.95	0.13	6.13	0.88	0.00	4.51	6.13	0.88
5	MH05	0.17	0.17	6.49	0.22	0.00	4.18	6.49	0.22
6	MH06	0.35	0.18	6.26	0.32	0.00	4.59	6.26	0.32
7	MH07	0.64	0.29	6.18	0.58	0.00	4.71	6.18	0.58
8	MH08	0.93	0.29	6.15	0.79	0.00	4.52	6.15	0.79
9	MH09	0.29	0.29	6.15	0.37	0.00	4.68	6.15	0.37
10	MH10	0.50	0.21	6.13	0.87	0.00	4.68	6.12	0.86
11	MH11	2.38	0.00	6.12	0.91	0.00	4.71	6.12	0.91
12	MH12	0.21	0.21	6.03	0.38	0.00	4.76	6.03	0.38
13	MH13	0.36	0.15	6.02	0.89	0.00	4.79	6.02	0.89
14	MH14	3.92	0.00	6.02	0.94	0.00	5.05	6.02	0.94
15	MH15	3.92	0.00	5.86	0.82	0.00	5.32	5.86	0.82
16	MH16	0.36	0.36	6.24	0.33	0.00	4.13	6.23	0.32
17	MH17	0.61	0.23	6.13	0.55	0.00	4.55	6.13	0.55
18	MH18	0.82	0.23	6.09	0.68	0.00	4.59	6.09	0.68
19	MH19	1.01	0.19	6.06	0.78	0.00	4.68	6.06	0.78
20	MH20	1.18	0.17	6.03	0.91	0.00	4.61	6.03	0.91
21	MH21	0.29	0.29	5.98	0.32	0.00	4.44	5.95	0.29
22	MH22	0.46	0.14	5.68	0.36	0.00	4.74	5.68	0.36
23	MH23	0.16	0.16	6.19	0.22	0.00	3.85	6.19	0.22
24	MH24	0.33	0.17	6.07	0.31	0.00	4.05	6.07	0.31
25	MH25	0.50	0.17	5.93	0.38	0.00	4.27	5.93	0.38
26	MH26	0.76	0.26	5.79	0.47	0.00	4.66	5.79	0.47
27	MH27	0.24	0.24	6.07	0.26	0.00	5.14	6.07	0.26
28	MH28	0.49	0.25	5.84	0.37	0.00	5.00	5.84	0.37
29	MH29	0.73	0.24	5.65	0.47	0.00	5.16	5.65	0.47
30	MH30	1.35	0.16	5.58	0.55	0.00	5.62	5.58	0.55
31	MH31	0.17	0.17	7.49	0.22	0.00	3.31	7.49	0.22
32	MH32	0.34	0.17	7.26	0.33	0.00	3.64	7.26	0.33
33	MH33	0.34	0.00	7.20	0.32	0.00	3.84	7.20	0.32
34	MH34	0.50	0.16	7.10	0.44	0.00	4.10	7.10	0.44
35	MH35	0.24	0.24	6.58	0.32	0.00	4.45	6.58	0.32
36	MH36	1.00	0.26	6.55	0.61	0.00	4.39	6.55	0.61
37	MH37	1.38	0.13	6.46	0.68	0.00	4.16	6.46	0.68
38	MH38	1.50	0.12	6.33	0.70	0.00	4.31	6.33	0.70
39	MH39	0.26	0.26	8.08	0.29	0.00	3.02	8.06	0.27
40	MH40	0.54	0.25	7.85	0.45	0.00	3.38	7.85	0.45
41	MH41	0.21	0.21	8.29	0.30	0.00	3.20	8.29	0.30
42	MH42	1.02	0.30	7.10	0.57	0.00	4.43	7.10	0.57
43	MH43	1.17	0.15	6.97	0.60	0.00	4.21	6.96	0.59
44	MH44	0.25	0.25	6.96	0.19	0.00	3.66	6.93	0.16
45	MH45	1.64	0.14	6.29	0.69	0.00	4.33	6.29	0.69
46	MH46	1.64	0.00	6.16	0.63	0.00	5.05	6.16	0.63
47	MH47	0.73	0.00	5.48	0.43	0.00	5.45	5.48	0.43

Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.

Pipe Input

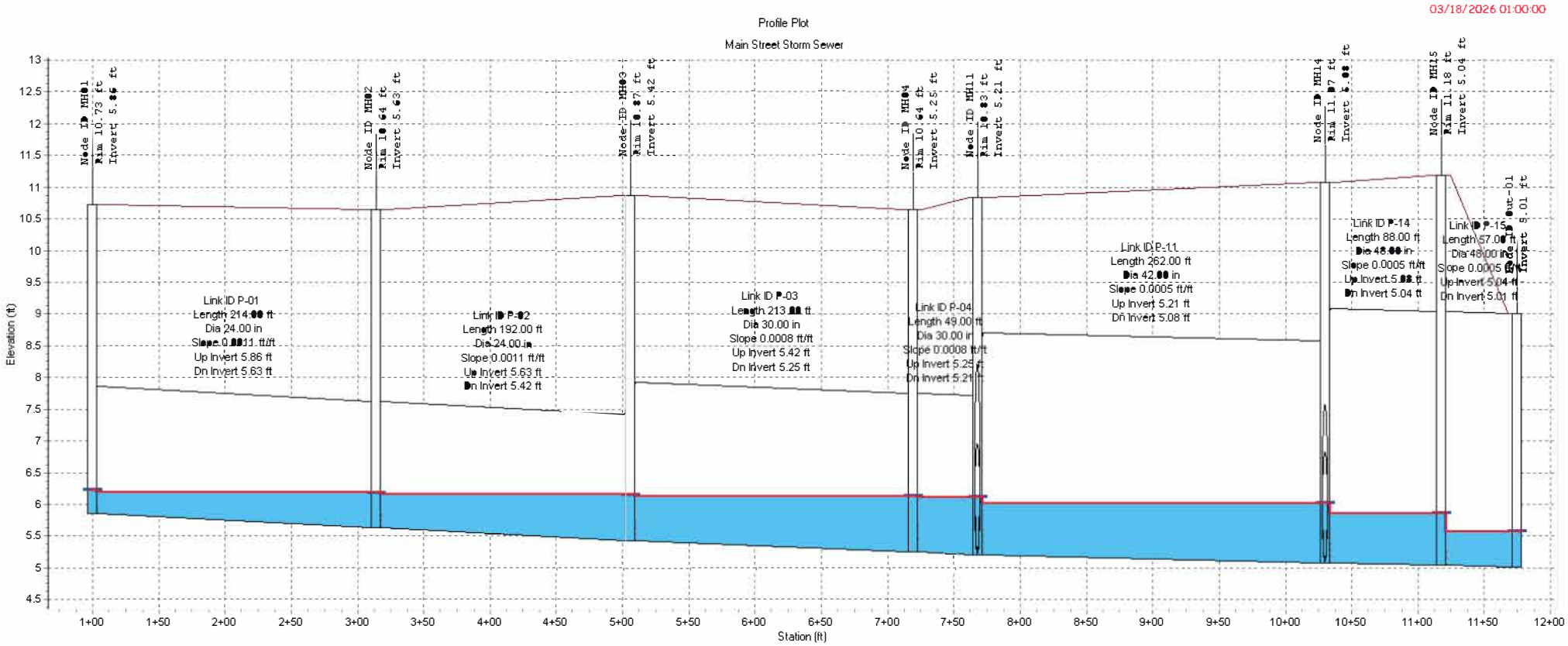
SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Total Drop (ft)	Average Slope (%)	Pipe Diameter or Height (in)	Manning's Roughness	Entrance Losses	Initial Flow (cfs)
1	P-01	214.00	5.86	5.63	0.23	0.11	24.00	0.0150	0.500	0.00
2	P-02	192.00	5.63	5.42	0.21	0.11	24.00	0.0150	0.500	0.00
3	P-03	213.00	5.42	5.25	0.17	0.08	30.00	0.0150	0.500	0.00
4	P-04	49.00	5.25	5.21	0.04	0.08	30.00	0.0150	0.500	0.00
5	P-05	257.00	6.27	5.94	0.33	0.13	21.00	0.0150	0.500	0.00
6	P-06	261.00	5.94	5.60	0.34	0.13	21.00	0.0150	0.500	0.00
7	P-07	217.00	5.60	5.36	0.24	0.11	24.00	0.0150	0.500	0.00
8	P-08	262.00	5.36	5.21	0.15	0.06	36.00	0.0150	0.500	0.00
9	P-09	327.00	5.78	5.26	0.52	0.16	18.00	0.0150	0.500	0.00
10	P-10	37.00	5.26	5.21	0.05	0.14	21.00	0.0150	0.500	0.00
11	P-11	262.00	5.21	5.08	0.13	0.05	42.00	0.0150	0.500	0.00
12	P-12	327.00	5.65	5.13	0.52	0.16	18.00	0.0150	0.500	0.00
13	P-13	37.00	5.13	5.08	0.05	0.14	21.00	0.0150	0.500	0.00
14	P-14	88.00	5.08	5.04	0.04	0.05	48.00	0.0150	0.500	0.00
15	P-15	57.00	5.04	5.01	0.03	0.05	48.00	0.0150	0.500	0.00
16	P-16	301.00	5.91	5.58	0.33	0.11	24.00	0.0150	0.500	0.00
17	P-17	207.00	5.58	5.41	0.17	0.08	30.00	0.0150	0.500	0.00
18	P-18	157.00	5.41	5.28	0.13	0.08	30.00	0.0150	0.500	0.00
19	P-19	213.00	5.28	5.12	0.16	0.08	30.00	0.0150	0.500	0.00
20	P-20	49.00	5.12	5.08	0.04	0.08	30.00	0.0150	0.500	0.00
21	P-21	216.00	5.66	5.32	0.34	0.16	18.00	0.0150	0.500	0.00
22	P-22	222.00	5.32	5.03	0.29	0.13	21.00	0.0150	0.500	0.00
23	P-23	163.00	5.97	5.76	0.21	0.13	21.00	0.0150	0.500	0.00
24	P-24	163.00	5.76	5.55	0.21	0.13	21.00	0.0150	0.500	0.00
25	P-25	212.00	5.55	5.32	0.23	0.11	24.00	0.0150	0.500	0.00
26	P-26	264.00	5.32	5.03	0.29	0.11	24.00	0.0150	0.500	0.00
27	P-27	214.00	5.81	5.47	0.34	0.16	18.00	0.0150	0.500	0.00
28	P-28	263.00	5.47	5.18	0.29	0.11	24.00	0.0150	0.500	0.00
29	P-29	172.00	5.18	5.05	0.13	0.08	30.00	0.0150	0.500	0.00
30	P-30	58.00	5.03	5.00	0.03	0.06	36.00	0.0150	0.500	0.00
31	P-31	215.00	7.27	6.93	0.34	0.16	18.00	0.0150	0.500	0.00
32	P-32	54.00	6.93	6.88	0.05	0.09	27.00	0.0150	0.500	0.00
33	P-33	244.00	6.88	6.66	0.22	0.09	27.00	0.0150	0.500	0.00
34	P-34	264.00	6.66	6.44	0.22	0.08	30.00	0.0150	0.500	0.00
35	P-35	246.00	6.26	5.94	0.32	0.13	21.00	0.0150	0.500	0.00
36	P-36	268.00	5.94	5.78	0.16	0.06	36.00	0.0150	0.500	0.00
37	P-37	256.00	5.78	5.63	0.15	0.06	36.00	0.0150	0.500	0.00
38	P-38	49.00	5.63	5.60	0.03	0.06	36.00	0.0150	0.500	0.00
39	P-39	247.00	7.79	7.40	0.39	0.16	18.00	0.0150	0.500	0.00
40	P-40	284.00	7.40	7.03	0.37	0.13	21.00	0.0150	0.500	0.00
41	P-41	250.00	7.99	7.59	0.40	0.16	18.00	0.0150	0.500	0.00
42	P-42	263.00	6.53	6.37	0.16	0.06	36.00	0.0150	0.500	0.00
43	P-43	167.00	6.37	6.27	0.10	0.06	36.00	0.0150	0.500	0.00
44	P-44	49.00	6.77	5.78	0.99	2.02	12.00	0.0150	0.500	0.00
45	P-45	120.00	5.60	5.53	0.07	0.06	36.00	0.0150	0.500	0.00
46	P-46	95.00	5.53	5.47	0.06	0.06	36.00	0.0150	0.500	0.00
47	P-47	58.00	5.05	5.00	0.05	0.09	30.00	0.0150	0.500	0.00

Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.

Pipe Results

SN	Element ID	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio
		(cfs)	(cfs)		(ft/sec)	(min)	(ft)	
1	P-01	0.32	6.43	0.05	1.03	3.46	0.46	0.23
2	P-02	0.57	6.48	0.09	1.14	2.81	0.65	0.32
3	P-03	0.82	10.04	0.08	1.11	3.20	0.81	0.32
4	P-04	0.95	10.16	0.09	1.05	0.78	0.90	0.36
5	P-05	0.17	4.92	0.03	0.91	4.71	0.27	0.16
6	P-06	0.35	4.96	0.07	0.94	4.63	0.45	0.26
7	P-07	0.64	6.52	0.10	1.08	3.35	0.69	0.34
8	P-08	0.93	13.83	0.07	0.90	4.85	0.85	0.28
9	P-09	0.29	3.63	0.08	1.12	4.87	0.62	0.41
10	P-10	0.50	5.05	0.10	1.98	0.31	0.89	0.51
11	P-11	2.38	19.42	0.12	1.17	3.73	0.93	0.26
12	P-12	0.21	3.63	0.06	0.97	5.62	0.64	0.42
13	P-13	0.36	5.05	0.07	1.29	0.48	0.91	0.52
14	P-14	3.92	26.54	0.15	1.91	0.77	0.88	0.22
15	P-15	3.92	28.56	0.14	2.68	0.35	0.69	0.17
16	P-16	0.38	6.49	0.06	1.11	4.52	0.43	0.22
17	P-17	0.59	10.19	0.06	0.97	3.56	0.62	0.25
18	P-18	0.82	10.23	0.08	1.07	2.45	0.73	0.29
19	P-19	1.01	9.74	0.10	0.97	3.66	0.85	0.34
20	P-20	1.18	10.16	0.12	1.10	0.74	0.93	0.37
21	P-21	0.32	3.61	0.09	1.26	2.86	0.32	0.22
22	P-22	0.43	4.96	0.09	1.09	3.39	0.46	0.26
23	P-23	0.16	4.93	0.03	0.85	3.20	0.26	0.15
24	P-24	0.33	4.93	0.07	1.07	2.54	0.35	0.20
25	P-25	0.50	6.46	0.08	1.07	3.30	0.43	0.21
26	P-26	0.76	6.50	0.12	1.20	3.67	0.51	0.26
27	P-27	0.24	3.63	0.07	1.13	3.16	0.32	0.21
28	P-28	0.49	6.51	0.08	1.03	4.26	0.42	0.21
29	P-29	0.73	9.77	0.07	1.21	2.37	0.45	0.18
30	P-30	1.35	14.00	0.10	2.00	0.48	0.45	0.15
31	P-31	0.17	3.62	0.05	0.81	4.42	0.28	0.18
32	P-32	0.34	8.17	0.04	1.49	0.60	0.33	0.14
33	P-33	0.34	8.06	0.04	0.97	4.19	0.38	0.17
34	P-34	0.50	10.26	0.05	1.28	3.44	0.33	0.13
35	P-35	0.24	4.95	0.05	1.02	4.02	0.46	0.26
36	P-36	1.00	14.12	0.07	0.91	4.91	0.64	0.21
37	P-37	1.38	13.99	0.10	1.12	3.81	0.69	0.23
38	P-38	1.50	14.30	0.10	1.21	0.67	0.70	0.23
39	P-39	0.29	3.62	0.08	1.20	3.43	0.36	0.24
40	P-40	0.51	4.96	0.10	1.48	3.20	0.35	0.20
41	P-41	0.21	3.64	0.06	1.21	3.44	0.23	0.15
42	P-42	1.02	14.26	0.07	1.06	4.14	0.58	0.19
43	P-43	1.17	14.15	0.08	1.69	1.65	0.46	0.15
44	P-44	0.29	4.39	0.07	4.43	0.18	0.42	0.42
45	P-45	1.64	13.96	0.12	1.43	1.40	0.66	0.22
46	P-46	1.64	14.53	0.11	2.04	0.78	0.51	0.17
47	P-47	0.73	10.44	0.07	1.74	0.56	0.35	0.14

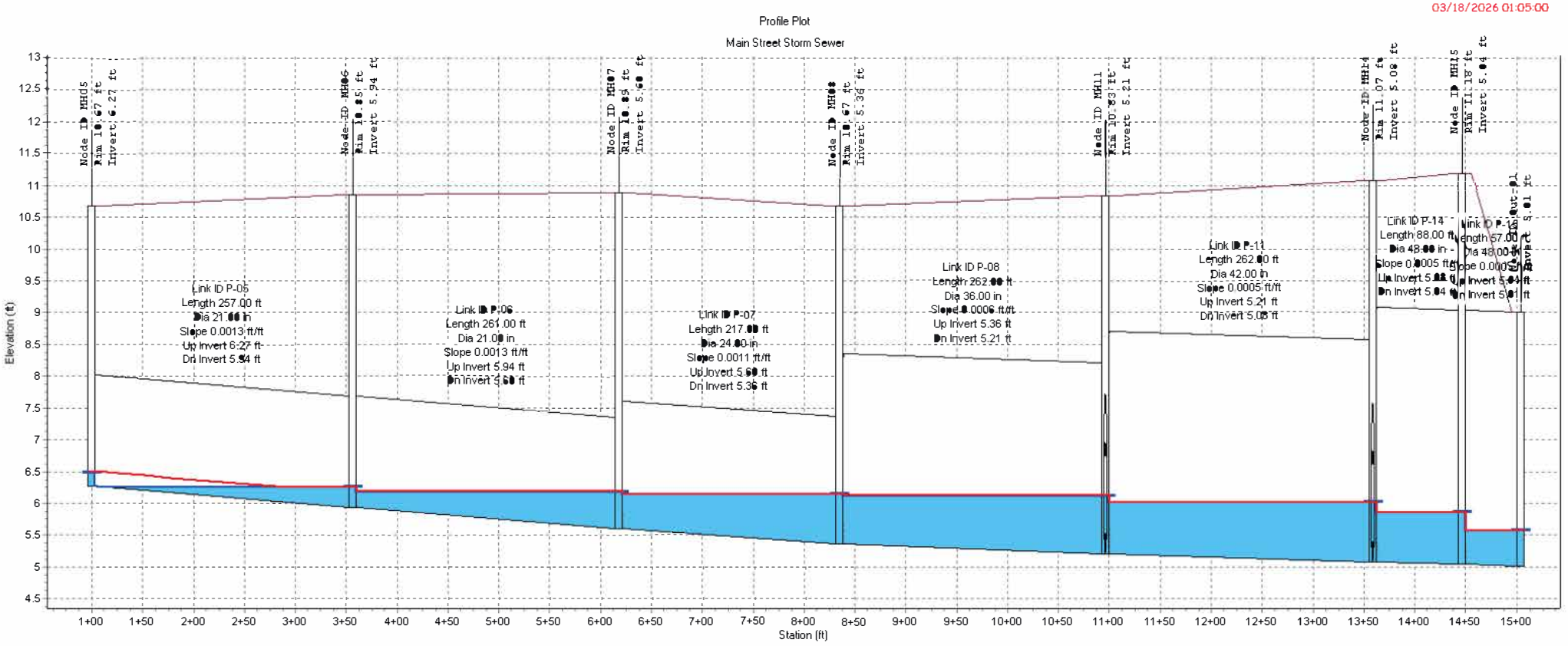
Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.



Node ID:	MH01	MH02	MH03	MH04	MH11	MH14	MH15	Out-01
Rim (ft):	10.73	10.64	10.87	10.64	10.83	11.07	11.18	
Invert (ft):	5.86	5.63	5.42	5.25	5.21	5.08	5.04	5.01
Min Pipe Cover (ft):	2.87	3.01	2.95	2.89	2.12	1.99	2.14	
Max HGL (ft):	6.23	6.19	6.16	6.13	6.12	6.02	5.86	5.58

Link ID:	P-01	P-02	P-03	P-04	P-11	P-14	P-15
Length (ft):	214.00	192.00	213.00	49.00	262.00	88.00	57.00
Dia (in):	24.00	24.00	30.00	30.00	42.00	48.00	48.00
Slope (ft/ft):	0.0011	0.0011	0.0008	0.0008	0.0005	0.0005	0.0005
Up Invert (ft):	5.86	5.63	5.42	5.25	5.21	5.08	5.04
Dn Invert (ft):	5.63	5.42	5.25	5.21	5.08	5.04	5.01
Max Q (cfs):	0.32	0.57	0.82	0.95	2.38	3.92	3.92
Max Vel (ft/s):	1.03	1.14	1.11	1.05	1.17	1.91	2.68
Max Depth (ft):	0.46	0.65	0.81	0.90	0.93	0.88	0.69

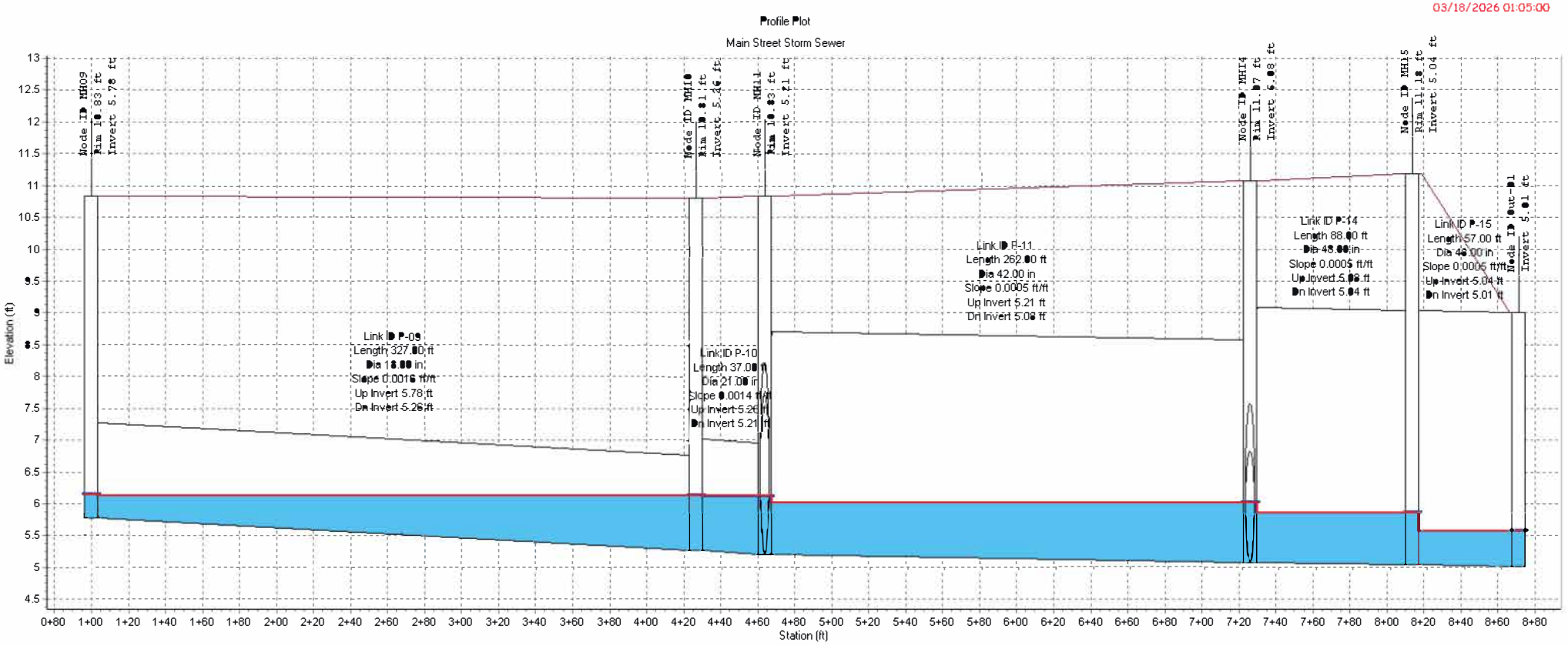
Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.



Node ID:	MH05	MH06	MH07	MH08	MH11	MH14	MH15	Out-01
Rim (ft):	10.67	10.85	10.89	10.67	10.83	11.07	11.18	
Invert (ft):	6.27	5.94	5.60	5.36	5.21	5.08	5.04	5.01
Min Pipe Cover (ft):	2.65	3.16	3.29	2.31	2.12	1.99	2.14	
Max HGL (ft):	6.49	6.26	6.18	6.15	6.12	6.02	5.86	5.58

Link ID:	P-05	P-06	P-07	P-08	P-11	P-14	P-15
Length (ft):	257.00	261.00	217.00	262.00	262.00	88.00	57.00
Dia (in):	21.00	21.00	24.00	36.00	42.00	48.00	48.00
Slope (ft/ft):	0.0013	0.0013	0.0011	0.0006	0.0005	0.0005	0.0005
Up Invert (ft):	6.27	5.94	5.60	5.36	5.21	5.08	5.04
Dn Invert (ft):	5.94	5.60	5.36	5.21	5.08	5.04	5.01
Max Q (cfs):	0.17	0.35	0.64	0.93	2.38	3.92	3.92
Max Vel (ft/s):	0.91	0.94	1.08	0.90	1.17	1.91	2.68
Max Depth (ft):	0.27	0.45	0.69	0.85	0.93	0.88	0.69

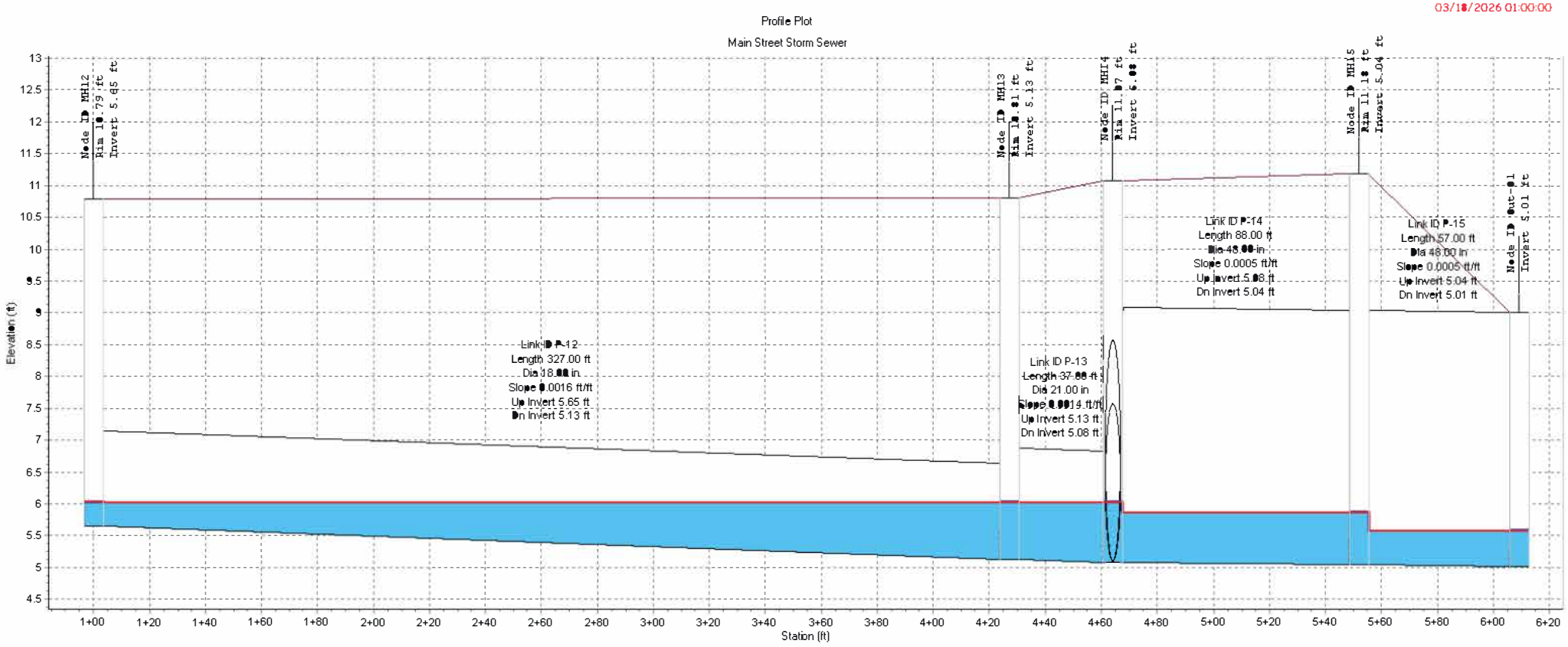
Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.



Node ID:	MH09	MH10	MH11	MH14	MH15	Out-01
Rim (ft):	10.83	10.81	10.83	11.07	11.18	
Invert (ft):	5.78	5.26	5.21	5.08	5.04	5.01
Min Pipe Cover (ft):	3.55	3.80	2.12	1.99	2.14	
Max HGL (ft):	6.15	6.13	6.12	6.02	5.86	5.58

Link ID:	P-09	P-10	P-11	P-14	P-15
Length (ft):	327.00	37.00	262.00	88.00	57.00
Dia (in):	18.00	21.00	42.00	48.00	48.00
Slope (ft/ft):	0.0016	0.0014	0.0005	0.0005	0.0005
Up Invert (ft):	5.78	5.26	5.21	5.08	5.04
Dn Invert (ft):	5.26	5.21	5.08	5.04	5.01
Max Q (cfs):	0.29	0.50	2.38	3.92	3.92
Max Vel (ft/s):	1.12	1.98	1.17	1.91	2.68
Max Depth (ft):	0.62	0.89	0.93	0.88	0.69

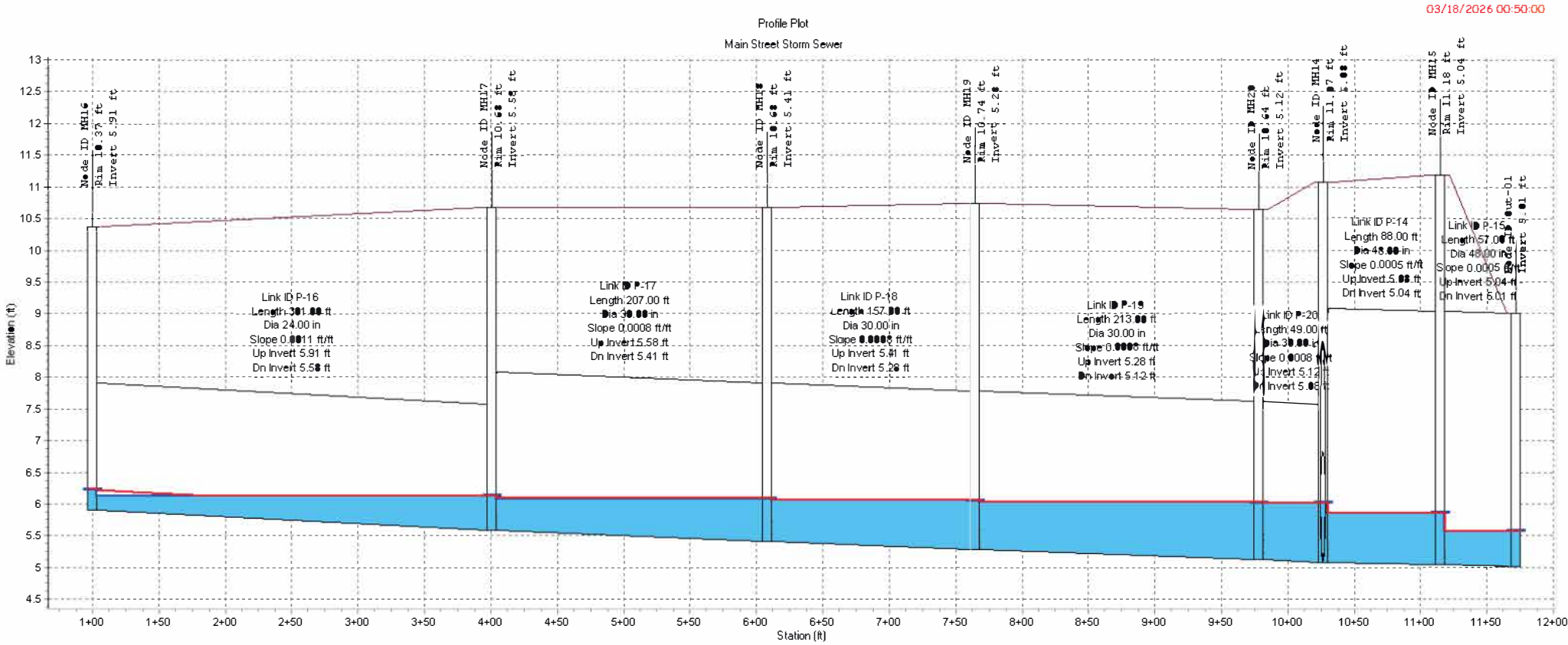
Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.



Node ID:	MH12	MH13	MH14	MH15	Out-01
Rim (ft):	10.79	10.81	11.07	11.18	
Invert (ft):	5.65	5.13	5.08	5.04	5.01
Min Pipe Cover (ft):	3.64	3.93	1.99	2.14	
Max HGL (ft):	6.03	6.02	6.02	5.86	5.58

Link ID:	P-12	P-13	P-14	P-15
Length (ft):	327.00	37.00	88.00	57.00
Dia (in):	18.00	21.00	48.00	48.00
Slope (ft/ft):	0.0016	0.0014	0.0005	0.0005
Up Invert (ft):	5.65	5.13	5.08	5.04
Dn Invert (ft):	5.13	5.08	5.04	5.01
Max Q (cfs):	0.21	0.36	3.92	3.92
Max Vel (ft/s):	0.97	1.29	1.91	2.68
Max Depth (ft):	0.64	0.91	0.88	0.69

Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.

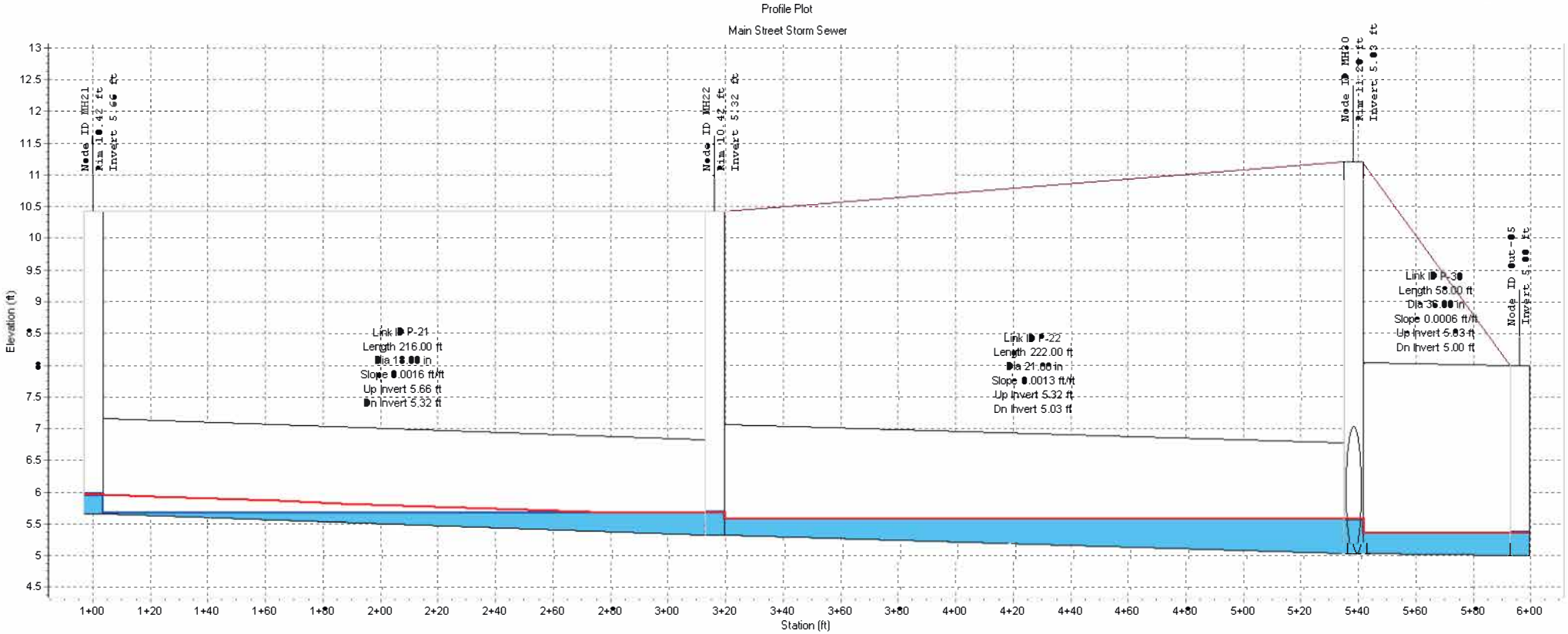


Node ID:	MH16	MH17	MH18	MH19	MH20	MH14	MH15	Out-01
Rim (ft):	10.37	10.68	10.68	10.74	10.64	11.07	11.18	
Invert (ft):	5.91	5.58	5.41	5.28	5.12	5.08	5.04	5.01
Min Pipe Cover (ft):	2.46	2.60	2.77	2.96	3.02	1.99	2.14	
Max HGL (ft):	6.24	6.13	6.09	6.06	6.03	6.02	5.86	5.58

Link ID:	P-16	P-17	P-18	P-19	P-20	P-14	P-15
Length (ft):	301.00	207.00	157.00	213.00	49.00	88.00	57.00
Dia (in):	24.00	30.00	30.00	30.00	30.00	48.00	48.00
Slope (ft/ft):	0.0011	0.0008	0.0008	0.0008	0.0008	0.0005	0.0005
Up Invert (ft):	5.91	5.58	5.41	5.28	5.12	5.08	5.04
Dn Invert (ft):	5.58	5.41	5.28	5.12	5.08	5.04	5.01
Max Q (cfs):	0.38	0.59	0.82	1.01	1.18	3.92	3.92
Max Vel (ft/s):	1.11	0.97	1.07	0.97	1.10	1.91	2.68
Max Depth (ft):	0.43	0.62	0.73	0.85	0.93	0.88	0.69

Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.

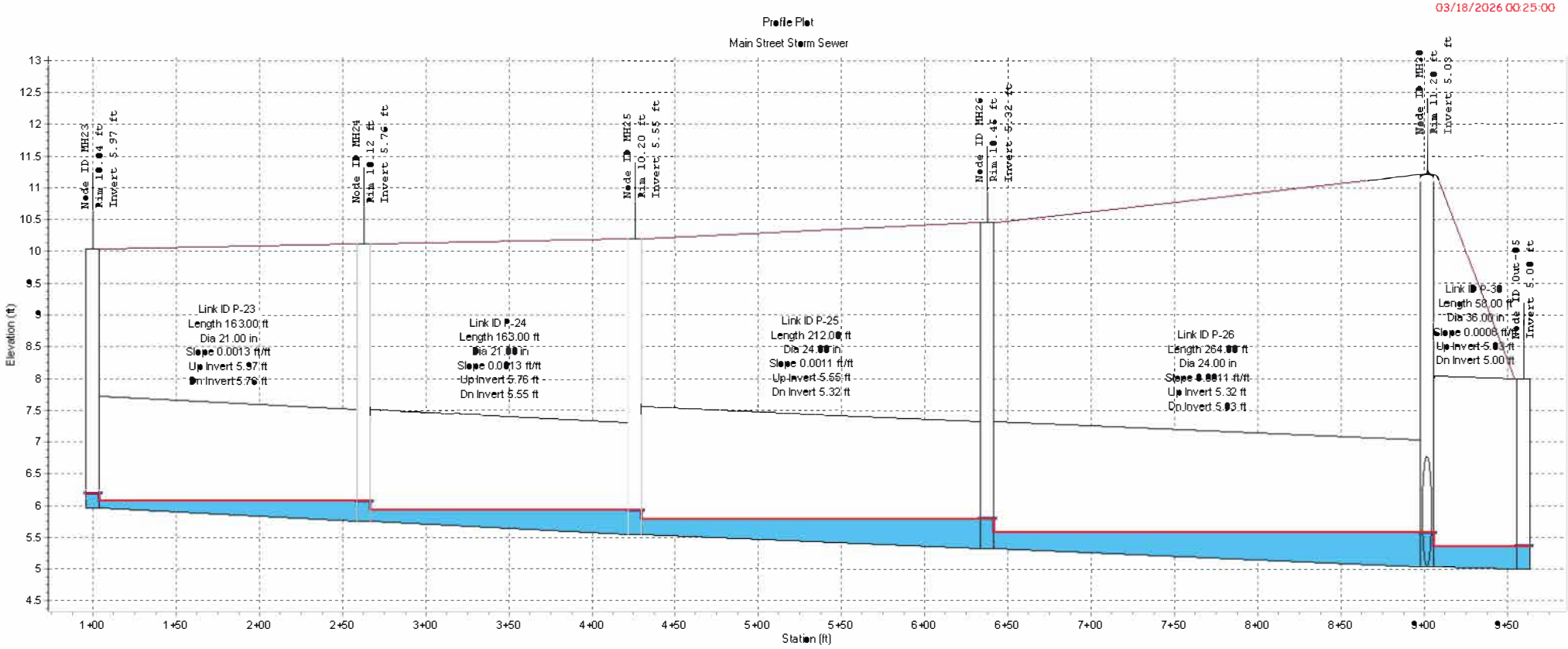
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Node ID:	MH21	MH22	MH30	Out-05
Rim (ft):	10.42	10.42	11.20	
Invert (ft):	5.66	5.32	5.03	5.00
Min Pipe Cover (ft):	3.26	3.35	3.17	
Max HGL (ft):	5.98	5.68	5.58	5.36

Link ID:	P-21	P-22	P-30
Length (ft):	216.00	222.00	58.00
Dia (in):	18.00	21.00	36.00
Slope (ft/ft):	0.0016	0.0013	0.0006
Up Invert (ft):	5.66	5.32	5.03
Dn Invert (ft):	5.32	5.03	5.00
Max Q (cfs):	0.32	0.43	1.35
Max Vel (ft/s):	1.26	1.09	2.00
Max Depth (ft):	0.32	0.46	0.45

Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.

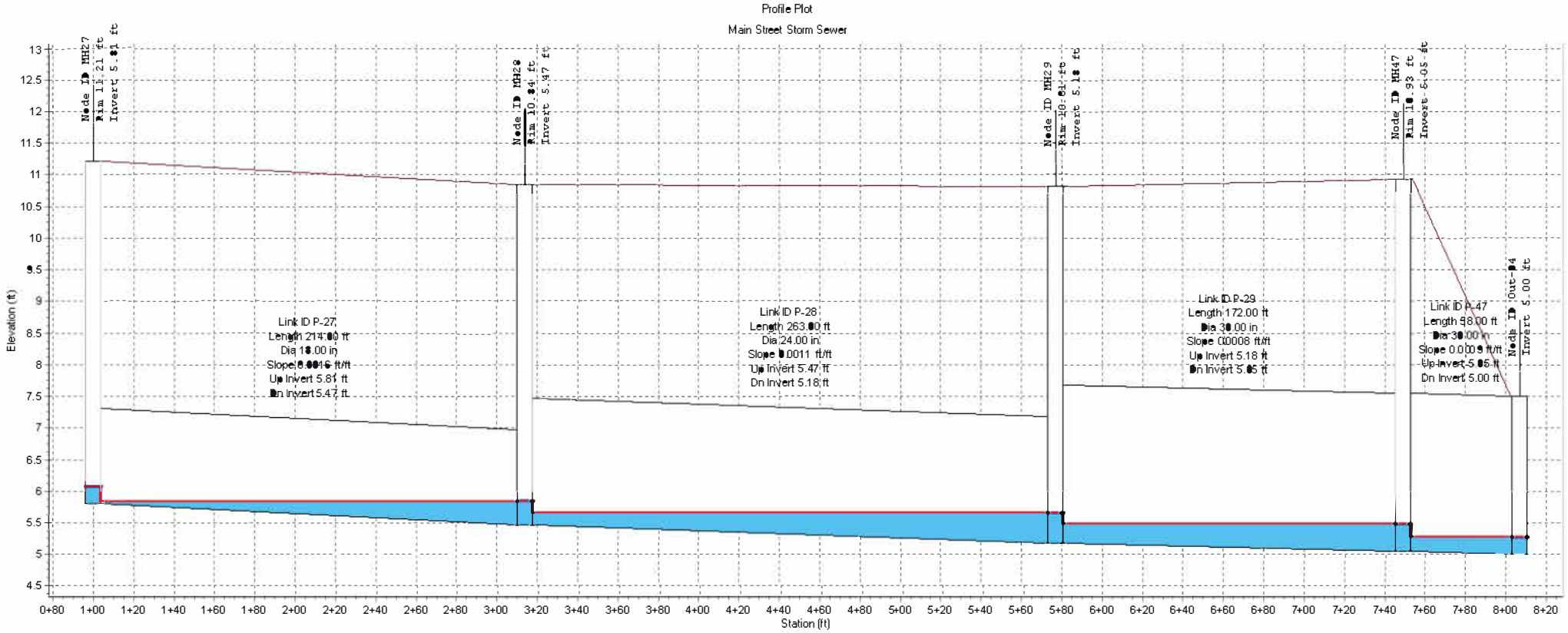


Node ID:	MH23	MH24	MH25	MH26	MH30	Out-05
Rim (ft):	10.04	10.12	10.20	10.45	11.20	
Invert (ft):	5.97	5.76	5.55	5.32	5.03	5.00
Min Pipe Cover (ft):	2.32	2.61	2.65	3.13	3.17	
Max HGL (ft):	6.19	6.07	5.93	5.79	5.58	5.36

Link ID:	P-23	P-24	P-25	P-26	P-30
Length (ft):	163.00	163.00	212.00	264.00	58.00
Dia (in):	21.00	21.00	24.00	24.00	36.00
Slope (ft/ft):	0.0013	0.0013	0.0011	0.0011	0.0006
Up Invert (ft):	5.97	5.76	5.55	5.32	5.03
Dn Invert (ft):	5.76	5.55	5.32	5.03	5.00
Max Q (cfs):	0.16	0.33	0.50	0.76	1.35
Max Vel (ft/s):	0.85	1.07	1.07	1.20	2.00
Max Depth (ft):	0.26	0.35	0.43	0.51	0.45

Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.

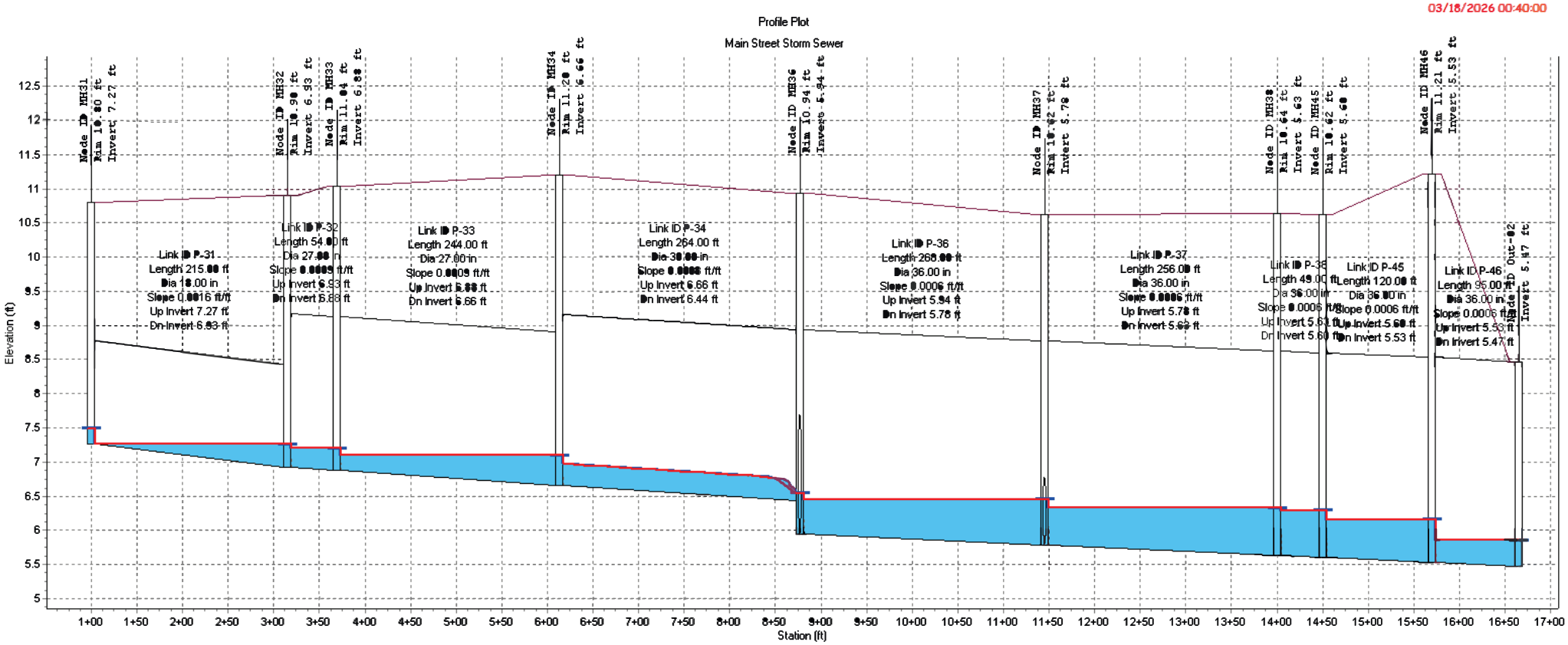
03/18/2026 00:25:00



Node ID:	MH27	MH28	MH29	MH47	Out-04
Rim (ft):	11.21	10.84	10.81	10.93	
Invert (ft):	5.81	5.47	5.18	5.05	5.00
Min Pipe Cover (ft):	3.90	3.37	3.13	3.38	
Max HGL (ft):	6.07	5.84	5.65	5.48	5.27

Link ID:	P-27	P-28	P-29	P-47
Length (ft):	214.00	263.00	172.00	58.00
Dia (in):	18.00	24.00	30.00	30.00
Slope (ft/ft):	0.0016	0.0011	0.0008	0.0009
Up Invert (ft):	5.81	5.47	5.18	5.05
Dn Invert (ft):	5.47	5.18	5.05	5.00
Max Q (cfs):	0.24	0.49	0.73	0.73
Max Vel (ft/s):	1.13	1.03	1.21	1.74
Max Depth (ft):	0.32	0.42	0.45	0.35

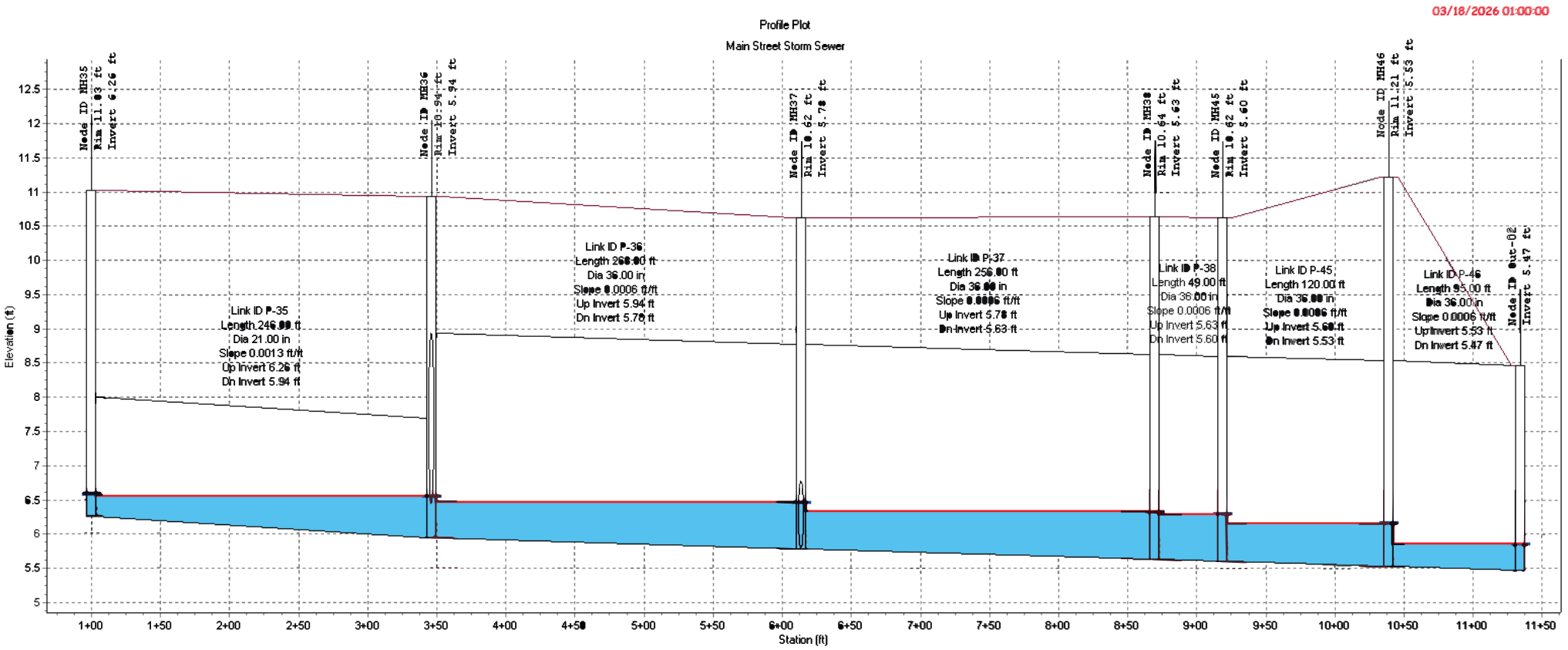
Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.



Node ID:	MH31	MH32	MH33	MH34	MH36	MH37	MH38	MH45	MH46	Out-02
Rim (ft):	10.80	10.90	11.04	11.20	10.94	10.62	10.64	10.62	11.21	
Invert (ft):	7.27	6.93	6.88	6.66	5.94	5.78	5.63	5.60	5.53	5.47
Min Pipe Cover (ft):	2.03	1.72	1.91	2.04	2.00	1.84	2.01	2.02	2.68	
Max HGL (ft):	7.49	7.26	7.20	7.10	6.55	6.46	6.33	6.29	6.16	5.86

Link ID:	P-31	P-32	P-33	P-34	P-36	P-37	P-38	P-45	P-46
Length (ft):	215.00	54.00	244.00	264.00	268.00	256.00	49.00	120.00	95.00
Dia (in):	18.00	27.00	27.00	30.00	36.00	36.00	36.00	36.00	36.00
Slope (ft/ft):	0.0016	0.0009	0.0009	0.0008	0.0006	0.0006	0.0006	0.0006	0.0006
Up Invert (ft):	7.27	6.93	6.88	6.66	5.94	5.78	5.63	5.60	5.53
Dn Invert (ft):	6.93	6.88	6.66	6.44	5.78	5.63	5.60	5.53	5.47
Max Q (cfs):	0.17	0.34	0.34	0.50	1.00	1.38	1.50	1.64	1.64
Max Vel (ft/s):	0.81	1.49	0.97	1.28	0.91	1.12	1.21	1.43	2.04
Max Depth (ft):	0.28	0.33	0.38	0.33	0.64	0.69	0.70	0.66	0.51

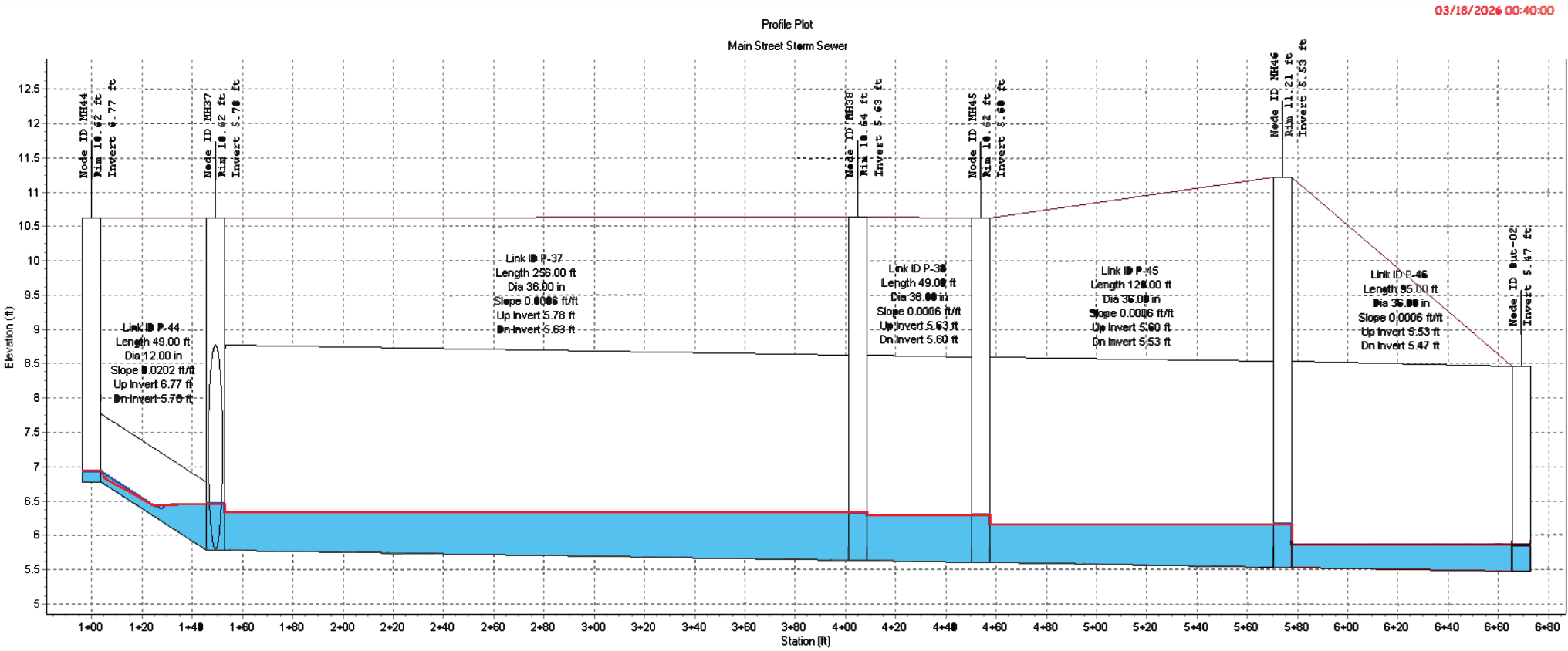
Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.



Node ID:	MH35	MH36	MH37	MH38	MH45	MH46	Out-02
Rim (ft):	11.03	10.94	10.62	10.64	10.62	11.21	
Invert (ft):	6.26	5.94	5.78	5.63	5.60	5.53	5.47
Min Pipe Cover (ft):	3.02	2.00	1.84	2.01	2.02	2.68	
Max HGL (ft):	6.58	6.55	6.46	6.33	6.29	6.16	5.86

Link ID:	P-35	P-36	P-37	P-38	P-45	P-46
Length (ft):	246.00	268.00	256.00	49.00	120.00	95.00
Dia (in):	21.00	36.00	36.00	36.00	36.00	36.00
Slope (ft/ft):	0.0013	0.0006	0.0006	0.0006	0.0006	0.0006
Up Invert (ft):	6.26	5.94	5.78	5.63	5.60	5.53
Dn Invert (ft):	5.94	5.78	5.63	5.60	5.53	5.47
Max Q (cfs):	0.24	1.00	1.38	1.50	1.64	1.64
Max Vel (ft/s):	1.02	0.91	1.12	1.21	1.43	2.04
Max Depth (ft):	0.46	0.64	0.69	0.70	0.66	0.51

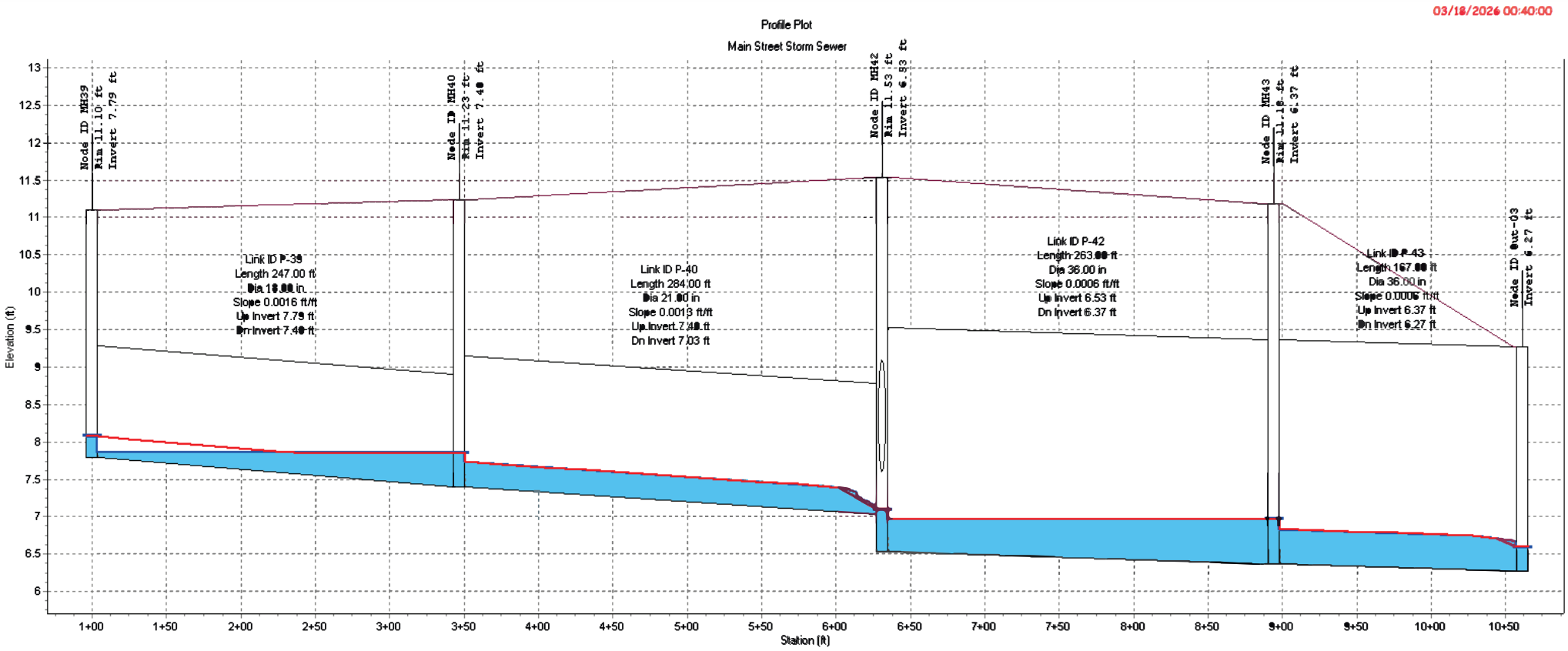
Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.



Node ID:	MH44	MH37	MH38	MH45	MH46	Out-02
Rim (ft):	10.62	10.62	10.64	10.62	11.21	
Invert (ft):	6.77	5.78	5.63	5.60	5.53	5.47
Min Pipe Cover (ft):	2.85	1.84	2.01	2.02	2.68	
Max HGL (ft):	6.96	6.46	6.33	6.29	6.16	5.86

Link ID:	P-44	P-37	P-38	P-45	P-46
Length (ft):	49.00	256.00	49.00	120.00	95.00
Dia (in):	12.00	36.00	36.00	36.00	36.00
Slope (ft/ft):	0.0202	0.0006	0.0006	0.0006	0.0006
Up Invert (ft):	6.77	5.78	5.63	5.60	5.53
Dn Invert (ft):	5.78	5.63	5.60	5.53	5.47
Max Q (cfs):	0.29	1.38	1.50	1.64	1.64
Max Vel (ft/s):	4.43	1.12	1.21	1.43	2.04
Max Depth (ft):	0.42	0.69	0.70	0.66	0.51

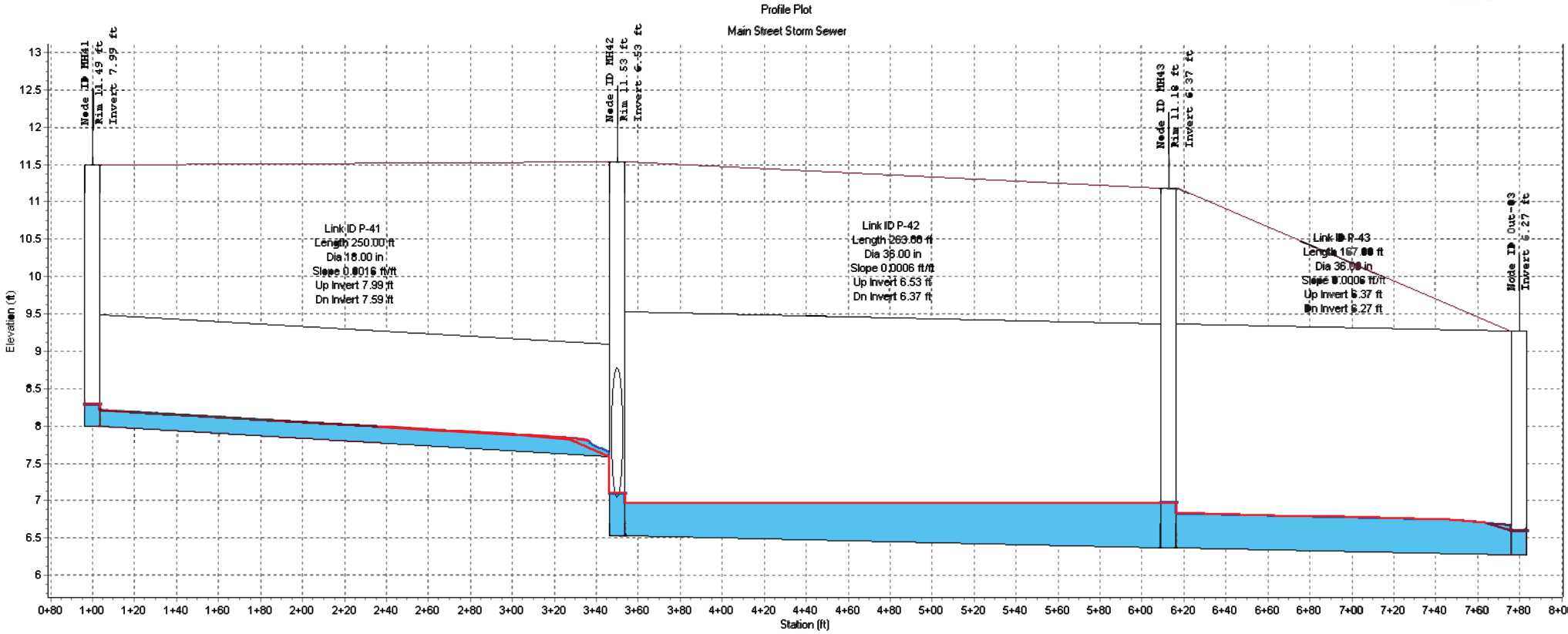
Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.



Node ID:	MH39	MH40	MH42	MH43	Out-03
Rim (ft):	11.10	11.23	11.53	11.18	
Invert (ft):	7.79	7.40	6.53	6.37	6.27
Min Pipe Cover (ft):	1.81	2.08	2.00	1.81	
Max HGL (ft):	8.08	7.85	7.10	6.97	6.60

Link ID:	P-39	P-40	P-42	P-43
Length (ft):	247.00	284.00	263.00	167.00
Dia (in):	18.00	21.00	36.00	36.00
Slope (ft/ft):	0.0016	0.0013	0.0006	0.0006
Up Invert (ft):	7.79	7.40	6.53	6.37
Dn Invert (ft):	7.40	7.03	6.37	6.27
Max Q (cfs):	0.29	0.51	1.02	1.17
Max Vel (ft/s):	1.20	1.48	1.06	1.69
Max Depth (ft):	0.36	0.35	0.58	0.46

Attachment-D: Storm Sewer Network Analysis Results using Nolte Method.



Node ID:	MH41	MH42	MH43	Out-03
Rim (ft):	11.49	11.53	11.18	
Invert (ft):	7.99	6.53	6.37	6.27
Min Pipe Cover (ft):	2.00	2.00	1.81	
Max HGL (ft):	8.29	7.10	6.97	6.60

Link ID:	P-41	P-42	P-43
Length (ft):	250.00	263.00	167.00
Dia (in):	18.00	36.00	36.00
Slope (ft/ft):	0.0016	0.0006	0.0006
Up Invert (ft):	7.99	6.53	6.37
Dn Invert (ft):	7.59	6.37	6.27
Max Q (cfs):	0.21	1.02	1.17
Max Vel (ft/s):	1.21	1.06	1.69
Max Depth (ft):	0.23	0.58	0.46

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

Project Description

File Name	SAC METHOD - TimeSeries BC.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	EPA SWMM
EPA SWMM Infiltration Method	SCS Curve Number
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Number of Elements

	Qty
Rain Gages	0
Subbasins	0
Nodes	52
Junctions	47
Outfalls	5
Flow Diversions	0
Inlets	0
Storage Nodes	0
Links	47
Channels	0
Pipes	47
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft^2)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)
1	MH01	Junction	5.86	10.73	5.86	10.73	0.00	4.64	10.73	0.00	0.00
2	MH02	Junction	5.63	10.64	5.63	10.64	0.00	8.47	10.64	0.00	0.00
3	MH03	Junction	5.42	10.87	5.42	10.87	0.00	12.32	10.38	0.00	0.49
4	MH04	Junction	5.25	10.64	5.25	10.64	0.00	15.35	10.14	0.00	0.50
5	MH05	Junction	6.27	10.67	6.27	10.67	0.00	3.37	10.67	0.00	0.00
6	MH06	Junction	5.94	10.85	5.94	10.85	0.00	5.69	10.74	0.00	0.11
7	MH07	Junction	5.60	10.89	5.60	10.89	0.00	10.00	10.51	0.00	0.38
8	MH08	Junction	5.36	10.67	5.36	10.67	0.00	14.32	10.23	0.00	0.44
9	MH09	Junction	5.78	10.83	5.78	10.83	0.00	4.27	10.83	0.00	0.00
10	MH10	Junction	5.26	10.81	5.26	10.81	0.00	7.67	10.20	0.00	0.61
11	MH11	Junction	5.21	10.83	5.21	10.83	0.00	36.91	9.97	0.00	0.86
12	MH12	Junction	5.65	10.79	5.65	10.79	0.00	3.30	10.79	0.00	0.00
13	MH13	Junction	5.13	10.81	5.13	10.81	0.00	5.88	9.61	0.00	1.20
14	MH14	Junction	5.08	11.07	5.08	11.07	0.00	59.82	9.45	0.00	1.62
15	MH15	Junction	5.04	11.18	5.04	11.18	0.00	58.77	9.02	0.00	2.16
16	MH16	Junction	5.91	10.37	5.91	10.37	0.00	5.02	10.37	0.00	0.00
17	MH17	Junction	5.58	10.68	5.58	10.68	0.00	8.53	10.68	0.00	0.00
18	MH18	Junction	5.41	10.68	5.41	10.68	0.00	11.79	10.58	0.00	0.10
19	MH19	Junction	5.28	10.74	5.28	10.74	0.00	14.87	10.23	0.00	0.51
20	MH20	Junction	5.12	10.64	5.12	10.64	0.00	17.62	9.70	0.00	0.94
21	MH21	Junction	5.66	10.42	5.66	10.42	0.00	4.26	9.99	0.00	0.43
22	MH22	Junction	5.32	10.42	5.32	10.42	0.00	6.66	9.43	0.00	0.99
23	MH23	Junction	5.97	10.04	5.97	10.04	0.00	2.70	10.04	0.00	0.00
24	MH24	Junction	5.76	10.12	5.76	10.12	0.00	5.49	10.12	0.00	0.00
25	MH25	Junction	5.55	10.20	5.55	10.20	0.00	8.29	9.90	0.00	0.30
26	MH26	Junction	5.32	10.45	5.32	10.45	0.00	12.23	9.64	0.00	0.81
27	MH27	Junction	5.81	11.21	5.81	11.21	0.00	3.70	9.89	0.00	1.32
28	MH28	Junction	5.47	10.84	5.47	10.84	0.00	7.57	9.47	0.00	1.37
29	MH29	Junction	5.18	10.81	5.18	10.81	0.00	11.19	8.99	0.00	1.82
30	MH30	Junction	5.03	11.20	5.03	11.20	0.00	21.49	8.79	0.00	2.41
31	MH31	Junction	7.27	10.80	7.27	10.80	0.00	2.74	10.80	0.00	0.00
32	MH32	Junction	6.93	10.90	6.93	10.90	0.00	5.53	10.64	0.00	0.26
33	MH33	Junction	6.88	11.04	6.88	11.04	0.00	5.67	10.59	0.00	0.45
34	MH34	Junction	6.66	11.20	6.66	11.20	0.00	8.53	10.48	0.00	0.72
35	MH35	Junction	6.26	11.03	6.26	11.03	0.00	3.72	10.54	0.00	0.49
36	MH36	Junction	5.94	10.94	5.94	10.94	0.00	16.22	10.32	0.00	0.62
37	MH37	Junction	5.78	10.62	5.78	10.62	0.00	22.47	10.06	0.00	0.56
38	MH38	Junction	5.63	10.64	5.63	10.64	0.00	24.65	9.62	0.00	1.02
39	MH39	Junction	7.79	11.10	7.79	11.10	0.00	3.84	11.10	0.00	0.00
40	MH40	Junction	7.40	11.23	7.40	11.23	0.00	7.69	10.47	0.00	0.76
41	MH41	Junction	7.99	11.49	7.99	11.49	0.00	3.23	9.55	0.00	1.94
42	MH42	Junction	6.53	11.53	6.53	11.53	0.00	15.33	9.18	0.00	2.35
43	MH43	Junction	6.37	11.18	6.37	11.18	0.00	17.80	8.92	0.00	2.26
44	MH44	Junction	6.77	10.62	6.77	10.62	0.00	3.81	10.62	0.00	0.00
45	MH45	Junction	5.60	10.62	5.60	10.62	0.00	26.83	9.39	0.00	1.23
46	MH46	Junction	5.53	11.21	5.53	11.21	0.00	26.36	8.98	0.00	2.23
47	MH47	Junction	5.05	10.93	5.05	10.93	0.00	11.12	8.75	0.00	2.18
48	Out-01	Outfall	5.01					58.77	8.61		
49	Out-02	Outfall	5.47					26.34	8.61		
50	Out-03	Outfall	6.27					17.81	8.61		
51	Out-04	Outfall	5.00					11.12	8.61		
52	Out-05	Outfall	5.00					21.28	8.61		

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	(ft)	
1	P-01	Pipe	MH01	MH02	214.00	5.86	5.63	0.11	24.0	0.015	4.74	6.43	0.74	2.26	2.00	1.00
2	P-02	Pipe	MH02	MH03	192.00	5.63	5.42	0.11	24.0	0.015	8.54	6.48	1.32	2.72	2.00	1.00
3	P-03	Pipe	MH03	MH04	213.00	5.42	5.25	0.08	30.0	0.015	12.43	10.04	1.24	2.53	2.50	1.00
4	P-04	Pipe	MH04	MH11	49.00	5.25	5.21	0.08	30.0	0.015	15.40	10.16	1.52	4.00	2.50	1.00
5	P-05	Pipe	MH05	MH06	257.00	6.27	5.94	0.13	21.0	0.015	2.77	4.92	0.56	1.92	1.75	1.00
6	P-06	Pipe	MH06	MH07	261.00	5.94	5.60	0.13	21.0	0.015	5.73	4.96	1.16	2.38	1.75	1.00
7	P-07	Pipe	MH07	MH08	217.00	5.60	5.36	0.11	24.0	0.015	10.03	6.52	1.54	3.19	2.00	1.00
8	P-08	Pipe	MH08	MH11	262.00	5.36	5.21	0.06	36.0	0.015	14.37	13.83	1.04	2.03	3.00	1.00
9	P-09	Pipe	MH09	MH10	327.00	5.78	5.26	0.16	18.0	0.015	4.36	3.63	1.20	2.47	1.50	1.00
10	P-10	Pipe	MH10	MH11	37.00	5.26	5.21	0.14	21.0	0.015	7.66	5.05	1.52	4.92	1.75	1.00
11	P-11	Pipe	MH11	MH14	262.00	5.21	5.08	0.05	42.0	0.015	36.82	19.42	1.90	3.83	3.50	1.00
12	P-12	Pipe	MH12	MH13	327.00	5.65	5.13	0.16	18.0	0.015	3.30	3.63	0.91	2.13	1.50	1.00
13	P-13	Pipe	MH13	MH14	37.00	5.13	5.08	0.14	21.0	0.015	5.91	5.05	1.17	3.92	1.75	1.00
14	P-14	Pipe	MH14	MH15	88.00	5.08	5.04	0.05	48.0	0.015	58.77	26.54	2.21	4.92	3.99	1.00
15	P-15	Pipe	MH15	Out-01	57.00	5.04	5.01	0.05	48.0	0.015	58.77	28.56	2.06	6.23	3.79	0.95
16	P-16	Pipe	MH16	MH17	301.00	5.91	5.58	0.11	24.0	0.015	5.02	6.49	0.77	2.35	2.00	1.00
17	P-17	Pipe	MH17	MH18	207.00	5.58	5.41	0.08	30.0	0.015	8.26	10.19	0.81	1.85	2.50	1.00
18	P-18	Pipe	MH18	MH19	157.00	5.41	5.28	0.08	30.0	0.015	11.78	10.23	1.15	2.40	2.50	1.00
19	P-19	Pipe	MH19	MH20	213.00	5.28	5.12	0.08	30.0	0.015	14.85	9.74	1.52	3.02	2.50	1.00
20	P-20	Pipe	MH20	MH14	49.00	5.12	5.08	0.08	30.0	0.015	17.60	10.16	1.73	3.65	2.50	1.00
21	P-21	Pipe	MH21	MH22	216.00	5.66	5.32	0.16	18.0	0.015	4.27	3.61	1.18	2.80	1.50	1.00
22	P-22	Pipe	MH22	MH30	222.00	5.32	5.03	0.13	21.0	0.015	6.73	4.96	1.36	2.81	1.75	1.00
23	P-23	Pipe	MH23	MH24	163.00	5.97	5.76	0.13	21.0	0.015	2.76	4.93	0.56	1.89	1.75	1.00
24	P-24	Pipe	MH24	MH25	163.00	5.76	5.55	0.13	21.0	0.015	5.56	4.93	1.13	2.31	1.75	1.00
25	P-25	Pipe	MH25	MH26	212.00	5.55	5.32	0.11	24.0	0.015	8.35	6.46	1.29	2.66	2.00	1.00
26	P-26	Pipe	MH26	MH30	264.00	5.32	5.03	0.11	24.0	0.015	12.26	6.50	1.89	3.90	2.00	1.00
27	P-27	Pipe	MH27	MH28	214.00	5.81	5.47	0.16	18.0	0.015	3.78	3.63	1.04	2.43	1.50	1.00
28	P-28	Pipe	MH28	MH29	263.00	5.47	5.18	0.11	24.0	0.015	7.56	6.51	1.16	2.43	2.00	1.00
29	P-29	Pipe	MH29	MH47	172.00	5.18	5.05	0.08	30.0	0.015	11.12	9.77	1.14	3.03	2.50	1.00
30	P-30	Pipe	MH30	Out-05	58.00	5.03	5.00	0.06	36.0	0.015	21.28	14.00	1.52	4.79	3.00	1.00
31	P-31	Pipe	MH31	MH32	215.00	7.27	6.93	0.16	18.0	0.015	2.80	3.62	0.77	2.02	1.50	1.00
32	P-32	Pipe	MH32	MH33	54.00	6.93	6.88	0.09	27.0	0.015	5.67	8.17	0.69	4.65	2.25	1.00
33	P-33	Pipe	MH33	MH34	244.00	6.88	6.66	0.09	27.0	0.015	5.84	8.06	0.73	2.11	2.25	1.00
34	P-34	Pipe	MH34	MH36	264.00	6.66	6.44	0.08	30.0	0.015	8.60	10.26	0.84	1.91	2.50	1.00
35	P-35	Pipe	MH35	MH36	246.00	6.26	5.94	0.13	21.0	0.015	3.95	4.95	0.80	2.29	1.75	1.00
36	P-36	Pipe	MH36	MH37	268.00	5.94	5.78	0.06	36.0	0.015	16.36	14.12	1.16	2.31	3.00	1.00
37	P-37	Pipe	MH37	MH38	256.00	5.78	5.63	0.06	36.0	0.015	22.61	13.99	1.62	3.20	3.00	1.00
38	P-38	Pipe	MH38	MH45	49.00	5.63	5.60	0.06	36.0	0.015	24.41	14.30	1.71	3.48	3.00	1.00
39	P-39	Pipe	MH39	MH40	247.00	7.79	7.40	0.16	18.0	0.015	3.86	3.62	1.07	2.51	1.50	1.00
40	P-40	Pipe	MH40	MH42	284.00	7.40	7.03	0.13	21.0	0.015	7.77	4.96	1.57	3.45	1.75	1.00
41	P-41	Pipe	MH41	MH42	250.00	7.99	7.59	0.16	18.0	0.015	3.23	3.64	0.89	2.63	1.50	1.00
42	P-42	Pipe	MH42	MH43	263.00	6.53	6.37	0.06	36.0	0.015	15.33	14.26	1.08	2.85	2.60	0.87
43	P-43	Pipe	MH43	Out-03	167.00	6.37	6.27	0.06	36.0	0.015	17.81	14.15	1.26	4.23	2.44	0.81
44	P-44	Pipe	MH44	MH37	49.00	6.77	5.78	2.02	12.0	0.015	3.95	4.39	0.90	7.78	1.00	1.00
45	P-45	Pipe	MH45	MH46	120.00	5.60	5.53	0.06	36.0	0.015	26.36	13.96	1.89	3.98	3.00	1.00
46	P-46	Pipe	MH46	Out-02	95.00	5.53	5.47	0.06	36.0	0.015	26.34	14.53	1.81	5.05	3.00	1.00
47	P-47	Pipe	MH47	Out-04	58.00	5.05	5.00	0.09	30.0	0.015	11.12	10.44	1.07	4.08	2.50	1.00

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft^2)	Minimum Pipe Cover (in)
1	MH01	5.86	10.73	4.87	5.86	0.00	10.73	0.00	0.00	0.00
2	MH02	5.63	10.64	5.01	5.63	0.00	10.64	0.00	0.00	0.00
3	MH03	5.42	10.87	5.45	5.42	0.00	10.87	0.00	0.00	0.00
4	MH04	5.25	10.64	5.39	5.25	0.00	10.64	0.00	0.00	0.00
5	MH05	6.27	10.67	4.40	6.27	0.00	10.67	0.00	0.00	0.00
6	MH06	5.94	10.85	4.91	5.94	0.00	10.85	0.00	0.00	0.00
7	MH07	5.60	10.89	5.29	5.60	0.00	10.89	0.00	0.00	0.00
8	MH08	5.36	10.67	5.31	5.36	0.00	10.67	0.00	0.00	0.00
9	MH09	5.78	10.83	5.05	5.78	0.00	10.83	0.00	0.00	0.00
10	MH10	5.26	10.81	5.55	5.26	0.00	10.81	0.00	0.00	0.00
11	MH11	5.21	10.83	5.62	5.21	0.00	10.83	0.00	0.00	0.00
12	MH12	5.65	10.79	5.14	5.65	0.00	10.79	0.00	0.00	0.00
13	MH13	5.13	10.81	5.68	5.13	0.00	10.81	0.00	0.00	0.00
14	MH14	5.08	11.07	5.99	5.08	0.00	11.07	0.00	0.00	0.00
15	MH15	5.04	11.18	6.14	5.04	0.00	11.18	0.00	0.00	0.00
16	MH16	5.91	10.37	4.46	5.91	0.00	10.37	0.00	0.00	0.00
17	MH17	5.58	10.68	5.10	5.58	0.00	10.68	0.00	0.00	0.00
18	MH18	5.41	10.68	5.27	5.41	0.00	10.68	0.00	0.00	0.00
19	MH19	5.28	10.74	5.46	5.28	0.00	10.74	0.00	0.00	0.00
20	MH20	5.12	10.64	5.52	5.12	0.00	10.64	0.00	0.00	0.00
21	MH21	5.66	10.42	4.76	5.66	0.00	10.42	0.00	0.00	0.00
22	MH22	5.32	10.42	5.10	5.32	0.00	10.42	0.00	0.00	0.00
23	MH23	5.97	10.04	4.07	5.97	0.00	10.04	0.00	0.00	0.00
24	MH24	5.76	10.12	4.36	5.76	0.00	10.12	0.00	0.00	0.00
25	MH25	5.55	10.20	4.65	5.55	0.00	10.20	0.00	0.00	0.00
26	MH26	5.32	10.45	5.13	5.32	0.00	10.45	0.00	0.00	0.00
27	MH27	5.81	11.21	5.40	5.81	0.00	11.21	0.00	0.00	0.00
28	MH28	5.47	10.84	5.37	5.47	0.00	10.84	0.00	0.00	0.00
29	MH29	5.18	10.81	5.63	5.18	0.00	10.81	0.00	0.00	0.00
30	MH30	5.03	11.20	6.17	5.03	0.00	11.20	0.00	0.00	0.00
31	MH31	7.27	10.80	3.53	7.27	0.00	10.80	0.00	0.00	0.00
32	MH32	6.93	10.90	3.97	6.93	0.00	10.90	0.00	0.00	0.00
33	MH33	6.88	11.04	4.16	6.88	0.00	11.04	0.00	0.00	0.00
34	MH34	6.66	11.20	4.54	6.66	0.00	11.20	0.00	0.00	0.00
35	MH35	6.26	11.03	4.77	6.26	0.00	11.03	0.00	0.00	0.00
36	MH36	5.94	10.94	5.00	5.94	0.00	10.94	0.00	0.00	0.00
37	MH37	5.78	10.62	4.84	5.78	0.00	10.62	0.00	0.00	0.00
38	MH38	5.63	10.64	5.01	5.63	0.00	10.64	0.00	0.00	0.00
39	MH39	7.79	11.10	3.31	7.79	0.00	11.10	0.00	0.00	0.00
40	MH40	7.40	11.23	3.83	7.40	0.00	11.23	0.00	0.00	0.00
41	MH41	7.99	11.49	3.50	7.99	0.00	11.49	0.00	0.00	0.00
42	MH42	6.53	11.53	5.00	6.53	0.00	11.53	0.00	0.00	0.00
43	MH43	6.37	11.18	4.81	6.37	0.00	11.18	0.00	0.00	0.00
44	MH44	6.77	10.62	3.85	6.77	0.00	10.62	0.00	0.00	0.00
45	MH45	5.60	10.62	5.02	5.60	0.00	10.62	0.00	0.00	0.00
46	MH46	5.53	11.21	5.68	5.53	0.00	11.21	0.00	0.00	0.00
47	MH47	5.05	10.93	5.88	5.05	0.00	10.93	0.00	0.00	0.00

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)
1	MH01	4.64	4.64	10.73	4.87	0.00	0.00	10.73	4.87
2	MH02	8.47	3.73	10.64	5.01	0.00	0.00	10.60	4.97
3	MH03	12.32	3.78	10.38	4.96	0.00	0.49	10.20	4.78
4	MH04	15.35	2.92	10.14	4.89	0.00	0.50	9.89	4.64
5	MH05	3.37	2.73	10.67	4.40	0.00	0.00	10.67	4.40
6	MH06	5.69	2.92	10.74	4.80	0.00	0.11	10.64	4.70
7	MH07	10.00	4.27	10.51	4.91	0.00	0.38	10.36	4.76
8	MH08	14.32	4.29	10.23	4.87	0.00	0.44	9.85	4.49
9	MH09	4.27	4.27	10.83	5.05	0.00	0.00	10.73	4.95
10	MH10	7.67	3.31	10.20	4.94	0.00	0.61	9.94	4.68
11	MH11	36.91	0.00	9.97	4.76	0.00	0.86	9.68	4.47
12	MH12	3.30	3.30	10.79	5.14	0.00	0.00	9.70	4.05
13	MH13	5.88	2.58	9.61	4.48	0.00	1.20	9.22	4.09
14	MH14	59.82	0.00	9.45	4.37	0.00	1.62	9.06	3.98
15	MH15	58.77	0.00	9.02	3.98	0.00	2.16	8.46	3.42
16	MH16	5.02	5.02	10.37	4.46	0.00	0.00	10.37	4.46
17	MH17	8.53	3.51	10.68	5.10	0.00	0.00	10.20	4.62
18	MH18	11.79	3.53	10.58	5.17	0.00	0.10	10.07	4.66
19	MH19	14.87	3.09	10.23	4.95	0.00	0.51	9.83	4.55
20	MH20	17.62	2.77	9.70	4.58	0.00	0.94	9.36	4.24
21	MH21	4.26	4.26	9.99	4.33	0.00	0.43	8.81	3.15
22	MH22	6.66	2.39	9.43	4.11	0.00	0.99	8.25	2.93
23	MH23	2.70	2.70	10.04	4.07	0.00	0.00	9.59	3.62
24	MH24	5.49	2.73	10.12	4.36	0.00	0.00	9.52	3.76
25	MH25	8.29	2.73	9.90	4.35	0.00	0.30	9.21	3.66
26	MH26	12.23	3.88	9.64	4.32	0.00	0.81	8.77	3.45
27	MH27	3.70	3.70	9.89	4.08	0.00	1.32	8.54	2.73
28	MH28	7.57	3.79	9.47	4.00	0.00	1.37	8.11	2.64
29	MH29	11.19	3.63	8.99	3.81	0.00	1.82	7.65	2.47
30	MH30	21.49	2.59	8.79	3.76	0.00	2.41	7.61	2.58
31	MH31	2.74	2.74	10.80	3.53	0.00	0.00	10.32	3.05
32	MH32	5.53	2.73	10.64	3.71	0.00	0.26	10.09	3.16
33	MH33	5.67	0.00	10.59	3.71	0.00	0.45	10.04	3.16
34	MH34	8.53	2.69	10.48	3.82	0.00	0.72	9.91	3.25
35	MH35	3.72	3.72	10.54	4.28	0.00	0.49	9.95	3.69
36	MH36	16.22	3.89	10.32	4.38	0.00	0.62	9.73	3.79
37	MH37	22.47	2.29	10.06	4.28	0.00	0.56	9.45	3.67
38	MH38	24.65	2.04	9.62	3.99	0.00	1.02	8.95	3.32
39	MH39	3.84	3.84	11.10	3.31	0.00	0.00	10.45	2.66
40	MH40	7.69	3.83	10.47	3.07	0.00	0.76	9.93	2.53
41	MH41	3.23	3.23	9.55	1.56	0.00	1.94	9.26	1.27
42	MH42	15.33	4.43	9.18	2.65	0.00	2.35	8.89	2.36
43	MH43	17.80	2.47	8.92	2.55	0.00	2.26	8.53	2.16
44	MH44	3.81	3.81	10.62	3.85	0.00	0.00	10.48	3.71
45	MH45	26.83	2.42	9.39	3.79	0.00	1.23	8.69	3.09
46	MH46	26.36	0.00	8.98	3.45	0.00	2.23	8.20	2.67
47	MH47	11.12	0.00	8.75	3.70	0.00	2.18	7.34	2.29

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Total Drop (ft)	Average Slope (%)	Pipe Diameter or Height (in)	Manning's Roughness	Entrance Losses	Initial Flow (cfs)
1	P-01	214.00	5.86	5.63	0.23	0.11	24.00	0.0150	0.500	0.00
2	P-02	192.00	5.63	5.42	0.21	0.11	24.00	0.0150	0.500	0.00
3	P-03	213.00	5.42	5.25	0.17	0.08	30.00	0.0150	0.500	0.00
4	P-04	49.00	5.25	5.21	0.04	0.08	30.00	0.0150	0.500	0.00
5	P-05	257.00	6.27	5.94	0.33	0.13	21.00	0.0150	0.500	0.00
6	P-06	261.00	5.94	5.60	0.34	0.13	21.00	0.0150	0.500	0.00
7	P-07	217.00	5.60	5.36	0.24	0.11	24.00	0.0150	0.500	0.00
8	P-08	262.00	5.36	5.21	0.15	0.06	36.00	0.0150	0.500	0.00
9	P-09	327.00	5.78	5.26	0.52	0.16	18.00	0.0150	0.500	0.00
10	P-10	37.00	5.26	5.21	0.05	0.14	21.00	0.0150	0.500	0.00
11	P-11	262.00	5.21	5.08	0.13	0.05	42.00	0.0150	0.500	0.00
12	P-12	327.00	5.65	5.13	0.52	0.16	18.00	0.0150	0.500	0.00
13	P-13	37.00	5.13	5.08	0.05	0.14	21.00	0.0150	0.500	0.00
14	P-14	88.00	5.08	5.04	0.04	0.05	48.00	0.0150	0.500	0.00
15	P-15	57.00	5.04	5.01	0.03	0.05	48.00	0.0150	0.500	0.00
16	P-16	301.00	5.91	5.58	0.33	0.11	24.00	0.0150	0.500	0.00
17	P-17	207.00	5.58	5.41	0.17	0.08	30.00	0.0150	0.500	0.00
18	P-18	157.00	5.41	5.28	0.13	0.08	30.00	0.0150	0.500	0.00
19	P-19	213.00	5.28	5.12	0.16	0.08	30.00	0.0150	0.500	0.00
20	P-20	49.00	5.12	5.08	0.04	0.08	30.00	0.0150	0.500	0.00
21	P-21	216.00	5.66	5.32	0.34	0.16	18.00	0.0150	0.500	0.00
22	P-22	222.00	5.32	5.03	0.29	0.13	21.00	0.0150	0.500	0.00
23	P-23	163.00	5.97	5.76	0.21	0.13	21.00	0.0150	0.500	0.00
24	P-24	163.00	5.76	5.55	0.21	0.13	21.00	0.0150	0.500	0.00
25	P-25	212.00	5.55	5.32	0.23	0.11	24.00	0.0150	0.500	0.00
26	P-26	264.00	5.32	5.03	0.29	0.11	24.00	0.0150	0.500	0.00
27	P-27	214.00	5.81	5.47	0.34	0.16	18.00	0.0150	0.500	0.00
28	P-28	263.00	5.47	5.18	0.29	0.11	24.00	0.0150	0.500	0.00
29	P-29	172.00	5.18	5.05	0.13	0.08	30.00	0.0150	0.500	0.00
30	P-30	58.00	5.03	5.00	0.03	0.06	36.00	0.0150	0.500	0.00
31	P-31	215.00	7.27	6.93	0.34	0.16	18.00	0.0150	0.500	0.00
32	P-32	54.00	6.93	6.88	0.05	0.09	27.00	0.0150	0.500	0.00
33	P-33	244.00	6.88	6.66	0.22	0.09	27.00	0.0150	0.500	0.00
34	P-34	264.00	6.66	6.44	0.22	0.08	30.00	0.0150	0.500	0.00
35	P-35	246.00	6.26	5.94	0.32	0.13	21.00	0.0150	0.500	0.00
36	P-36	268.00	5.94	5.78	0.16	0.06	36.00	0.0150	0.500	0.00
37	P-37	256.00	5.78	5.63	0.15	0.06	36.00	0.0150	0.500	0.00
38	P-38	49.00	5.63	5.60	0.03	0.06	36.00	0.0150	0.500	0.00
39	P-39	247.00	7.79	7.40	0.39	0.16	18.00	0.0150	0.500	0.00
40	P-40	284.00	7.40	7.03	0.37	0.13	21.00	0.0150	0.500	0.00
41	P-41	250.00	7.99	7.59	0.40	0.16	18.00	0.0150	0.500	0.00
42	P-42	263.00	6.53	6.37	0.16	0.06	36.00	0.0150	0.500	0.00
43	P-43	167.00	6.37	6.27	0.10	0.06	36.00	0.0150	0.500	0.00
44	P-44	49.00	6.77	5.78	0.99	2.02	12.00	0.0150	0.500	0.00
45	P-45	120.00	5.60	5.53	0.07	0.06	36.00	0.0150	0.500	0.00
46	P-46	95.00	5.53	5.47	0.06	0.06	36.00	0.0150	0.500	0.00
47	P-47	58.00	5.05	5.00	0.05	0.09	30.00	0.0150	0.500	0.00

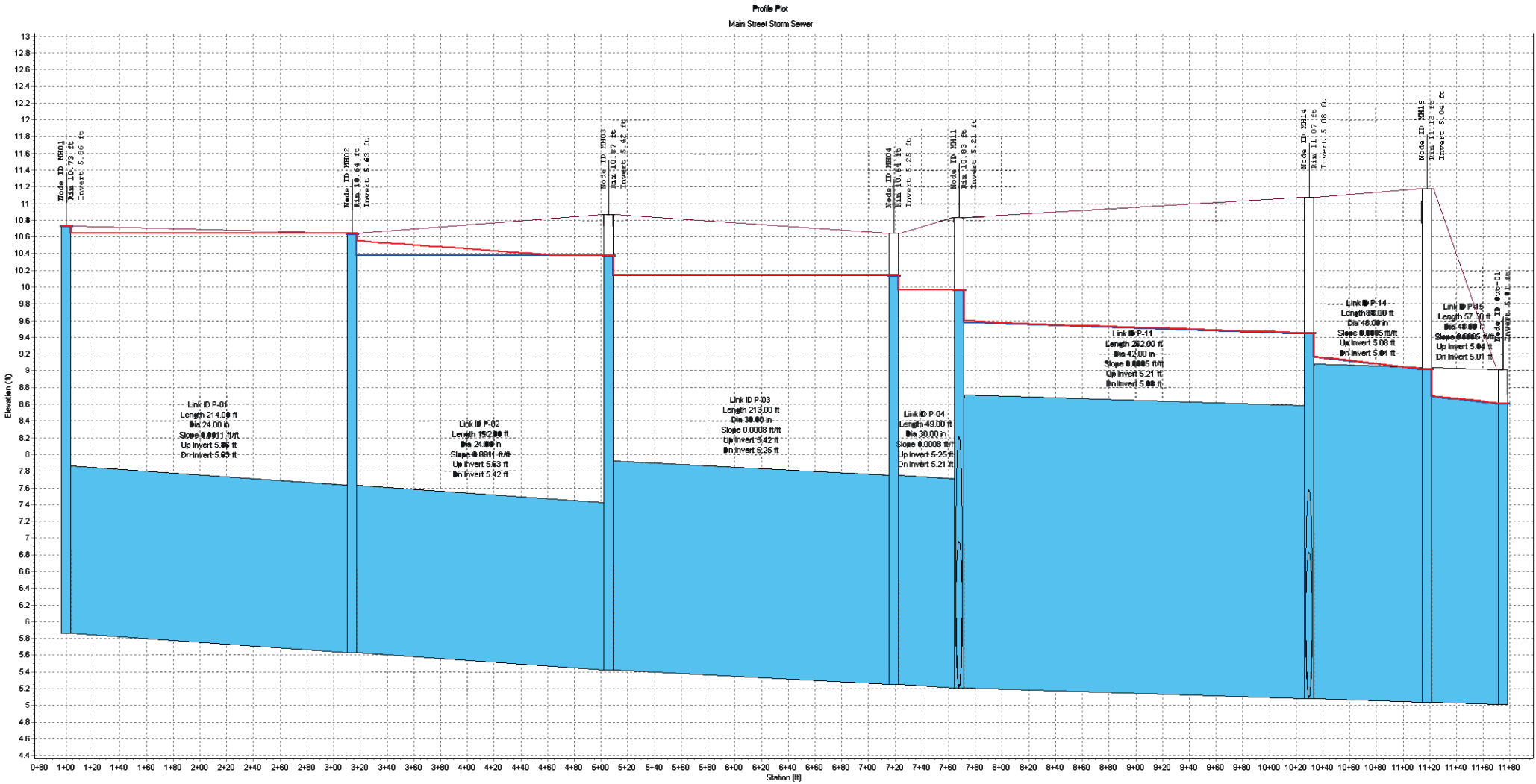
Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

Pipe Results

SN	Element ID	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio
1	P-01	4.74	6.43	0.74	2.26	1.58	2.00	1.00
2	P-02	8.54	6.48	1.32	2.72	1.18	2.00	1.00
3	P-03	12.43	10.04	1.24	2.53	1.40	2.50	1.00
4	P-04	15.40	10.16	1.52	4.00	0.20	2.50	1.00
5	P-05	2.77	4.92	0.56	1.92	2.23	1.75	1.00
6	P-06	5.73	4.96	1.16	2.38	1.83	1.75	1.00
7	P-07	10.03	6.52	1.54	3.19	1.13	2.00	1.00
8	P-08	14.37	13.83	1.04	2.03	2.15	3.00	1.00
9	P-09	4.36	3.63	1.20	2.47	2.21	1.50	1.00
10	P-10	7.66	5.05	1.52	4.92	0.13	1.75	1.00
11	P-11	36.82	19.42	1.90	3.83	1.14	3.50	1.00
12	P-12	3.30	3.63	0.91	2.13	2.56	1.50	1.00
13	P-13	5.91	5.05	1.17	3.92	0.16	1.75	1.00
14	P-14	58.77	26.54	2.21	4.92	0.30	3.99	1.00
15	P-15	58.77	28.56	2.06	6.23	0.15	3.79	0.95
16	P-16	5.02	6.49	0.77	2.35	2.13	2.00	1.00
17	P-17	8.26	10.19	0.81	1.85	1.86	2.50	1.00
18	P-18	11.78	10.23	1.15	2.40	1.09	2.50	1.00
19	P-19	14.85	9.74	1.52	3.02	1.18	2.50	1.00
20	P-20	17.60	10.16	1.73	3.65	0.22	2.50	1.00
21	P-21	4.27	3.61	1.18	2.80	1.29	1.50	1.00
22	P-22	6.73	4.96	1.36	2.81	1.32	1.75	1.00
23	P-23	2.76	4.93	0.56	1.89	1.44	1.75	1.00
24	P-24	5.56	4.93	1.13	2.31	1.18	1.75	1.00
25	P-25	8.35	6.46	1.29	2.66	1.33	2.00	1.00
26	P-26	12.26	6.50	1.89	3.90	1.13	2.00	1.00
27	P-27	3.78	3.63	1.04	2.43	1.47	1.50	1.00
28	P-28	7.56	6.51	1.16	2.43	1.80	2.00	1.00
29	P-29	11.12	9.77	1.14	3.03	0.95	2.50	1.00
30	P-30	21.28	14.00	1.52	4.79	0.20	3.00	1.00
31	P-31	2.80	3.62	0.77	2.02	1.77	1.50	1.00
32	P-32	5.67	8.17	0.69	4.65	0.19	2.25	1.00
33	P-33	5.84	8.06	0.73	2.11	1.93	2.25	1.00
34	P-34	8.60	10.26	0.84	1.91	2.30	2.50	1.00
35	P-35	3.95	4.95	0.80	2.29	1.79	1.75	1.00
36	P-36	16.36	14.12	1.16	2.31	1.93	3.00	1.00
37	P-37	22.61	13.99	1.62	3.20	1.33	3.00	1.00
38	P-38	24.41	14.30	1.71	3.48	0.23	3.00	1.00
39	P-39	3.86	3.62	1.07	2.51	1.64	1.50	1.00
40	P-40	7.77	4.96	1.57	3.45	1.37	1.75	1.00
41	P-41	3.23	3.64	0.89	2.63	1.58	1.50	1.00
42	P-42	15.33	14.26	1.08	2.85	1.54	2.60	0.87
43	P-43	17.81	14.15	1.26	4.23	0.66	2.44	0.81
44	P-44	3.95	4.39	0.90	7.78	0.10	1.00	1.00
45	P-45	26.36	13.96	1.89	3.98	0.50	3.00	1.00
46	P-46	26.34	14.53	1.81	5.05	0.31	3.00	1.00
47	P-47	11.12	10.44	1.07	4.08	0.24	2.50	1.00

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

03/18/2026 3:30:00 PM

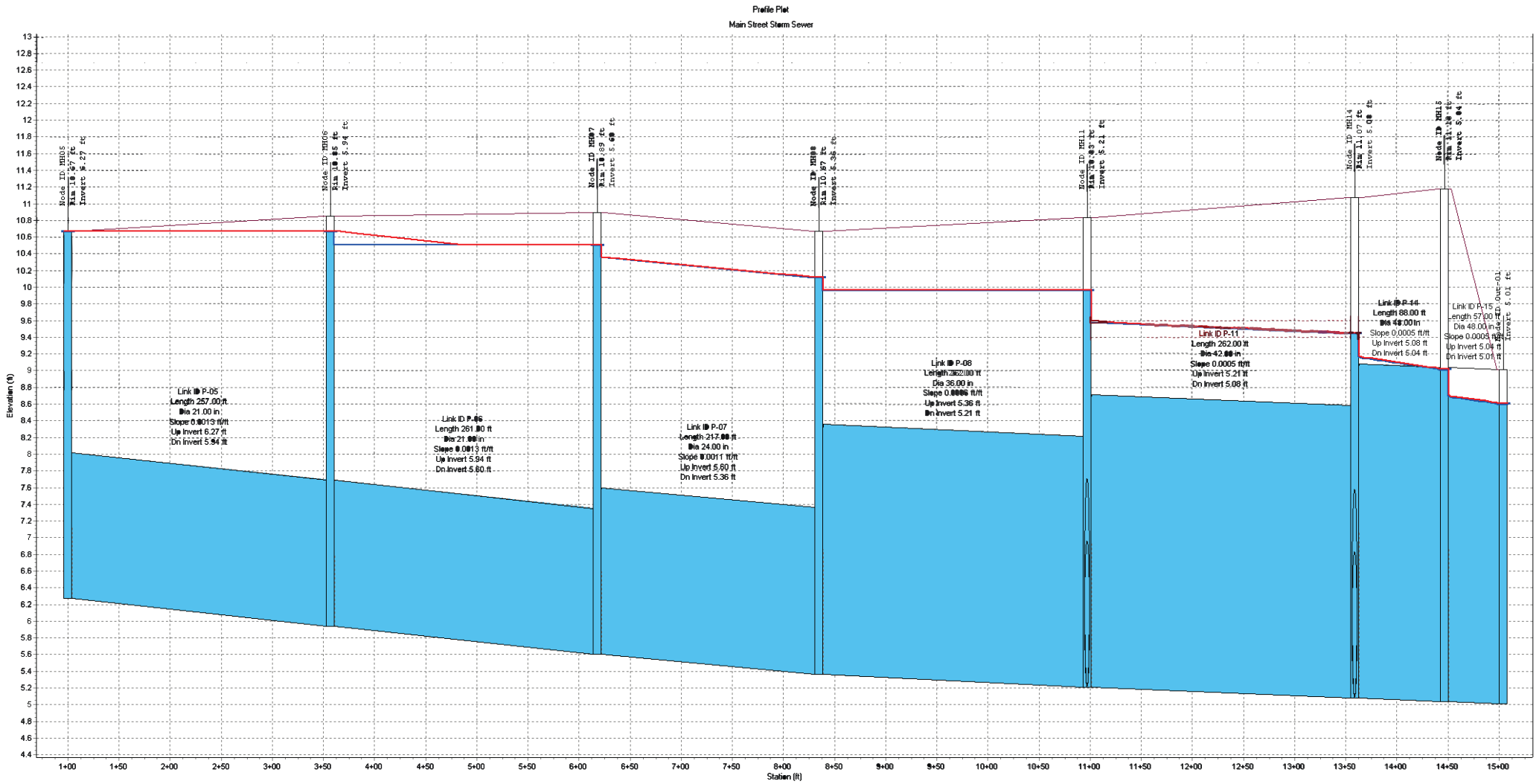


Node ID:	MH01	MH02	MH03	MH04	MH11	MH14	MH15	Out-01
Rim (ft):	10.73	10.64	10.87	10.64	10.83	11.07	11.18	
Invert (ft):	5.86	5.63	5.42	5.25	5.21	5.08	5.04	5.01
Min Pipe Cover (ft):	2.87	3.01	2.95	2.89	2.12	1.99	2.14	
Max HGL (ft):	10.73	10.64	10.38	10.14	9.97	9.45	9.02	8.61

Link ID:	P-01	P-02	P-03	P-04	P-11	P-14	P-15
Length (ft):	214.00	192.00	213.00	49.00	262.00	88.00	57.00
Dia (in):	24.00	24.00	30.00	30.00	42.00	48.00	48.00
Slope (ft/ft):	0.0011	0.0011	0.0008	0.0008	0.0005	0.0005	0.0005
Up Invert (ft):	5.86	5.63	5.42	5.25	5.21	5.08	5.04
Dn Invert (ft):	5.63	5.42	5.25	5.21	5.08	5.04	5.01
Max Q (cfs):	4.74	8.54	12.43	15.40	36.82	58.77	58.77
Max Vel (ft/s):	2.26	2.72	2.53	4.00	3.83	4.92	6.23
Max Depth (ft):	2.00	2.00	2.50	2.50	3.50	3.99	3.79

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

03/18/2026 3:50:00 PM

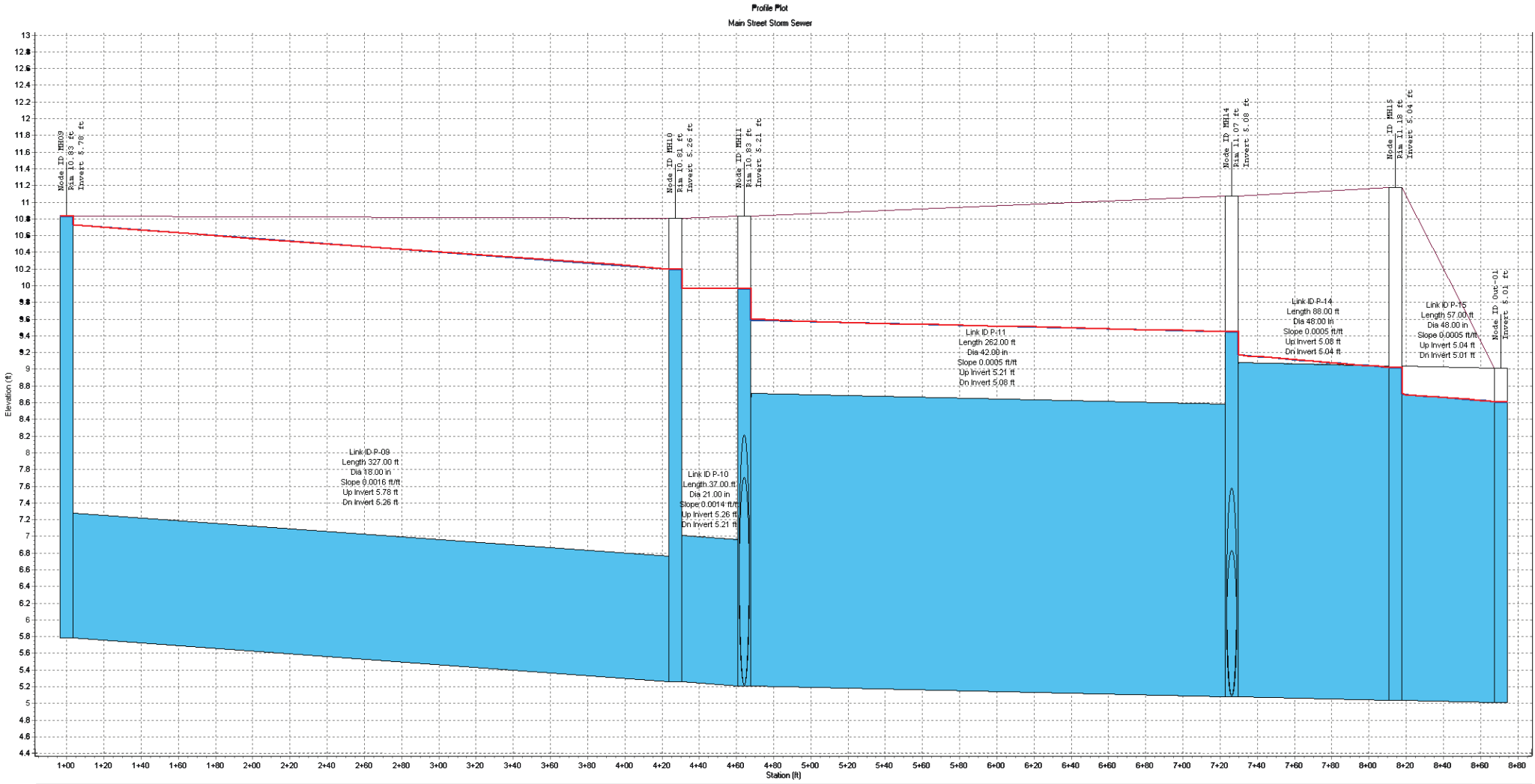


Node ID:	MH05	MH06	MH07	MH08	MH11	MH14	MH15	Out-01
Rim (ft):	10.67	10.85	10.89	10.67	10.83	11.07	11.18	
Invert (ft):	6.27	5.94	5.60	5.36	5.21	5.08	5.04	5.01
Min Pipe Cover (ft):	2.65	3.16	3.29	2.31	2.12	1.99	2.14	
Max HGL (ft):	10.67	10.74	10.51	10.23	9.97	9.45	9.02	8.61

Link ID:	P-05	P-06	P-07	P-08	P-11	P-14	P-15
Length (ft):	257.00	261.00	217.00	262.00	262.00	88.00	57.00
Dia (in):	21.00	21.00	24.00	36.00	42.00	48.00	48.00
Slope (ft/ft):	0.0013	0.0013	0.0011	0.0006	0.0005	0.0005	0.0005
Up Invert (ft):	6.27	5.94	5.60	5.36	5.21	5.08	5.04
Dn Invert (ft):	5.94	5.60	5.36	5.21	5.08	5.04	5.01
Max Q (cfs):	2.77	5.73	10.03	14.37	36.82	58.77	58.77
Max Vel (ft/s):	1.92	2.38	3.19	2.03	3.83	4.92	6.23
Max Depth (ft):	1.75	1.75	2.00	3.00	3.50	3.99	3.79

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

03/18/2026 3:05:00 PM

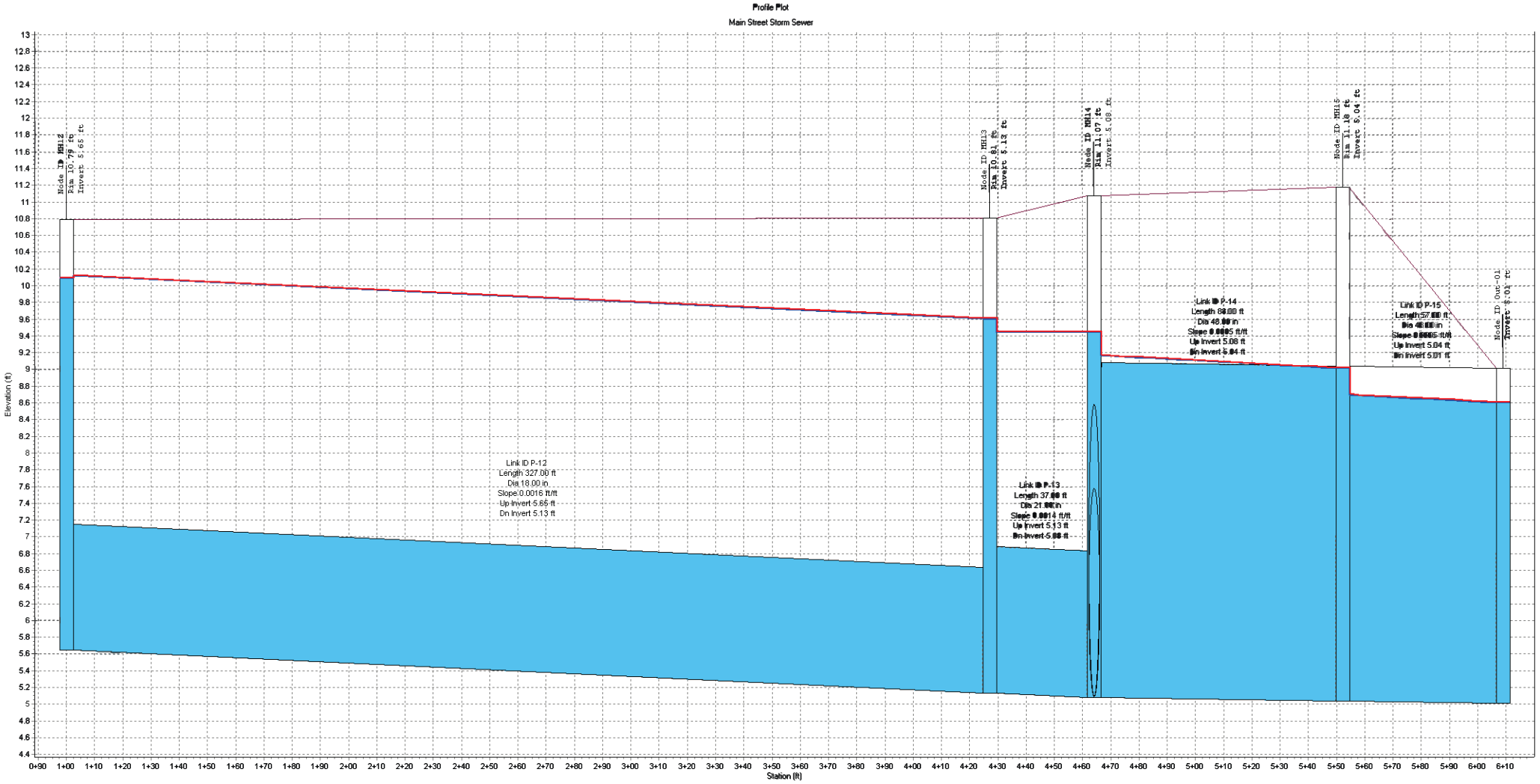


Node ID:	MH09	MH10	MH11	MH14	MH15	Out-01
Rim (ft):	10.83	10.81	10.83	11.07	11.18	
Invert (ft):	5.78	5.26	5.21	5.08	5.04	5.01
Min Pipe Cover (ft):	3.55	3.80	2.12	1.99	2.14	
Max HGL (ft):	10.83	10.20	9.97	9.45	9.02	8.61

Link ID:	P-09	P-10	P-11	P-14	P-15
Length (ft):	327.00	37.00	262.00	88.00	57.00
Dia (in):	18.00	21.00	42.00	48.00	48.00
Slope (ft/ft):	0.0016	0.0014	0.0005	0.0005	0.0005
Up Invert (ft):	5.78	5.26	5.21	5.08	5.04
Dn Invert (ft):	5.26	5.21	5.08	5.04	5.01
Max Q (cfs):	4.36	7.66	36.82	58.77	58.77
Max Vel (ft/s):	2.47	4.32	3.83	4.32	6.23
Max Depth (ft):	1.50	1.75	3.50	3.95	3.79

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

03/18/2026 3:35:00 PM

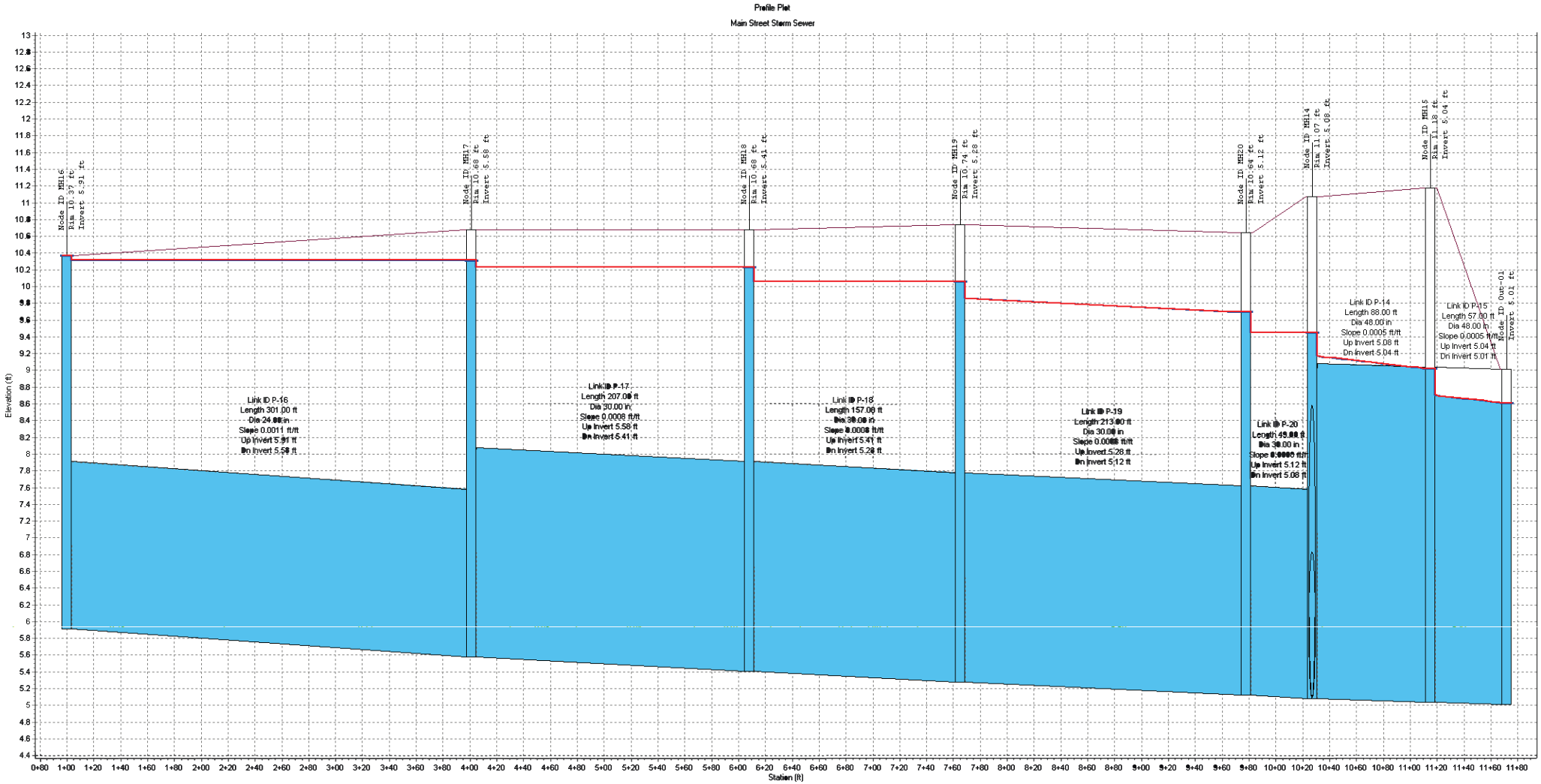


Node ID:	MH12	MH13	MH14	MH15	Out-01	
Rim (ft):	10.79	10.81	11.07	11.18		
Invert (ft):	5.65	5.13	5.08	5.04	5.01	
Min Pipe Cover (ft):	3.64	3.93	1.99	2.14		
Max HGL (ft):	10.79	9.61	9.45	9.02	8.61	

Link ID:	P-12	P-13	P-14	P-15
Length (ft):	327.00	37.00	88.00	57.00
Dia (in):	18.00	21.00	48.00	48.00
Slope (ft/ft):	0.0016	0.0014	0.0005	0.0005
Up Invert (ft):	5.65	5.13	5.08	5.04
Dn Invert (ft):	5.13	5.08	5.04	5.01
Max Q (cfs):	3.30	5.51	58.77	58.77
Max Vel (ft/s):	2.13	3.92	4.52	6.23
Max Depth (ft):	1.50	1.75	3.55	3.79

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

03/18/2026 3:15:00 PM

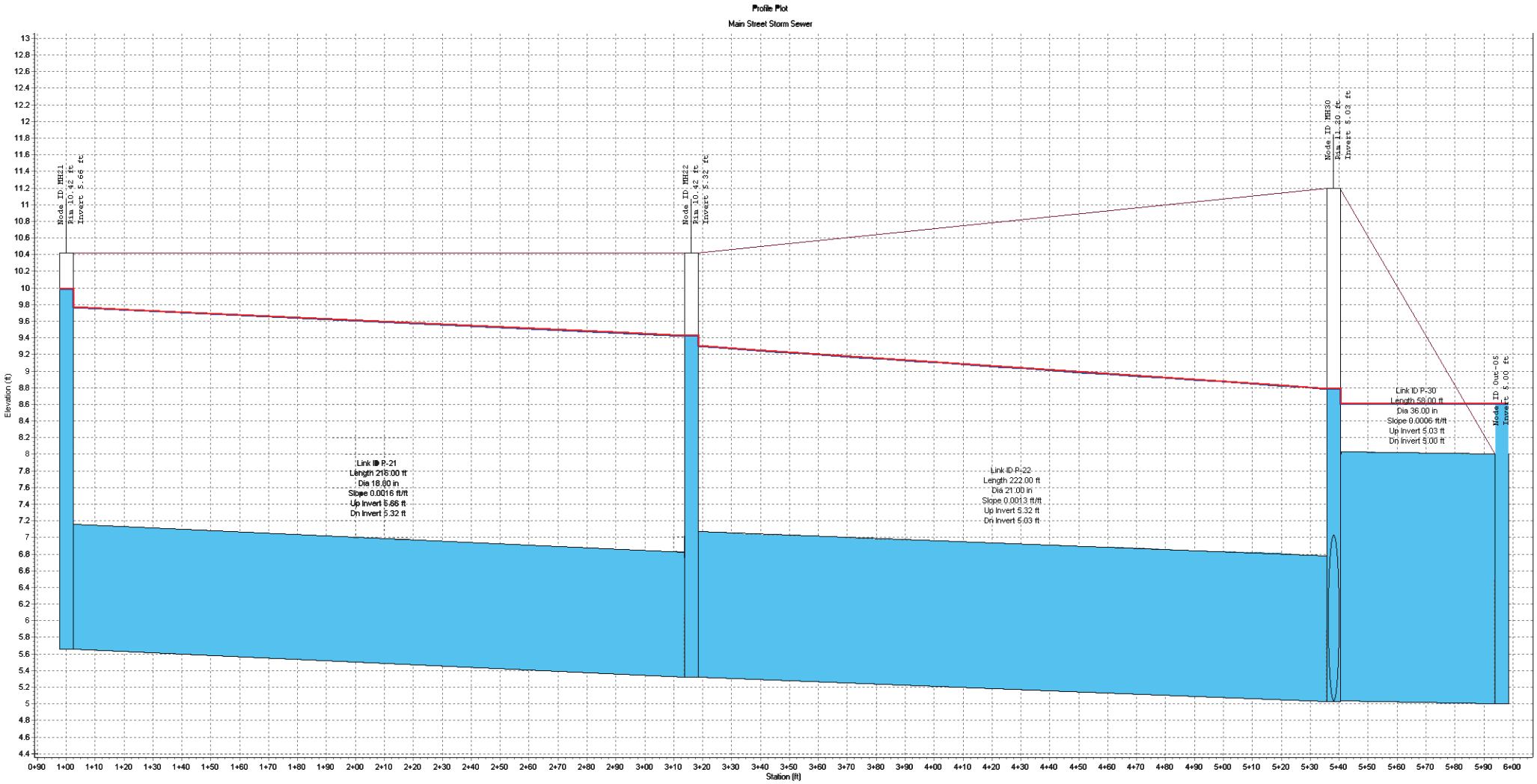


Node ID:	MH16	MH17	MH18	MH19	MH20	MH14	MH15	Out-01
Rim (ft):	10.37	10.68	10.68	10.74	10.64	11.07	11.18	
Invert (ft):	5.91	5.58	5.41	5.28	5.12	5.08	5.04	5.01
Min Pipe Cover (ft):	2.46	2.60	2.77	2.96	3.02	1.99	2.14	
Max HGL (ft):	10.37	10.68	10.58	10.23	9.70	9.45	9.02	8.61

Link ID:	P-16	P-17	P-18	P-19	P-20	P-14	P-15
Length (ft):	301.00	207.00	157.00	213.00	49.00	88.00	57.00
Dia (in):	24.00	30.00	30.00	30.00	30.00	48.00	48.00
Slope (ft/ft):	0.0011	0.0008	0.0008	0.0008	0.0008	0.0005	0.0005
Up Invert (ft):	5.91	5.58	5.41	5.28	5.12	5.08	5.04
Dn Invert (ft):	5.58	5.41	5.28	5.12	5.08	5.04	5.01
Max Q (cfs):	5.02	8.26	11.78	14.85	17.60	58.77	58.77
Max Vel (ft/s):	2.35	1.85	2.40	3.02	3.65	4.92	6.23
Max Depth (ft):	2.00	2.50	2.50	2.50	2.50	3.99	3.79

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

03/18/2026 3:30:00 PM

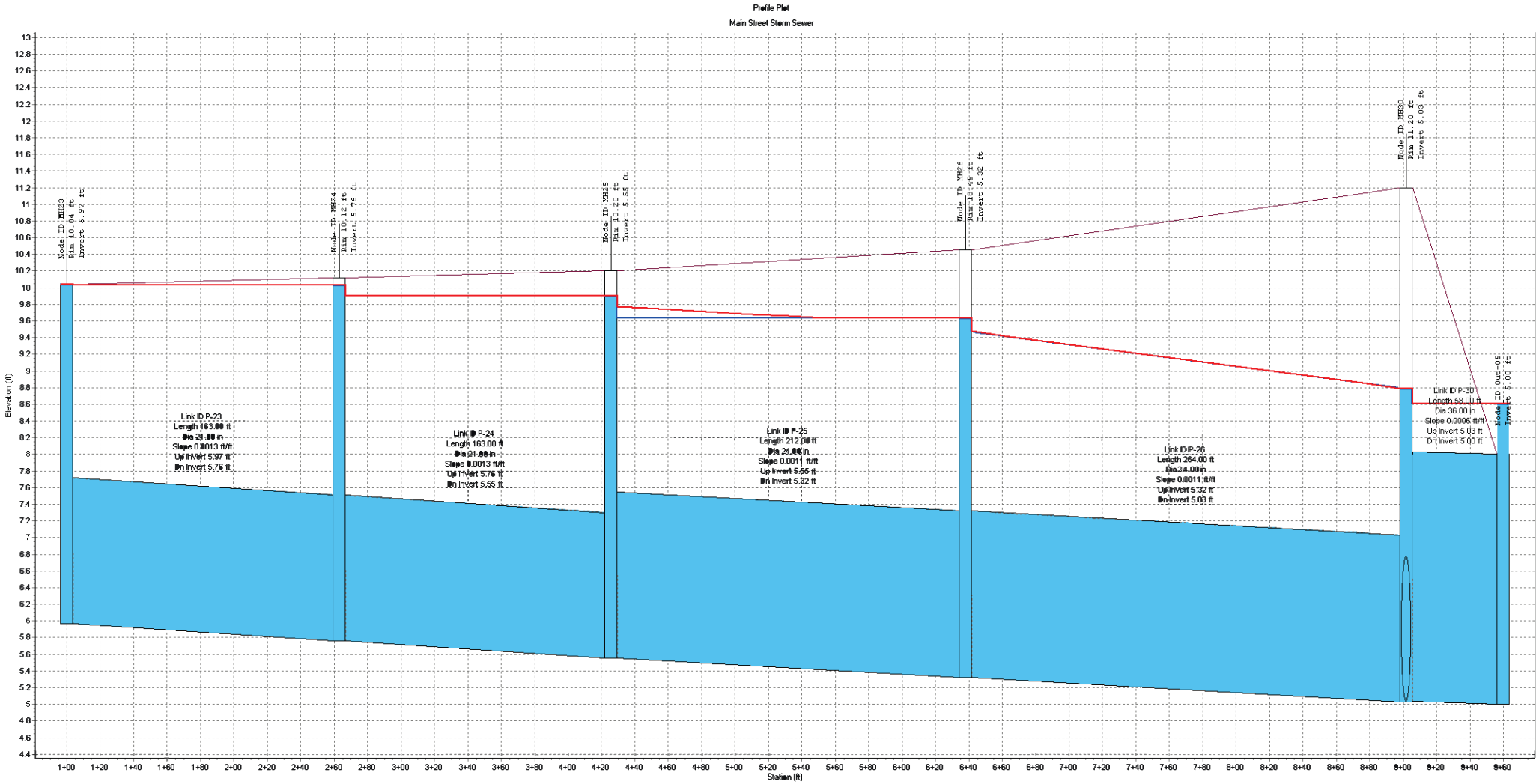


Node ID:	MH21	MH22	MH30	Out-05
Rim (ft):	10.42	10.42	11.20	
Invert (ft):	5.66	5.32	5.03	5.00
Min Pipe Cover (ft):	3.26	3.35	3.17	
Max HGL (ft):	9.99	9.43	8.79	8.61

Link ID:	P-21	P-22	P-30
Length (ft):	216.00	222.00	58.00
Dia (in):	18.00	21.00	36.00
Slope (ft/ft):	0.0016	0.0013	0.0006
Up Invert (ft):	5.66	5.32	5.03
Dn Invert (ft):	5.32	5.03	5.00
Max Q (cfs):	4.27	6.73	21.28
Max Vel (ft/s):	2.80	2.81	4.79
Max Depth (ft):	1.50	1.75	3.00

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

03/18/2026 3:05:00 PM

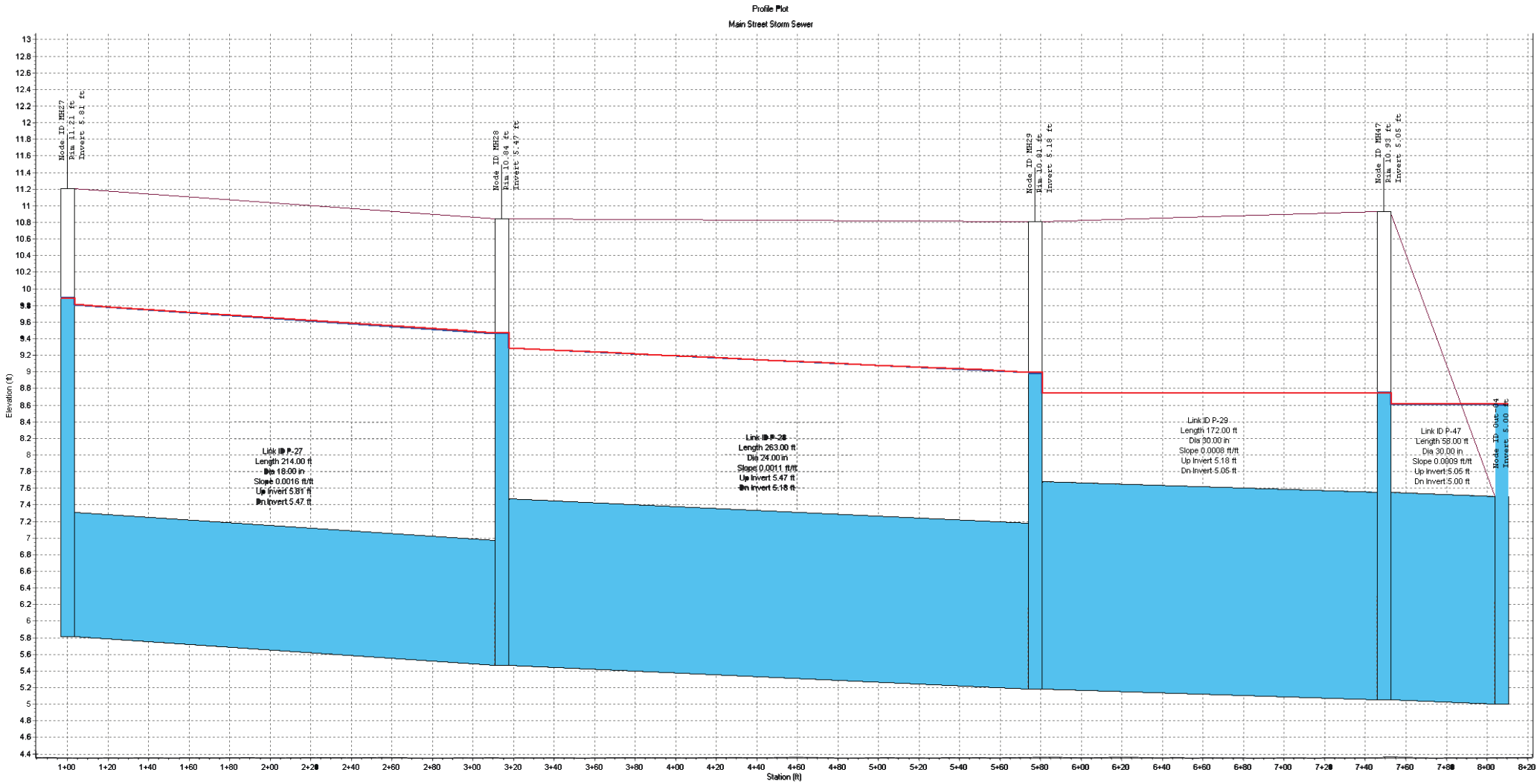


Node ID:	MH23	MH24	MH25	MH26	MH30	Out-05
Rim (ft):	10.04	10.12	10.20	10.45	11.20	
Invert (ft):	5.97	5.76	5.55	5.32	5.03	5.00
Min Pipe Cover (ft):	2.32	2.61	2.65	3.13	3.17	
Max HGL (ft):	10.04	10.12	9.90	9.64	8.79	8.61

Link ID:	P-23	P-24	P-25	P-26	P-30
Length (ft):	163.00	163.00	212.00	264.00	58.00
Dia (in):	21.00	21.00	24.00	24.00	36.00
Slope (ft/ft):	0.0013	0.0013	0.0011	0.0011	0.0006
Up Invert (ft):	5.97	5.76	5.55	5.32	5.03
Dn Invert (ft):	5.76	5.55	5.32	5.03	5.00
Max Q (cfs):	2.76	5.56	8.35	12.26	21.28
Max Vel (ft/s):	1.89	2.31	2.66	3.90	4.79
Max Depth (ft):	1.75	1.75	2.00	2.00	3.00

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

03/18/2026 2:55:00 PM

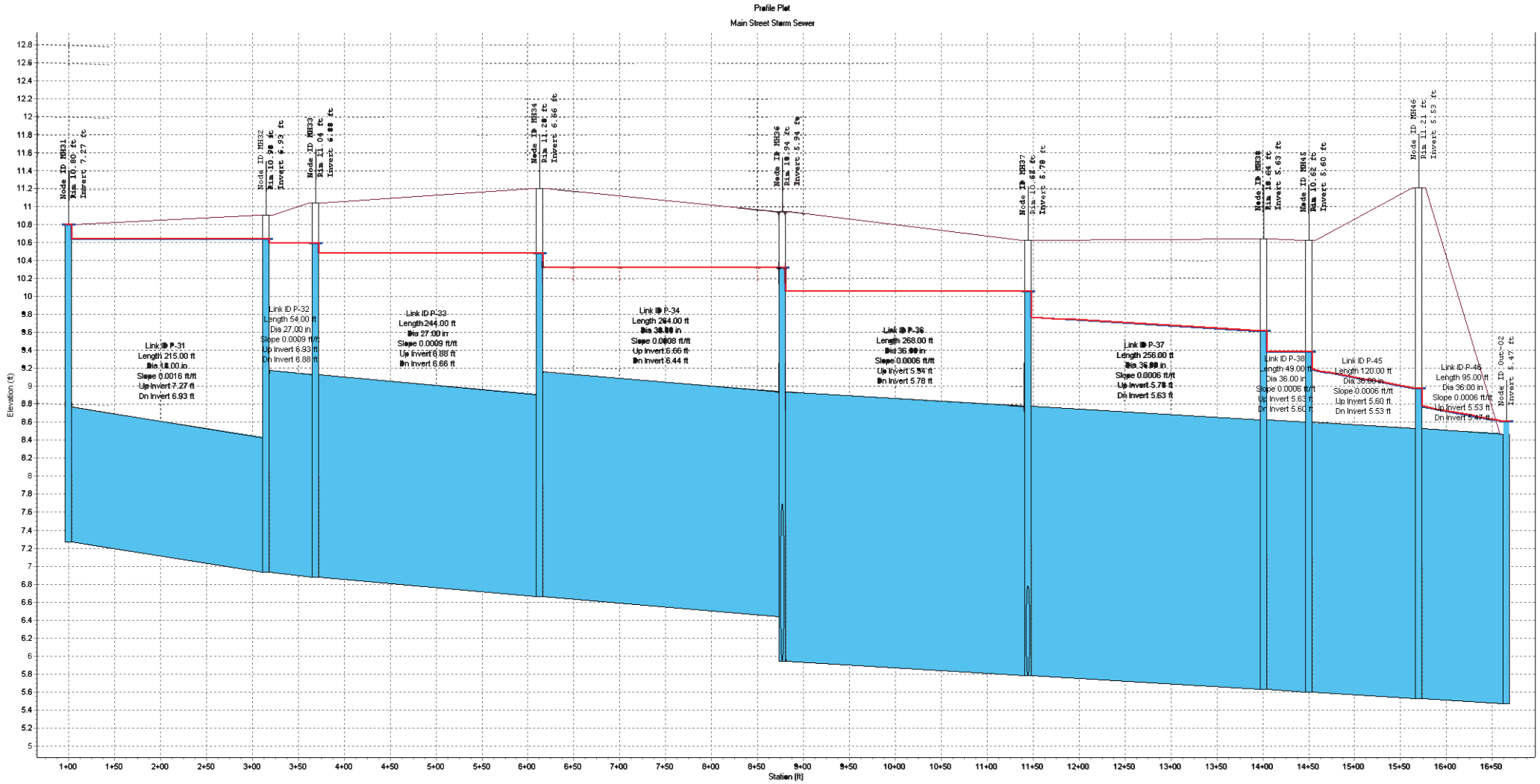


Node ID:	MH27	MH28	MH29	MH47	Out-04
Rim (ft):	11.21	10.04	10.01	10.93	
Invert (ft):	5.81	5.47	5.18	5.05	5.00
Min Pipe Cover (ft):	3.90	3.37	3.13	3.38	
Max HGL (ft):	9.89	9.47	8.99	8.75	8.61

Link ID:	P-27	P-28	P-29	P-47
Length (ft):	214.00	263.00	172.00	58.00
Dia (in):	18.00	24.00	30.00	30.00
Slope (ft/ft):	0.0016	0.0011	0.0008	0.0009
Up Invert (ft):	5.81	5.47	5.18	5.05
Dn Invert (ft):	5.47	5.18	5.05	5.00
Max Q (cfs):	3.78	7.56	11.12	11.12
Max Vel (ft/s):	2.43	2.43	3.63	4.09
Max Depth (ft):	1.50	2.00	2.50	2.50

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

03/18/2026 3:30:00 PM

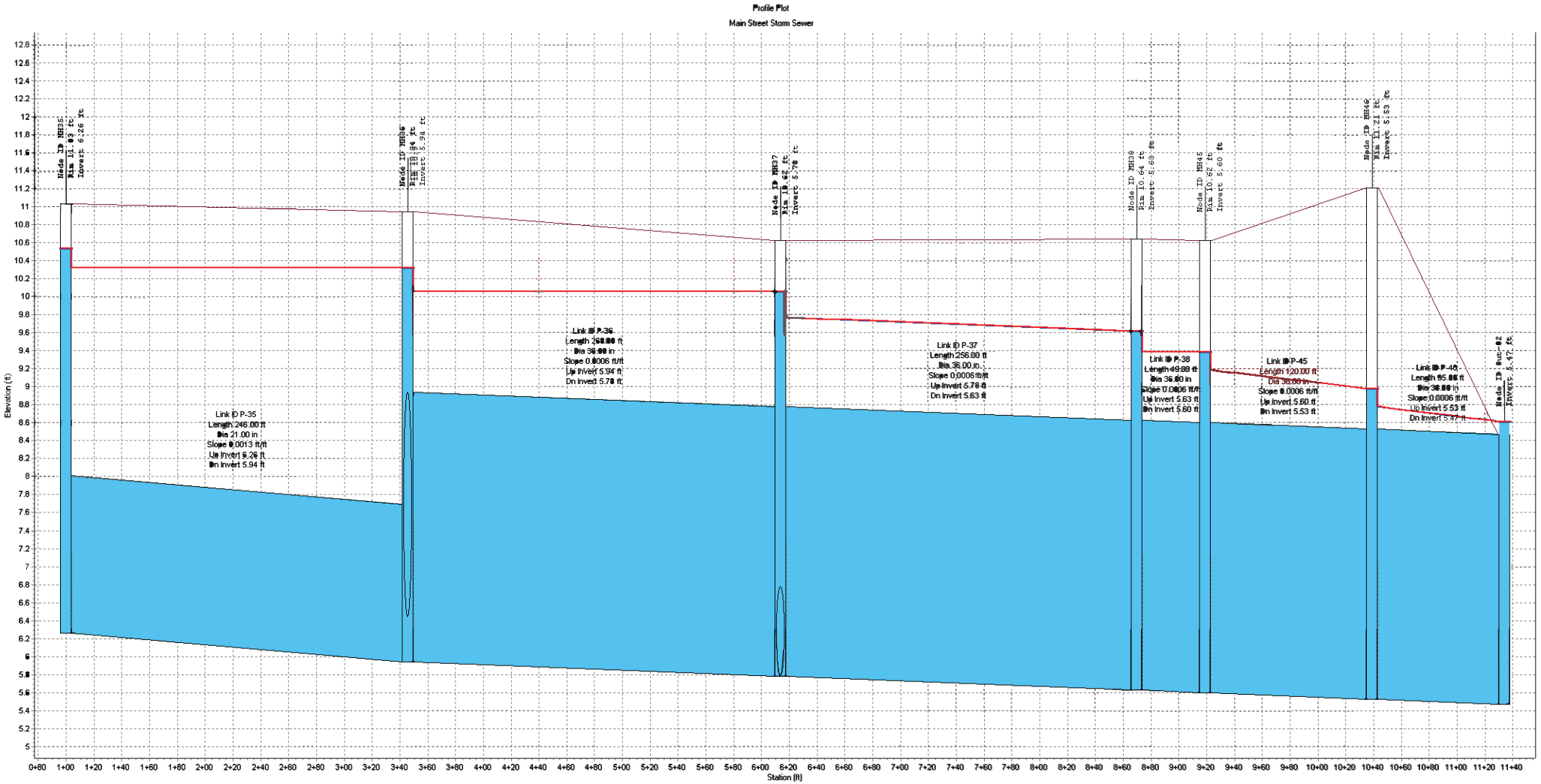


Node ID:	MH31	MH32	MH33	MH34	MH36	MH37	MH38	MH45	MH46	Out-02
Rim (ft):	10.80	10.90	11.04	11.20	10.94	10.62	10.64	10.62	11.21	
Invert (ft):	7.27	6.93	6.88	6.66	5.94	5.78	5.63	5.60	5.53	5.47
Min Pipe Cover (ft):	2.03	1.72	1.91	2.04	2.00	1.84	2.01	2.02	2.68	
Max HGL (ft):	10.80	10.64	10.59	10.48	10.32	10.06	9.62	9.39	8.98	8.61

Link ID:	P-31	P-32	P-33	P-34	P-36	P-37	P-38	P-45	P-46
Length (ft):	215.00	54.00	244.00	264.00	268.00	256.00	49.00	120.00	95.00
Dia (in):	18.00	27.00	27.00	30.00	36.00	36.00	36.00	36.00	36.00
Slope (ft/ft):	0.0016	0.0009	0.0009	0.0008	0.0006	0.0006	0.0006	0.0006	0.0006
Up Invert (ft):	7.27	6.93	6.88	6.66	5.94	5.78	5.63	5.60	5.53
Dn Invert (ft):	6.93	6.88	6.66	6.44	5.78	5.63	5.60	5.53	5.47
Max Q (cfs):	2.80	5.67	5.84	8.60	16.36	22.61	24.41	26.36	26.34
Max Vel (ft/s):	2.02	4.65	2.11	1.91	2.31	3.20	3.48	3.98	5.05
Max Depth (ft):	1.50	2.25	2.25	2.50	3.00	3.00	3.00	3.00	3.00

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

03/18/2026 3:05:00 PM

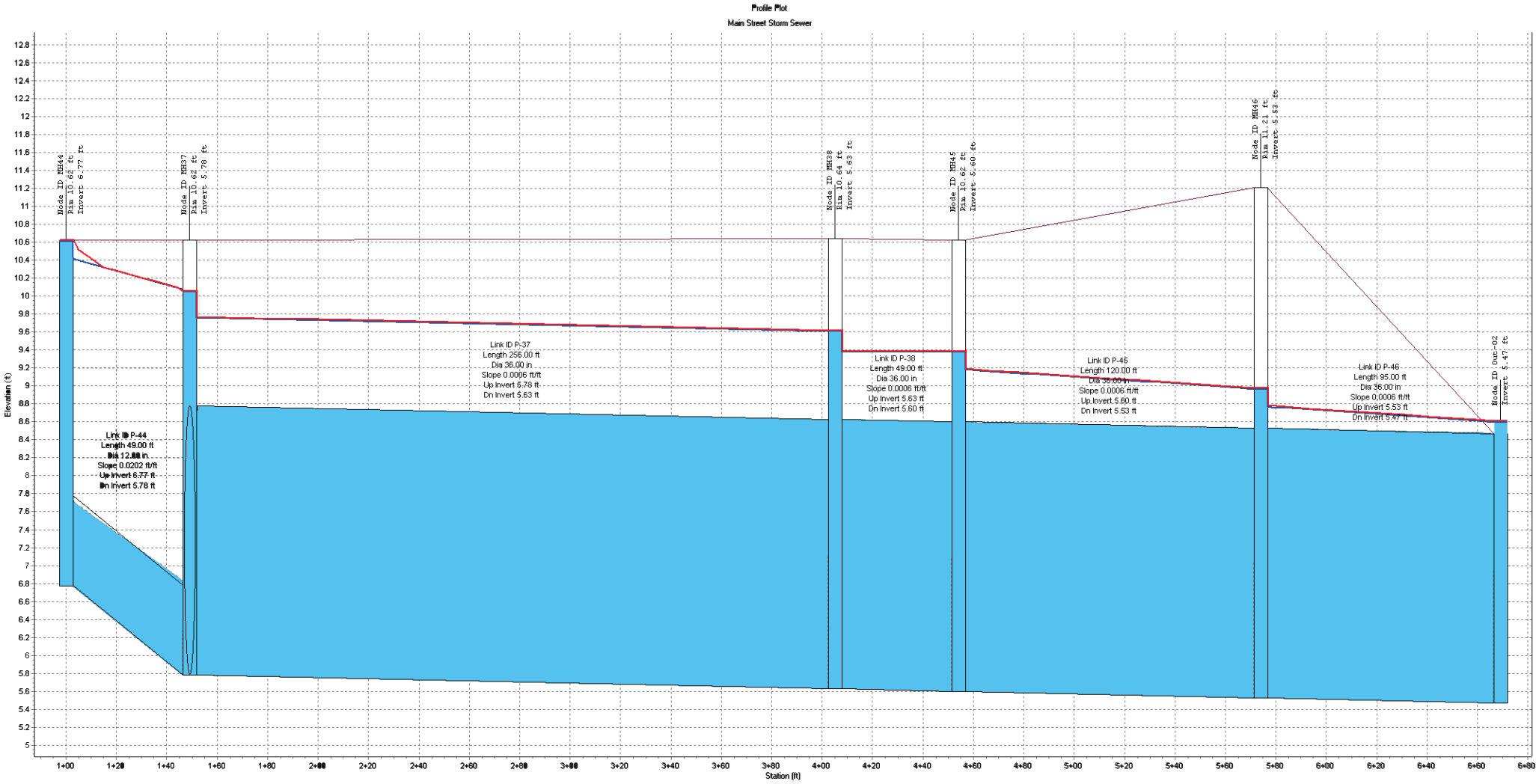


Node ID	MH35	MH36	MH37	MH38	MH45	MH46	Out-02
Rim (ft)	11.03	10.94	10.62	10.64	10.62	11.21	
Invert (ft)	6.26	5.94	5.78	5.63	5.60	5.53	5.47
Min Pipe Cover (ft)	3.02	2.00	1.84	2.01	2.02	2.68	
Max HGL (ft)	10.54	10.32	10.06	9.62	9.39	8.98	8.61

Link ID	P-35	P-36	P-37	P-38	P-45	P-46
Length (ft)	246.00	268.00	256.00	49.00	120.00	95.00
Dia (in)	21.00	36.00	36.00	36.00	36.00	36.00
Slope (ft/ft)	0.0013	0.0006	0.0006	0.0006	0.0006	0.0006
Up Invert (ft)	6.26	5.94	5.78	5.63	5.60	5.53
Dn Invert (ft)	5.94	5.78	5.63	5.60	5.53	5.47
Max Q (cfs)	3.95	16.36	22.61	24.41	26.36	26.34
Max Vel (ft/s)	2.29	2.31	3.20	3.48	3.98	5.05
Max Depth (ft)	1.75	3.00	3.00	3.00	3.00	3.00

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

03/18/2026 3:35:00 PM

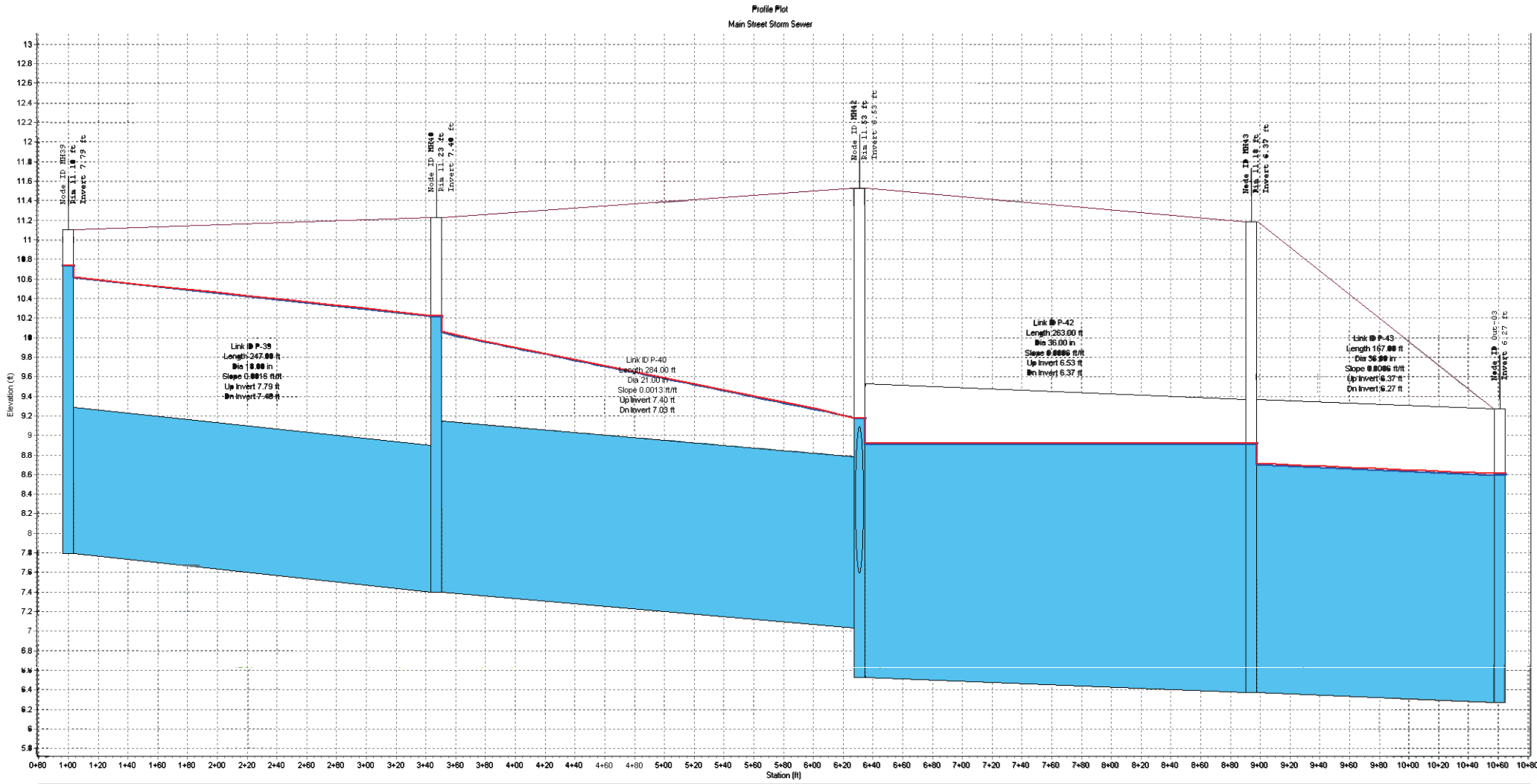


Node ID	MH44	MH37	MH38	MH45	MH46	Out-02
Rim (ft)	10.62	10.62	10.64	10.62	11.21	
Invert (ft)	6.77	5.78	5.63	5.60	5.53	5.47
Min Pipe Cover (ft)	2.85	1.84	2.01	2.02	2.68	
Max HGL (ft)	10.62	10.06	9.62	9.39	8.98	8.61

Link ID	P-44	P-37	P-38	P-45	P-46
Length (ft)	49.00	256.00	49.00	120.00	95.00
Dia (in)	12.00	36.00	36.00	36.00	36.00
Slope (ft/ft)	0.0202	0.0006	0.0006	0.0006	0.0006
Up Invert (ft)	6.77	5.78	5.63	5.60	5.53
Dn Invert (ft)	5.78	5.63	5.60	5.53	5.47
Max Q (cfs)	3.95	22.61	24.41	26.36	26.34
Max Vel (ft/s)	7.78	3.20	3.48	3.98	5.05
Max Depth (ft)	1.00	3.00	3.00	3.00	3.00

Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

03/18/2026 3:45:00 PM

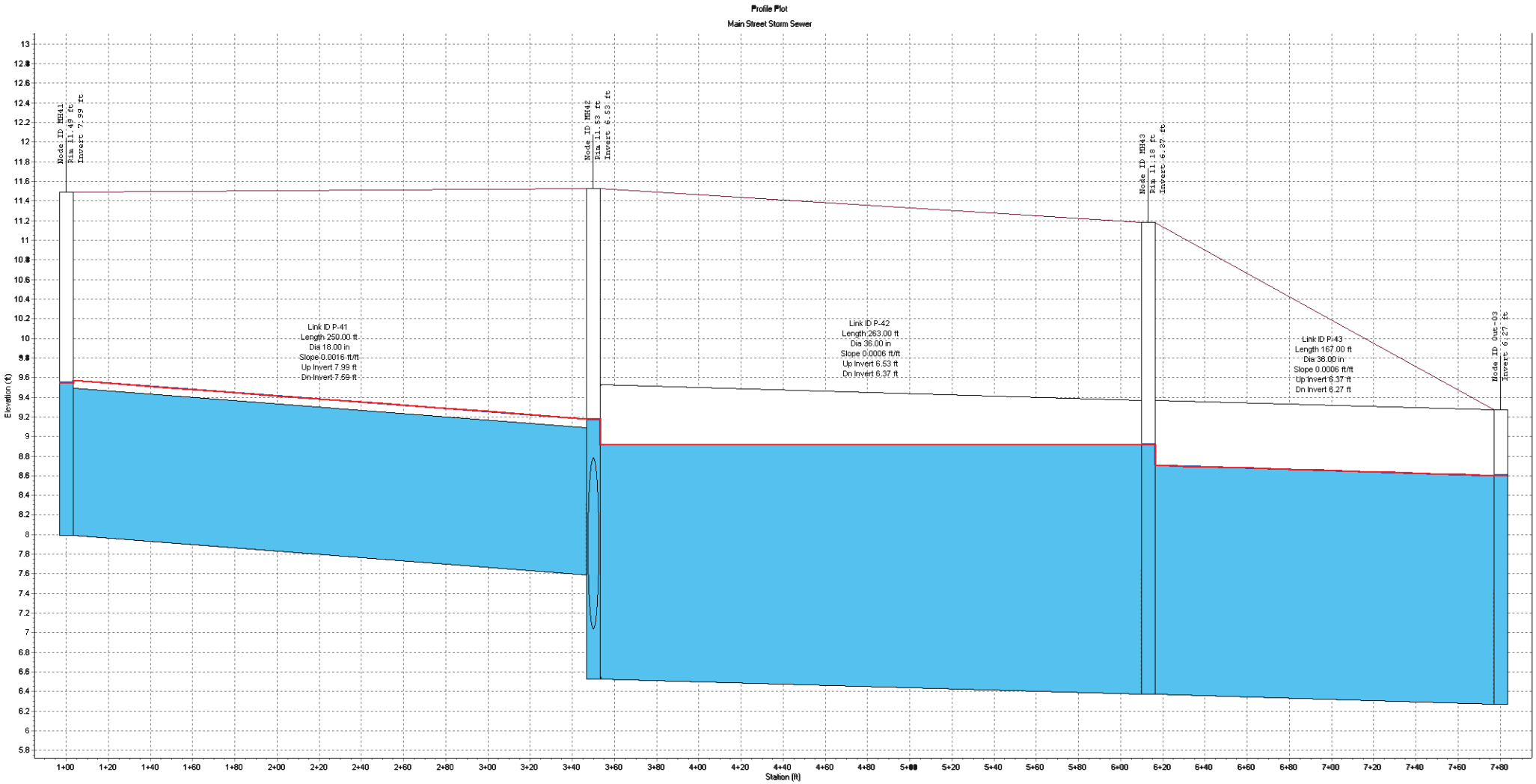


Node ID:	MH39	MH40	MH42	MH43	Out-03
Rim (ft):	11.10	11.23	11.53	11.18	
Invert (ft):	7.79	7.40	6.53	6.37	6.27
Min Pipe Cover (ft):	1.81	2.08	2.00	1.81	
Max HGL (ft):	11.10	10.47	9.18	8.92	8.61

Link ID:	P-39	P-40	P-42	P-43
Length (ft):	247.00	284.00	263.00	167.00
Dia (in):	18.00	21.00	36.00	36.00
Slope (ft/ft):	0.0016	0.0013	0.0006	0.0006
Up Invert (ft):	7.79	7.40	6.53	6.37
Dn Invert (ft):	7.40	7.03	6.37	6.27
Max Q (cfs):	3.86	7.77	15.33	17.81
Max Vel (ft/s):	2.51	3.45	2.85	4.23
Max Depth (ft):	1.50	1.75	2.00	2.44

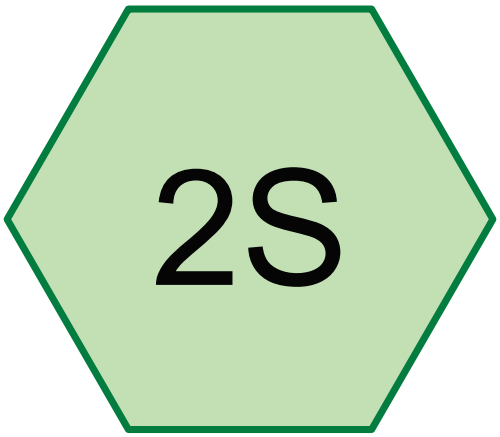
Attachment-E: Storm Sewer Network Analysis Results using Sacramento Method.

03/18/2026 3:25:00 PM

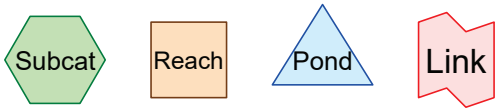


Node ID:	MH41	MH42	MH43	Out-03
Rim (ft):	11.49	11.53	11.18	
Invert (ft):	7.99	6.53	6.37	6.27
Min Pipe Cover(ft):	2.00	2.00	1.81	
Max HGL (ft):	9.55	9.18	8.92	8.61

Link ID:	P-41	P-42	P-43
Length (ft):	250.00	263.00	167.00
Dia (in):	18.00	36.00	36.00
Slope (ft/ft):	0.0016	0.0006	0.0006
Up Invert (ft):	7.99	6.53	6.37
Dn Invert (ft):	7.59	6.37	6.27
Max Q (cfs):	3.23	15.33	17.81
Max Vel (ft/s):	2.63	2.85	4.23
Max Depth (ft):	1.50	2.60	2.44



PRE DEVELOPMENT



Routing Diagram for DETENTION POND SIZING - PRE DEVELOPMENT
Prepared by Harsev Singh, Printed 03/21/2026
HydroCAD® 10.20-8a s/n 12915 © 2025 HydroCAD Software Solutions LLC

Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: PRE DEVELOPMENT Runoff Area=56.802 ac 0.00% Impervious Runoff Depth=4.07"
Flow Length=1,800' Slope=0.0010 '/' Tc=125.5 min CN=89 Runoff=46.30 cfs 19.262 af

Total Runoff Area = 56.802 ac Runoff Volume = 19.262 af Average Runoff Depth = 4.07"
100.00% Pervious = 56.802 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 2S: PRE DEVELOPMENT

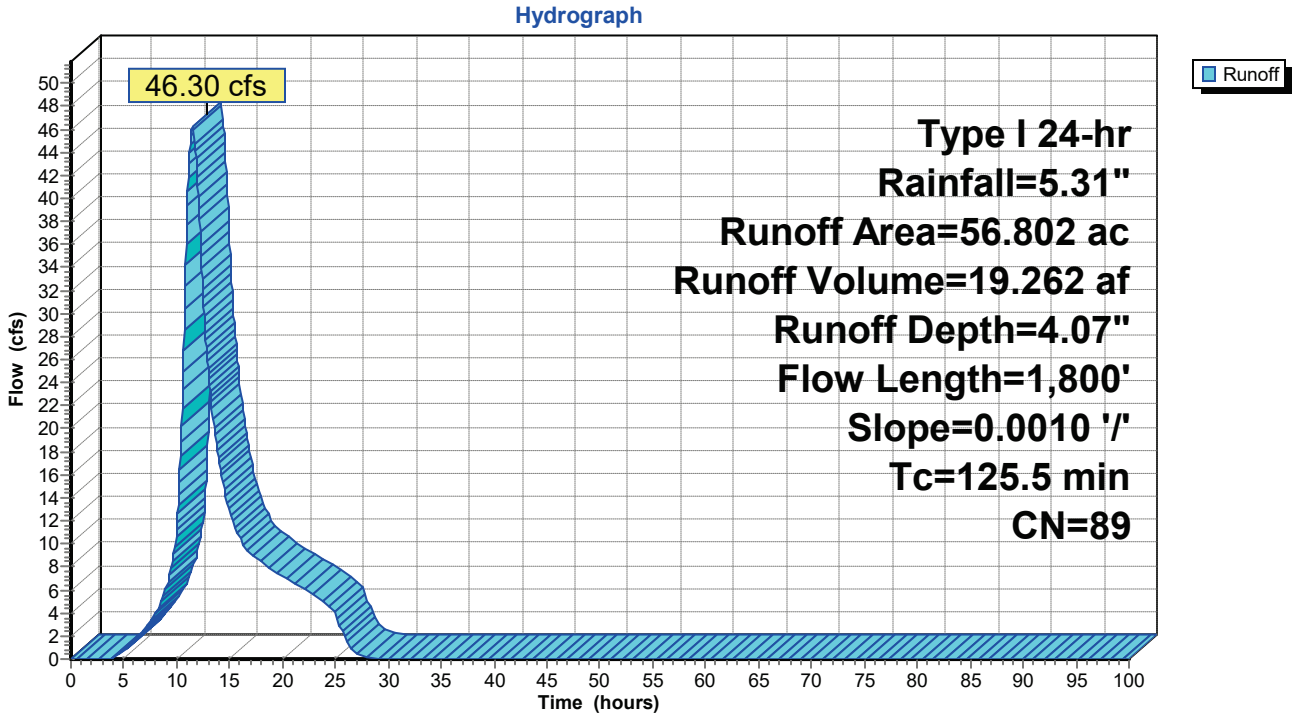
Runoff = 46.30 cfs @ 11.53 hrs, Volume= 19.262 af, Depth= 4.07"
Routed to nonexistent node 1P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type I 24-hr Rainfall=5.31"

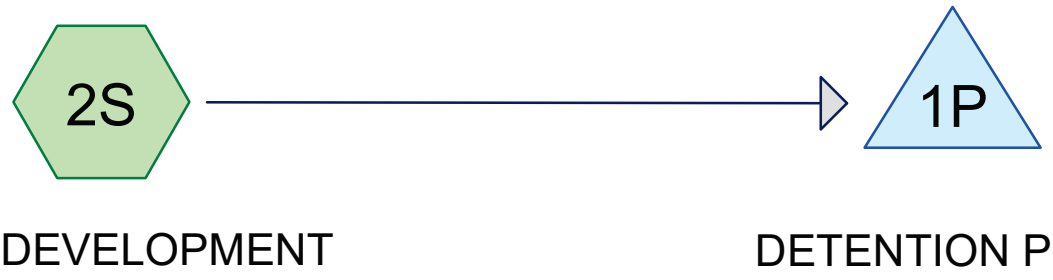
Area (ac)	CN	Description
56.802	89	<50% Grass cover, Poor, HSG D
56.802		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
79.1	1,500	0.0010	0.32		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
46.4	300	0.0010	0.11		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.10"
125.5	1,800	Total			

Subcatchment 2S: PRE DEVELOPMENT



Attachment-F: SCS TR-20 Method Analysis and Detention Pond Sizing Calculations.



Subcat Reach Pond Link

Routing Diagram for DETENTION POND SIZING - POST DEVELOPMENT
Prepared by Harsev Singh, Printed 04/25/2026
HydroCAD® 10.20-8a s/n 12915 © 2025 HydroCAD Software Solutions LLC

Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: POST DEVELOPMENT Runoff Area=56.802 ac 0.00% Impervious Runoff Depth=4.18"
Tc=18.1 min CN=90 Runoff=142.70 cfs 19.766 af

Pond 1P: DETENTION POND Peak Elev=8.61' Storage=521,911 cf Inflow=142.70 cfs 19.766 af
Outflow=9.42 cfs 17.357 af

Total Runoff Area = 56.802 ac Runoff Volume = 19.766 af Average Runoff Depth = 4.18"
100.00% Pervious = 56.802 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 2S: POST DEVELOPMENT

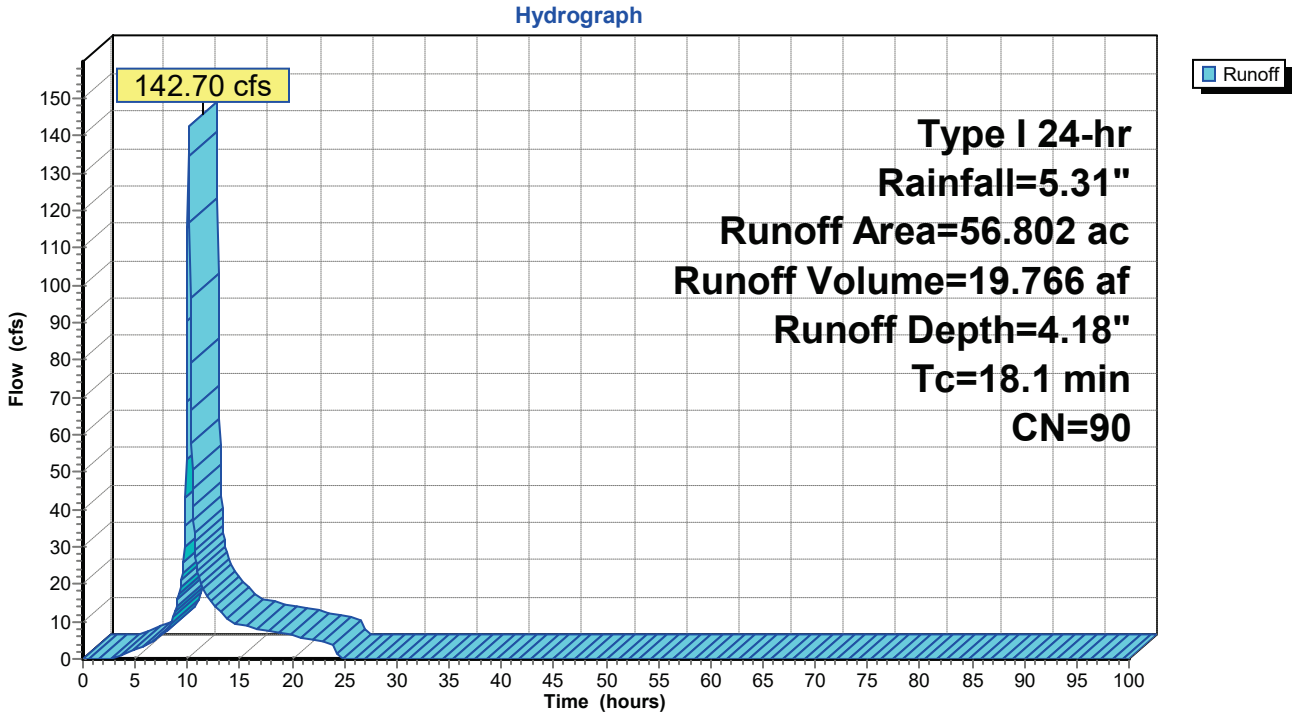
Runoff = 142.70 cfs @ 10.10 hrs, Volume= 19.766 af, Depth= 4.18"
Routed to Pond 1P : DETENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type I 24-hr Rainfall=5.31"

	Area (ac)	CN	Description
*	56.802	90	<50% Grass cover, Poor, HSG D
	56.802		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1					**Direct Entry,**

Subcatchment 2S: POST DEVELOPMENT



Summary for Pond 1P: DETENTION POND

Inflow Area = 56.802 ac, 0.00% Impervious, Inflow Depth = 4.18"
Inflow = 142.70 cfs @ 10.10 hrs, Volume= 19.766 af
Outflow = 9.42 cfs @ 14.53 hrs, Volume= 17.357 af, Atten= 93%, Lag= 265.6 min
Primary = 9.42 cfs @ 14.53 hrs, Volume= 17.357 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 8.61' @ 14.53 hrs Surf.Area= 156,946 sf Storage= 521,911 cf

Plug-Flow detention time= 1,291.9 min calculated for 17.348 af (88% of inflow)
Center-of-Mass det. time= 1,221.2 min (1,977.6 - 756.4)

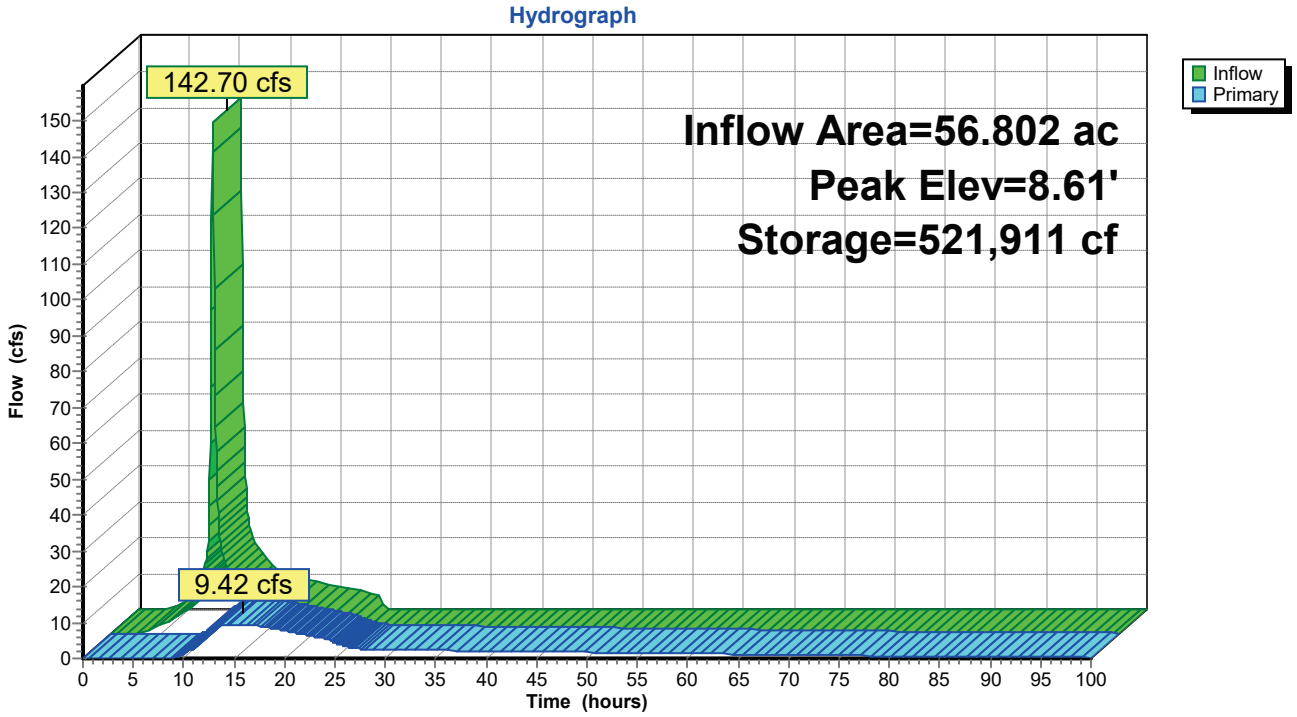
Volume	Invert	Avail.Storage	Storage Description
#1	5.00'	918,660 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.00	132,897	0	0
6.00	139,386	136,142	136,142
7.00	145,994	142,690	278,832
8.00	152,747	149,371	428,202
9.00	159,685	156,216	584,418
10.00	166,897	163,291	747,709
11.00	175,004	170,951	918,660

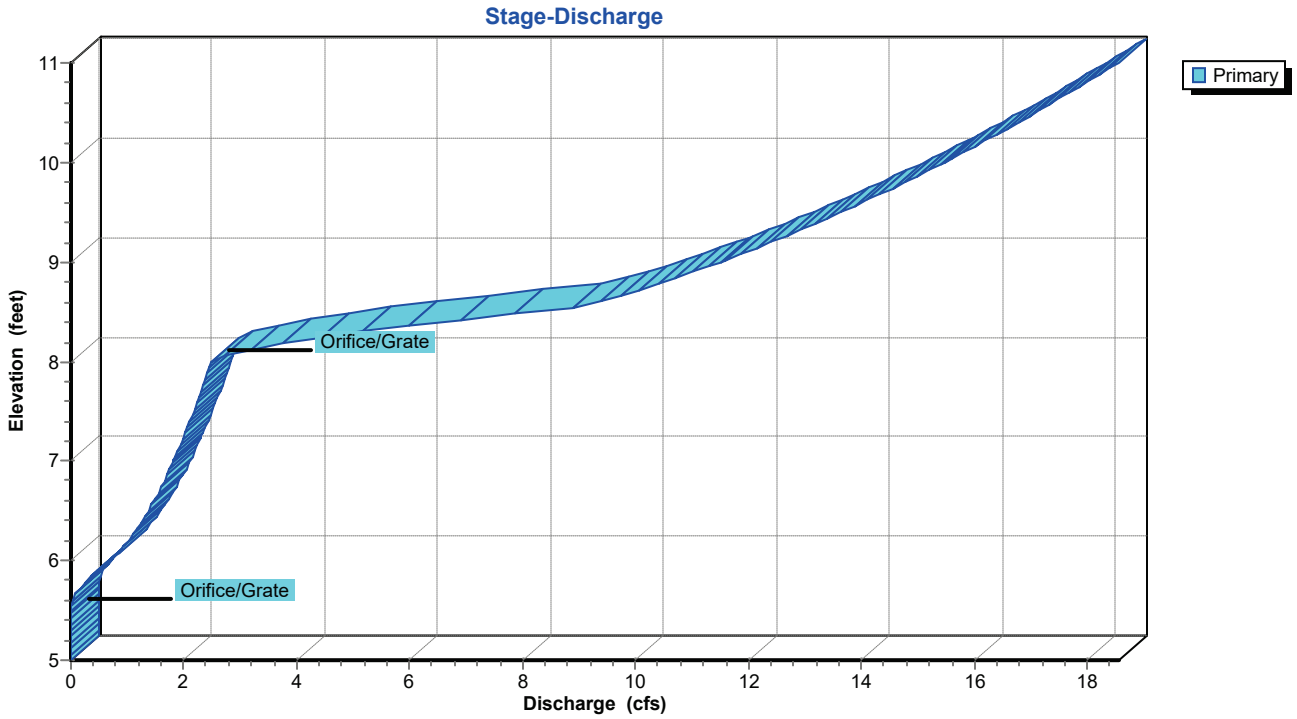
Device	Routing	Invert	Outlet Devices
#1	Primary	8.00'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	5.50'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.42 cfs @ 14.53 hrs HW=8.61' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 6.62 cfs @ 3.75 fps)
└─**2=Orifice/Grate** (Orifice Controls 2.80 cfs @ 8.02 fps)

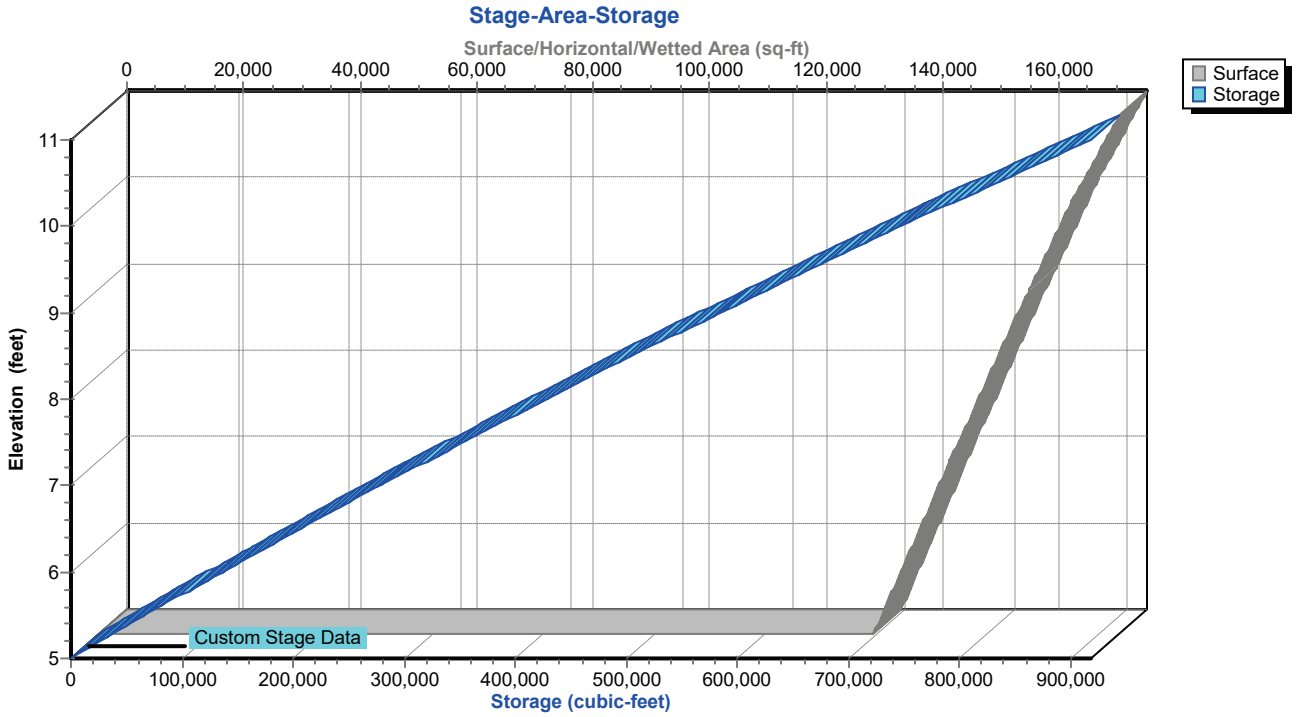
Pond 1P: DETENTION POND



Pond 1P: DETENTION POND



Pond 1P: DETENTION POND

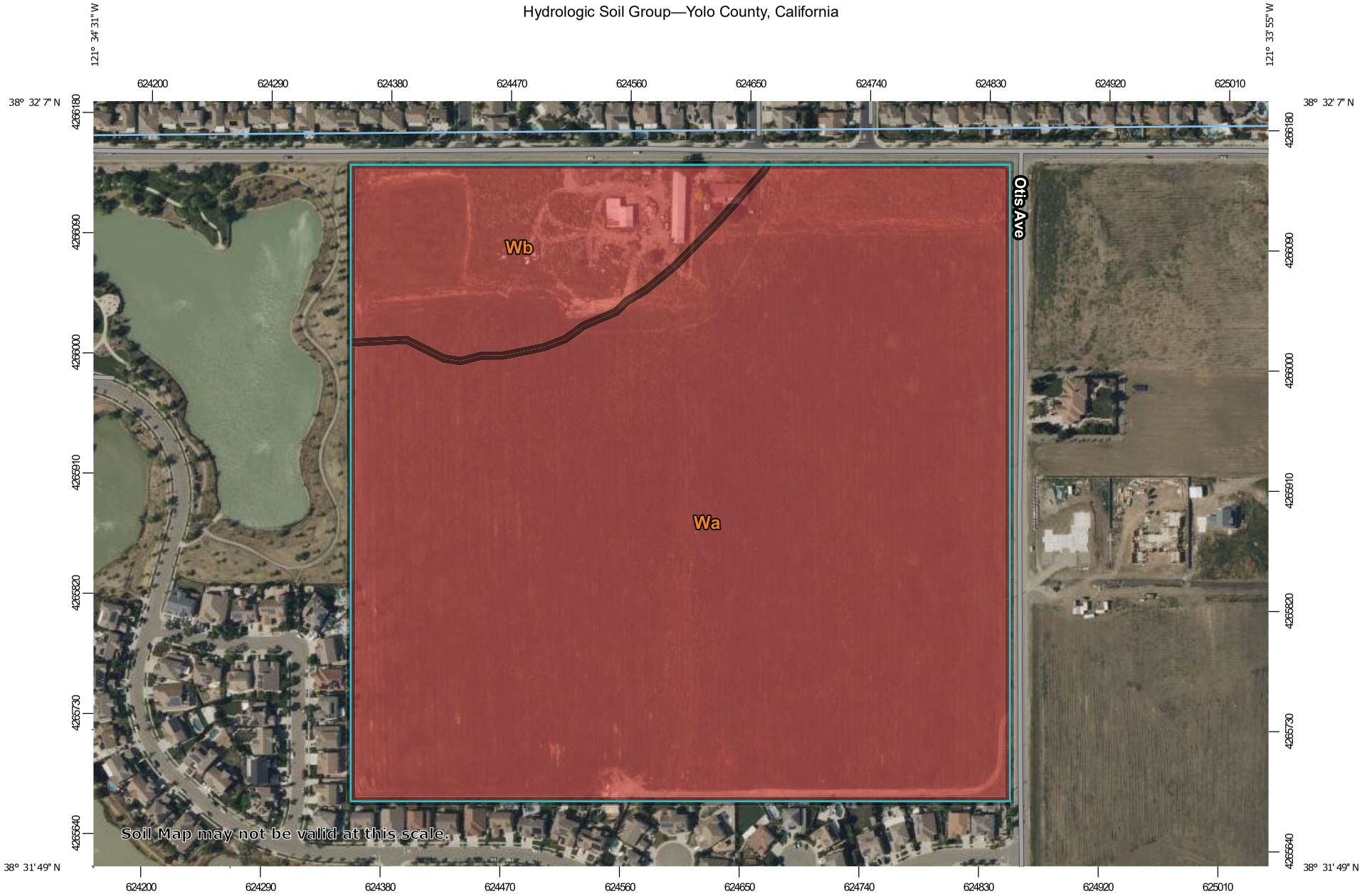


DETENTION POND SIZING - POST DEVELOPMENT
Type I 24-hr Rainfall=5.31"
Prepared by Harsev Singh
Printed 04/25/2026
HydroCAD® 10.20-8a s/n 12915 © 2025 HydroCAD Software Solutions LLC

Hydrograph for Pond 1P: DETENTION POND

Time (hours)	Elevation (feet)	Time (hours)	Elevation (feet)	Time (hours)	Elevation (feet)	Time (hours)	Elevation (feet)
0.00	5.00	26.00	8.15	52.00	6.81	78.00	6.02
0.50	5.00	26.50	8.11	52.50	6.79	78.50	6.01
1.00	5.00	27.00	8.08	53.00	6.77	79.00	6.00
1.50	5.00	27.50	8.04	53.50	6.75	79.50	5.99
2.00	5.00	28.00	8.01	54.00	6.73	80.00	5.99
2.50	5.00	28.50	7.98	54.50	6.71	80.50	5.98
3.00	5.00	29.00	7.95	55.00	6.69	81.00	5.97
3.50	5.01	29.50	7.93	55.50	6.67	81.50	5.96
4.00	5.03	30.00	7.90	56.00	6.65	82.00	5.95
4.50	5.05	30.50	7.87	56.50	6.63	82.50	5.95
5.00	5.08	31.00	7.84	57.00	6.61	83.00	5.94
5.50	5.12	31.50	7.81	57.50	6.59	83.50	5.93
6.00	5.17	32.00	7.78	58.00	6.58	84.00	5.93
6.50	5.22	32.50	7.76	58.50	6.56	84.50	5.92
7.00	5.28	33.00	7.73	59.00	6.54	85.00	5.91
7.50	5.37	33.50	7.70	59.50	6.52	85.50	5.91
8.00	5.46	34.00	7.67	60.00	6.50	86.00	5.90
8.50	5.58	34.50	7.65	60.50	6.49	86.50	5.89
9.00	5.74	35.00	7.62	61.00	6.47	87.00	5.89
9.50	5.98	35.50	7.59	61.50	6.45	87.50	5.88
10.00	6.56	36.00	7.57	62.00	6.44	88.00	5.88
10.50	7.71	36.50	7.54	62.50	6.42	88.50	5.87
11.00	8.05	37.00	7.51	63.00	6.40	89.00	5.87
11.50	8.25	37.50	7.49	63.50	6.39	89.50	5.86
12.00	8.38	38.00	7.46	64.00	6.37	90.00	5.86
12.50	8.48	38.50	7.44	64.50	6.36	90.50	5.85
13.00	8.54	39.00	7.41	65.00	6.34	91.00	5.85
13.50	8.58	39.50	7.38	65.50	6.33	91.50	5.84
14.00	8.60	40.00	7.36	66.00	6.31	92.00	5.84
14.50	**8.61**	40.50	7.33	66.50	6.30	92.50	5.83
15.00	**8.60**	41.00	7.31	67.00	6.28	93.00	5.83
15.50	8.60	41.50	7.28	67.50	6.27	93.50	5.82
16.00	8.59	42.00	7.26	68.00	6.25	94.00	5.82
16.50	8.58	42.50	7.24	68.50	6.24	94.50	5.81
17.00	8.57	43.00	7.21	69.00	6.23	95.00	5.81
17.50	8.56	43.50	7.19	69.50	6.21	95.50	5.81
18.00	8.54	44.00	7.16	70.00	6.20	96.00	5.80
18.50	8.52	44.50	7.14	70.50	6.19	96.50	5.80
19.00	8.51	45.00	7.12	71.00	6.17	97.00	5.80
19.50	8.49	45.50	7.09	71.50	6.16	97.50	5.79
20.00	8.47	46.00	7.07	72.00	6.15	98.00	5.79
20.50	8.46	46.50	7.05	72.50	6.14	98.50	5.79
21.00	8.44	47.00	7.02	73.00	6.13	99.00	5.78
21.50	8.42	47.50	7.00	73.50	6.11	99.50	5.78
22.00	8.41	48.00	6.98	74.00	6.10	100.00	5.78
22.50	8.39	48.50	6.96	74.50	6.09		
23.00	8.37	49.00	6.94	75.00	6.08		
23.50	8.35	49.50	6.91	75.50	6.07		
24.00	8.33	50.00	6.89	76.00	6.06		
24.50	8.29	50.50	6.87	76.50	6.05		
25.00	8.24	51.00	6.85	77.00	6.04		
25.50	8.19	51.50	6.83	77.50	6.03		

Attachment-G: Hydrological soil group from NRCS Soil Web.



Attachment-G: Hydrological soil group from NRCS Soil Web.

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Yolo County, California
Survey Area Data: Version 17, Sep 6, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Attachment-G: Hydrological soil group from NRCS Soil Web.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Wa	Willows silty clay loam, 0 percent slopes, MLRA 17	D	50.3	85.7%
Wb	Willows clay, 0 percent slopes, MLRA 17	D	8.4	14.3%
Totals for Area of Interest			**58.6**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Attachment-G: Hydrological soil group from NRCS Soil Web.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Attachment-H: Precipitation depth charts from NOAA NWS Web.

NOAA Atlas 14, Volume 6, Version 2
Location name: West Sacramento, California, USA*
Latitude: 38.5332°, Longitude: -121.5701°
Elevation: 17.84 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

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)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.110** (0.099-0.123)	**0.137** (0.123-0.153)	**0.175** (0.157-0.197)	**0.208** (0.185-0.237)	**0.257** (0.217-0.307)	**0.298** (0.244-0.367)	**0.343** (0.271-0.437)	**0.392** (0.299-0.519)	**0.465** (0.334-0.652)	**0.526** (0.361-0.774)
10-min	**0.158** (0.142-0.176)	**0.196** (0.177-0.220)	**0.250** (0.225-0.282)	**0.298** (0.265-0.340)	**0.368** (0.311-0.440)	**0.427** (0.350-0.526)	**0.491** (0.389-0.626)	**0.562** (0.428-0.745)	**0.666** (0.479-0.935)	**0.754** (0.518-1.11)
15-min	**0.191** (0.172-0.213)	**0.237** (0.214-0.266)	**0.303** (0.272-0.341)	**0.361** (0.320-0.411)	**0.446** (0.377-0.533)	**0.516** (0.424-0.636)	**0.594** (0.471-0.757)	**0.679** (0.518-0.900)	**0.805** (0.579-1.13)	**0.912** (0.626-1.34)
30-min	**0.266** (0.240-0.297)	**0.330** (0.298-0.370)	**0.422** (0.379-0.475)	**0.503** (0.446-0.572)	**0.621** (0.525-0.742)	**0.720** (0.590-0.886)	**0.828** (0.656-1.06)	**0.947** (0.721-1.25)	**1.12** (0.807-1.58)	**1.27** (0.873-1.87)
60-min	**0.369** (0.333-0.413)	**0.459** (0.413-0.514)	**0.586** (0.526-0.660)	**0.698** (0.619-0.795)	**0.862** (0.729-1.03)	**1.00** (0.820-1.23)	**1.15** (0.911-1.47)	**1.32** (1.00-1.74)	**1.56** (1.12-2.19)	**1.77** (1.21-2.60)
2-hr	**0.529** (0.478-0.592)	**0.649** (0.585-0.727)	**0.815** (0.731-0.917)	**0.957** (0.849-1.09)	**1.16** (0.982-1.39)	**1.33** (1.09-1.64)	**1.51** (1.20-1.92)	**1.71** (1.30-2.26)	**1.99** (1.43-2.79)	**2.23** (1.53-3.28)
3-hr	**0.659** (0.595-0.737)	**0.808** (0.728-0.905)	**1.01** (0.907-1.14)	**1.18** (1.05-1.35)	**1.43** (1.21-1.71)	**1.63** (1.34-2.00)	**1.84** (1.46-2.34)	**2.07** (1.57-2.74)	**2.39** (1.72-3.36)	**2.66** (1.83-3.92)
6-hr	**0.909** (0.821-1.02)	**1.13** (1.01-1.26)	**1.42** (1.27-1.59)	**1.66** (1.47-1.89)	**1.99** (1.68-2.38)	**2.26** (1.85-2.78)	**2.53** (2.01-3.23)	**2.82** (2.15-3.74)	**3.23** (2.32-4.53)	**3.55** (2.44-5.23)
12-hr	**1.19** (1.07-1.33)	**1.55** (1.39-1.73)	**2.02** (1.81-2.27)	**2.40** (2.13-2.73)	**2.91** (2.46-3.48)	**3.30** (2.71-4.07)	**3.70** (2.93-4.72)	**4.11** (3.13-5.45)	**4.67** (3.36-6.55)	**5.10** (3.50-7.50)
24-hr	**1.54** (1.40-1.72)	**2.10** (1.92-2.35)	**2.82** (2.57-3.17)	**3.40** (3.07-3.84)	**4.16** (3.66-4.84)	**4.74** (4.09-5.60)	**5.31** (4.49-6.41)	**5.89** (4.87-7.29)	**6.67** (5.31-8.54)	**7.26** (5.61-9.57)
2-day	**2.01** (1.83-2.24)	**2.69** (2.45-3.01)	**3.56** (3.24-3.99)	**4.25** (3.84-4.80)	**5.16** (4.53-5.99)	**5.83** (5.03-6.90)	**6.51** (5.50-7.85)	**7.18** (5.93-8.88)	**8.07** (6.43-10.3)	**8.74** (6.76-11.5)
3-day	**2.33** (2.12-2.60)	**3.07** (2.80-3.44)	**4.02** (3.66-4.51)	**4.77** (4.31-5.39)	**5.75** (5.05-6.68)	**6.48** (5.60-7.67)	**7.21** (6.09-8.70)	**7.93** (6.55-9.81)	**8.89** (7.08-11.4)	**9.60** (7.43-12.7)
4-day	**2.60** (2.38-2.91)	**3.42** (3.12-3.83)	**4.45** (4.05-4.99)	**5.26** (4.75-5.94)	**6.32** (5.55-7.34)	**7.11** (6.14-8.41)	**7.89** (6.67-9.52)	**8.66** (7.15-10.7)	**9.67** (7.71-12.4)	**10.4** (8.07-13.8)
7-day	**3.19** (2.91-3.56)	**4.20** (3.83-4.70)	**5.46** (4.97-6.13)	**6.44** (5.82-7.28)	**7.70** (6.77-8.95)	**8.62** (7.44-10.2)	**9.52** (8.04-11.5)	**10.4** (8.58-12.9)	**11.5** (9.18-14.8)	**12.4** (9.56-16.3)
10-day	**3.58** (3.27-4.01)	**4.74** (4.32-5.31)	**6.17** (5.61-6.92)	**7.27** (6.56-8.21)	**8.67** (7.61-10.1)	**9.68** (8.35-11.4)	**10.7** (9.01-12.9)	**11.6** (9.58-14.4)	**12.8** (10.2-16.4)	**13.7** (10.6-18.1)
20-day	**4.63** (4.22-5.18)	**6.11** (5.57-6.84)	**7.91** (7.19-8.87)	**9.28** (8.39-10.5)	**11.0** (9.68-12.8)	**12.3** (10.6-14.5)	**13.5** (11.4-16.2)	**14.6** (12.1-18.1)	**16.1** (12.8-20.6)	**17.1** (13.2-22.6)
30-day	**5.61** (5.12-6.28)	**7.35** (6.70-8.22)	**9.45** (8.60-10.6)	**11.1** (9.99-12.5)	**13.1** (11.5-15.2)	**14.5** (12.5-17.2)	**15.9** (13.4-19.2)	**17.2** (14.2-21.3)	**18.9** (15.1-24.2)	**20.1** (15.6-26.6)
45-day	**6.87** (6.27-7.68)	**8.86** (8.07-9.91)	**11.3** (10.3-12.7)	**13.1** (11.9-14.8)	**15.4** (13.6-17.9)	**17.1** (14.8-20.2)	**18.7** (15.8-22.6)	**20.2** (16.7-25.0)	**22.2** (17.7-28.4)	**23.6** (18.2-31.1)
60-day	**8.27** (7.55-9.25)	**10.5** (9.58-11.8)	**13.2** (12.0-14.9)	**15.3** (13.8-17.3)	**18.0** (15.8-20.9)	**19.8** (17.1-23.5)	**21.6** (18.3-26.1)	**23.4** (19.3-28.9)	**25.6** (20.4-32.8)	**27.2** (21.0-35.8)

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

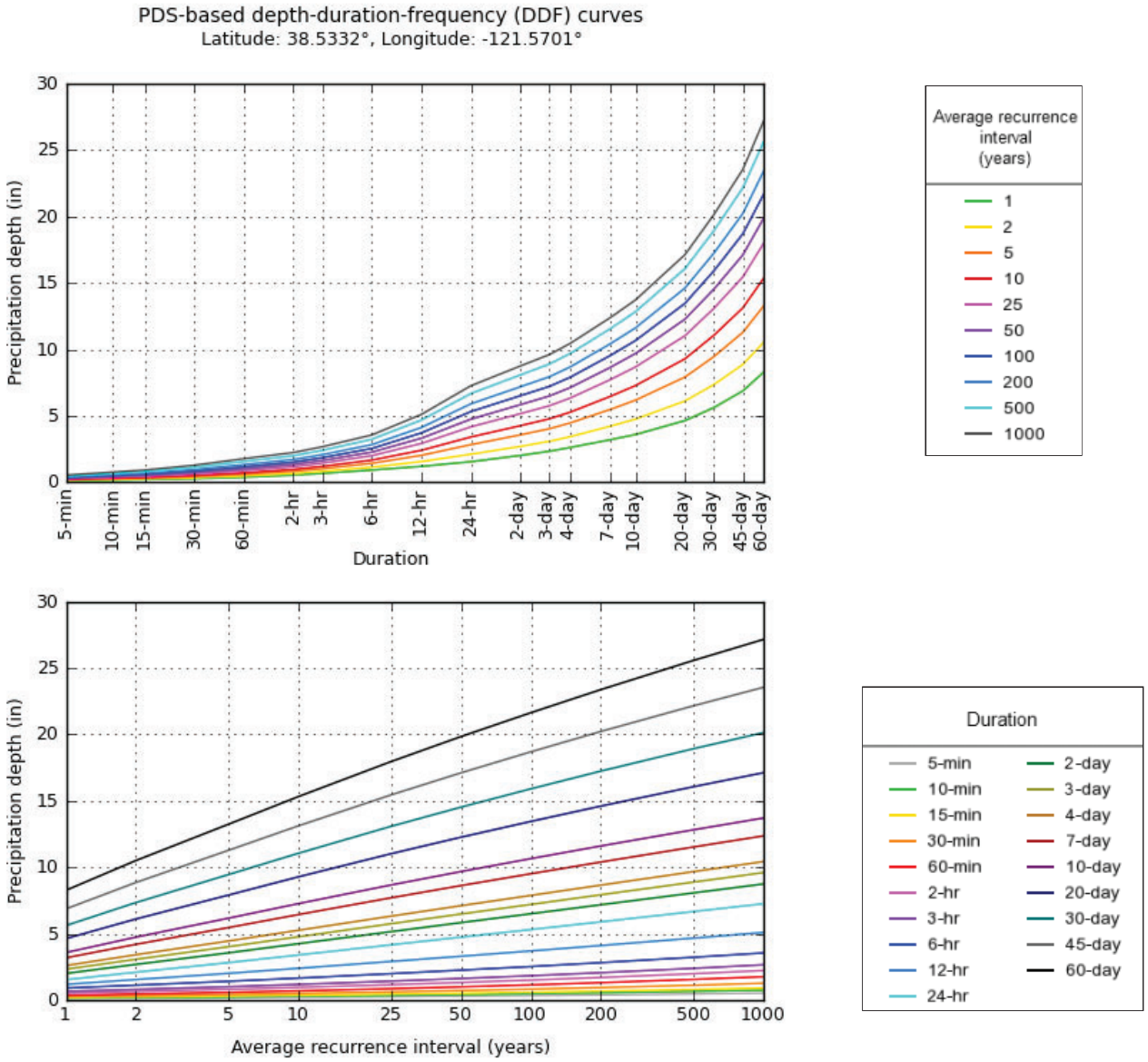
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper 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.

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PF graphical

Attachment-H: Precipitation depth charts from NOAA NWS Web.



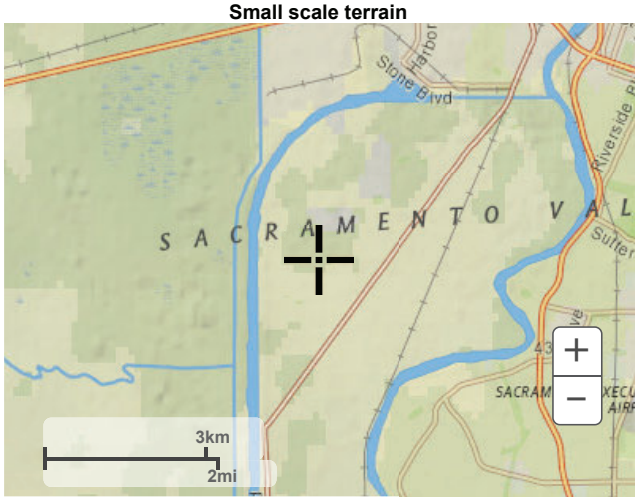
NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Thu Aug 18 07:53:28 2022

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Maps & aerials

Small scale terrain

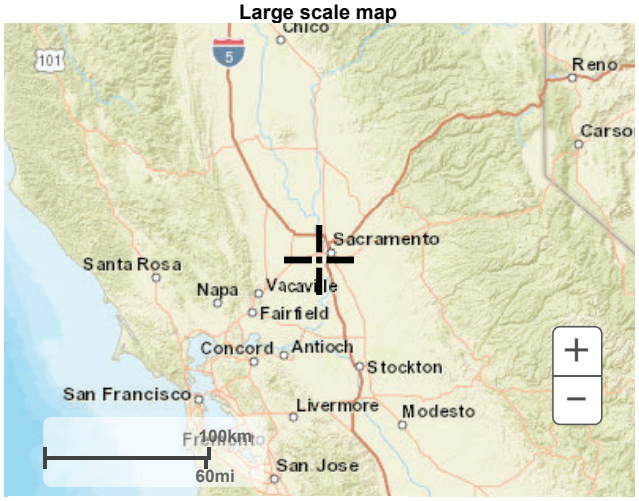


Large scale terrain

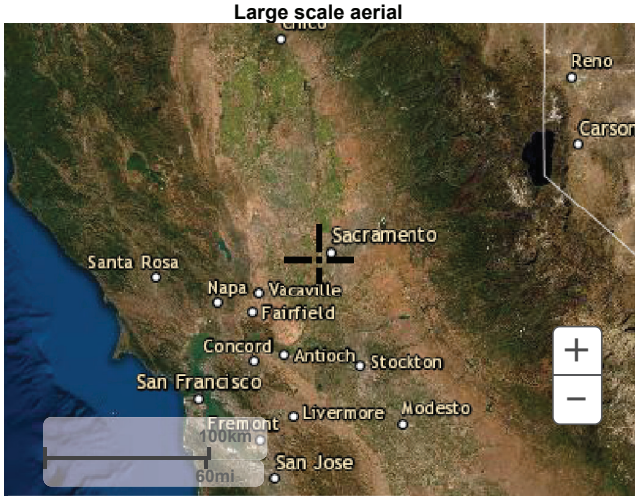
Attachment-H: Precipitation depth charts from NOAA NWS Web.



Large scale map



Large scale aerial



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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

Disclaimer

Attachment-I: Curve Number Table as per Urban Hydrology for Small Watersheds TR-55 manual.

Table 2-2a Runoff curve numbers for urban areas [1/]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2/]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3/]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4/]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5/]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1] Average runoff condition, and $I_a = 0.2S$.

[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

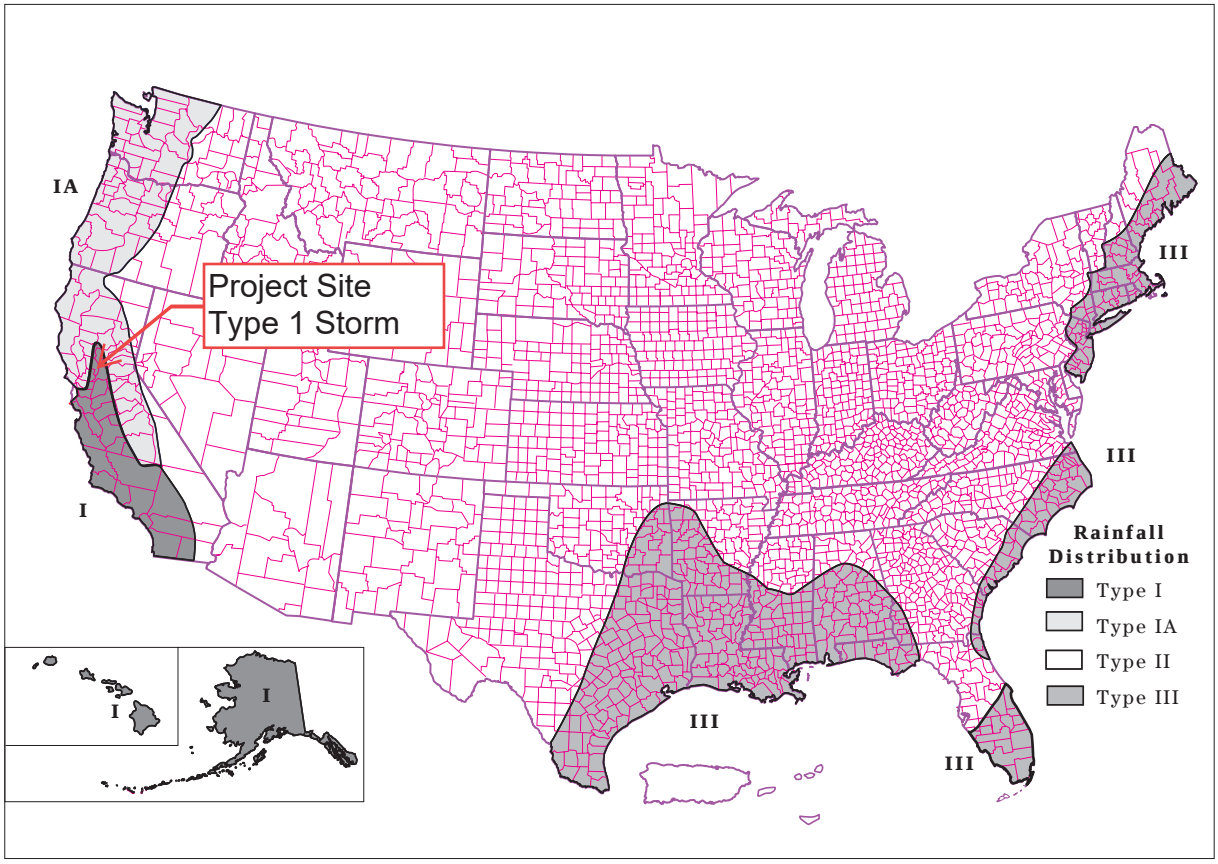
[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Attachment-J: Rainfall Distribution Map as per Urban Hydrology for Small Watersheds TR-55 manual.

Figure B-2 Approximate geographic boundaries for NRCS (SCS) rainfall distributions



Attachment-K: Gutter Spread Analysis.

Drainage Inlet Peak Flow Calculations

DMA ID	No. of Drainage Inlet(s) in DMA	Sacramento Method Peak Flow		Nolte Method Peak Flow
		10-Year Flow at each DI (cfs)	100-Year Flow at each DI (cfs)	Flow at each DI (cfs)
DMA-1	2	1.557	**2.320**	**0.160**
DMA-2	2	1.248	1.866	0.125
DMA-3	2	1.264	1.890	0.125
DMA-4	2	0.760	1.146	0.065
DMA-5	2	0.908	1.365	0.085
DMA-6	2	0.971	1.459	0.090
DMA-7	3	0.955	1.425	0.097
DMA-8	3	0.958	1.429	0.097
DMA-9	2	1.430	2.134	0.145
DMA-10	2	1.105	1.657	0.105
DMA-11	2	1.099	1.647	0.105
DMA-12	2	0.856	1.289	0.075
DMA-13	3	1.124	1.673	0.120
DMA-14	2	1.172	1.754	0.115
DMA-15	2	1.178	1.764	0.115
DMA-16	2	1.028	1.542	0.095
DMA-17	2	0.921	1.385	0.085
DMA-18	2	1.429	2.132	0.145
DMA-19	2	0.792	1.194	0.070
DMA-20	2	0.898	1.351	0.080
DMA-21	2	0.908	1.366	0.085
DMA-22	2	0.909	1.367	0.085
DMA-23	2	1.296	1.938	0.130
DMA-24	2	1.233	1.844	0.120
DMA-25	3	0.845	1.264	0.083
DMA-26	3	0.808	1.209	0.080
DMA-27	3	0.573	0.862	0.053
DMA-28	2	0.912	1.372	0.085
DMA-29	2	0.909	1.367	0.085
DMA-30	4	0.447	0.672	0.040
DMA-31	2	1.242	1.858	0.120
DMA-32	3	0.868	1.297	0.087
DMA-33	1	1.519	2.291	0.130
DMA-34	2	1.276	1.907	0.125
DMA-35	1	1.350	2.040	0.120
DMA-36	2	0.804	1.211	0.070
DMA-37	2	1.284	1.920	0.130
DMA-38	2	1.281	1.914	0.125
DMA-39	2	1.077	1.615	0.105
DMA-40	4	0.742	1.107	0.075
DMA-41	3	0.547	0.824	0.050
DMA-42	--	--	--	--

Attachment-K: Gutter Spread Analysis.

Hydraulic Analysis Report

Project Data

Project Title: LB-WS-01

Designer: Harsev Singh

Project Date: Monday, November 4, 2024

Project Units: U.S. Customary Units

Notes:

Curb and Gutter Analysis: Curb and Gutter Analysis 100 yr

Notes:

Gutter Input Parameters

Longitudinal Slope of Road: 0.0000 ft/ft

Cross-Slope of Pavement: 0.0180 ft/ft

Depressed Gutter Geometry

Cross-Slope of Gutter: 0.1458 ft/ft

Manning's n: 0.0150

Gutter Width: 2.0000 ft

Gutter Result Parameters

Design Flow: 2.3800 cfs

Gutter Result Parameters

Width of Spread: 9.2528 ft

Gutter Depression: 3.0680 in

Area of Flow: 1.0262 ft^2

Eo (Gutter Flow to Total Flow): 0.7305

Gutter Depth at Curb: 5.0666 in

Attachment-K: Gutter Spread Analysis.

Inlet Input Parameters

Inlet Location: Inlet in Sag

Percent Clogging: 0.0000 %

Inlet Type: Curb Opening

Length of Inlet: 4.0000 ft

Curb opening height: 4.0000 in

Local Depression: 2.0000 in

Inlet Result Parameters

Perimeter: 7.6000 ft

Effective Perimeter: 7.6000 ft

Area: 2.0000 ft^2

Effective Area: 2.0000 ft^2

Depth at curb face (upstream of local depression): 0.2647 ft

Computed Width of Spread at Sag: 1.8148 ft

Flow type: Weir Flow

Efficiency: 1.0000

Curb and Gutter Analysis: Curb and Gutter Analysis Nolte

Notes:

Gutter Input Parameters

Longitudinal Slope of Road: 0.0000 ft/ft

Cross-Slope of Pavement: 0.0180 ft/ft

Depressed Gutter Geometry

Cross-Slope of Gutter: 0.1458 ft/ft

Manning's n: 0.0150

Gutter Width: 2.0000 ft

Gutter Result Parameters

Design Flow: 0.1600 cfs

Attachment-K: Gutter Spread Analysis.

Gutter Result Parameters

Width of Spread: 1.1642 ft

Gutter Depression: 3.0680 in

Area of Flow: 0.2679 ft^2

Eo (Gutter Flow to Total Flow): 1.0000

Gutter Depth at Curb: 2.0374 in

Inlet Input Parameters

Inlet Location: Inlet in Sag

Percent Clogging: 0.0000 %

Inlet Type: Curb Opening

Length of Inlet: 4.0000 ft

Curb opening height: 4.0000 in

Local Depression: 2.0000 in

Inlet Result Parameters

Perimeter: 7.6000 ft

Effective Perimeter: 7.6000 ft

Area: 2.0000 ft^2

Effective Area: 2.0000 ft^2

Depth at curb face (upstream of local depression): 0.0438 ft

Computed Width of Spread at Sag: 0.3001 ft

Flow type: Weir Flow

Efficiency: 1.0000

Exhibit-A: Civil Improvement Plans (17x11 Scale-N.T.S.)

IMPROVEMENT PLANS
BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691
045-260-008, 009, 010, 045-270-001, & 002
TOTAL PROJECT AREA: 59.99 ACRE

ENGINEER'S STATEMENT

THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH THE ACCEPTED ENGINEERING PROCEDURES AND GUIDELINES AND ARE IN SUBSTANTIAL COMPLIANCE WITH APPLICABLE STATUTES, CITY ORDINANCES AND CODES IN THE EVENT OF CONFLICT BETWEEN ANY PORTION OF THESE PLANS AND CITY CODES, THE CITY CODES SHALL PREVAIL.

GEOTECHNICAL NOTE

A GEOTECHNICAL INVESTIGATIONS WAS PREPARED FOR THIS PROJECT (DATED OCTOBER 25-2024) ALL RECOMMENDATIONS INCLUDING THEREIN ARE HEREBY INCORPORATED IN THE PLANS. INSPECTIONS AND TESTING DURING CONSTRUCTIONS SHALL BE REQUIRED IN ACCORDANCE WITH THE RECOMMENDATIONS CONTAINED WITHIN THE REPORT. THE FOLLOWING REPORTS FOR THIS PROJECT ARE IN FILE IN THE DESIGN ENGINEER OFFICE:

PROJECT: BRAR FARMS SUBDIVISION
DATE: OCTOBER 25, 2024
FILE NO: 6073-001
PREPARED BY: RANEY GEOTECHNICAL, INC.

TOPOGRAPHIC SURVEY NOTE

INFORMATION SHOWN ON THIS PLAN IS BASED ON TOPOGRAPHIC SURVEY DATED 11/05/2024, PREPARED BY JTS ENGINEERING CONSULTANTS, INC. AND SHOWN ON SHEET C2.1.

EARTHWORK QUANTITIES

FOR EARTHWORK QUANTITIES REFER SHEET C3.0, C3.1, C3.2, AND C3.3 GRADING & DRAINAGE PLAN.

OWNER/ DEVELOPER

RBS HOLDINGS, LLC
C/O RYAN HOOPER
1730 I STREET, SUITE 220
SACRAMENTO, CA 95811
PHONE:- (916) 443-6956
EMAIL:- INFO@THATCHLAW.COM

DESIGN CONSULTANTS

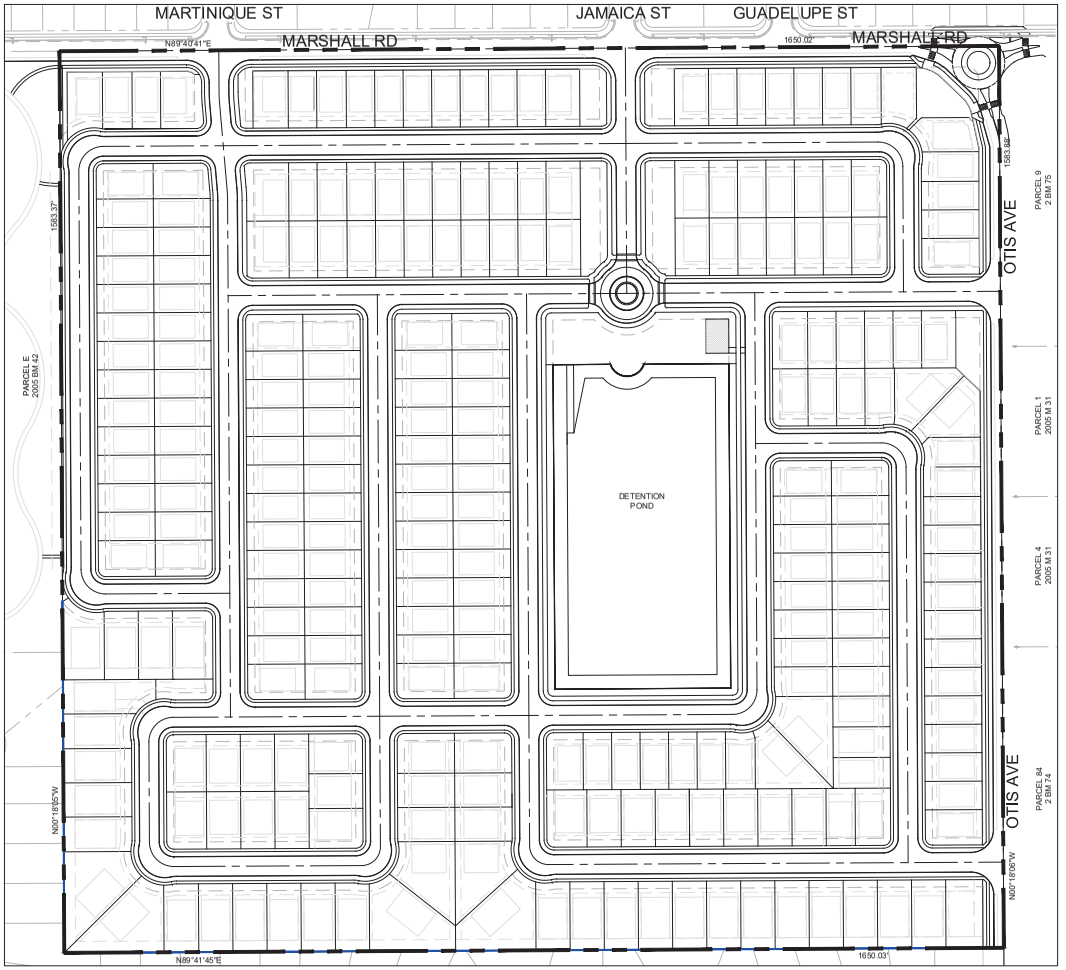
CONTINENTAL DEVELOPMENT CONSULTANTS, INC.
P.O. BOX 1924
WOODLAND CA 95776
CONTACT
HARSEV SINGH, PROJECT ENGINEER
PHONE:- (530) 341-2558
EMAIL:- singh.harsev@continentaldc.com

PLANNING ARCHITECT

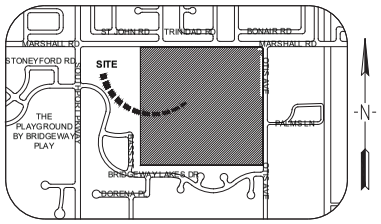
THE HLA GROUP LANDSCAPE ARCHITECTS & PLANNERS, INC.
555 UNIVERSITY AVENUE, SUITE 154
SACRAMENTO, CA 95825
CONTACT
ANTHONY MENDOZA
PHONE:- (916) 447-7400
EMAIL:- amendoza@hlagroup.com

CIVIL SHEET INDEX

1.	C1.0	COVER SHEET
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3.	C1.2	CONSULTANT'S NOTES
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5.	C2.1	AERIAL SURVEY
6.	C2.2	TENTATIVE SUBDIVISION MAP
7.	C2.3	TENTATIVE SUBDIVISION MAP
8.	C3.0	PRELIMINARY GRADING & DRAINAGE PLAN
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12.	C4.0	PRELIMINARY UTILITIES PLAN
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18.	C5.0	PRELIMINARY FIRE TRUCK ACCESS PLAN
19.	C5.1	PRELIMINARY FIRE TRUCK ACCESS PLAN
20.	C6.0	TYPICAL STREET SECTIONS
21.	C7.0	AGENCY DETAILS
22.	C7.1	AGENCY DETAILS
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25.	C8.0	OVERLAND RELEASE PATH EXHIBIT
26.	C8.1	OVERLAND RELEASE PATH EXHIBIT
27.	C8.2	OVERLAND RELEASE PATH EXHIBIT
28.	C8.3	OVERLAND RELEASE PATH EXHIBIT



SITE PLAN



VICINITY MAP
SCALE: N.T.S.

LEGEND

- PROPERTY LINE
- ROAD CENTERLINE
- PROPOSED CMU WALL

FLOODPLAIN INFORMATION

RD900
THIS AREA PROTECTED FROM THE ONE PERCENT ANNUAL CHANCE (100 YR) FLOOD BY LEVEE, DIKE, OR OTHER STRUCTURES SUBJECT TO POSSIBLE FAILURE OR OVER-TOPPING DURING LARGER FLOODS.
FIRM PANEL 06072980108

811 know what's below call 811 before you dig

NORTH
GRAPHIC SCALE
-100 0 50 100 200 400
(IN FEET)
1 INCH = 100 ft.

REVISIONS:

	REVISION ISSUE	DATED
A		

Continental Development Consultants, Inc.
Woodland, CA
Las Vegas, NV
Phone (702)347-6137; (530)405-3780 ● FAX (702)664-6237
Email: Contact @ continentaldc.com
Civil Engineering ■ Land Planning and Zoning Entitlements ■
Building Design and Improvements ■ Construction Consulting

TITLE: COVER SHEET
PROJECT: BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

REGISTERED PROFESSIONAL ENGINEER
HARSEV SINGH
No. 89981
Civil
Exp. 06/30/2027
STATE OF CALIFORNIA

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CITY OF WEST SACRAMENTO REQUIRED GENERAL NOTES

1. ALL PUBLIC IMPROVEMENT CONSTRUCTION SHALL CONFORM TO THE CITY OF WEST SACRAMENTO STANDARD SPECIFICATIONS AND SHALL BE SUBJECT TO A CITY ENCROACHMENT PERMIT.
2. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE TO CONTACT THE CITY OF WEST SACRAMENTO ENGINEERING DIVISION INSPECTOR AT (916) 617-4692 TO SCHEDULE A PRECONSTRUCTION MEETING.
3. ALL UNDERGROUND WATER, SEWER, AND STORM DRAIN SYSTEMS INCLUDING THEIR APPURTENANCES WITHIN THE BUILDING SITE PROPERTY UP TO WITHIN FIVE (5) FEET OF THE BUILDING SHALL CONFORM TO THE CITY OF WEST SACRAMENTO STANDARD SPECIFICATIONS AND SHALL BE INSPECTED BY THE ENGINEERING DIVISION WITH THE EXCEPTION OF UNDERGROUND FIRE LINES LOCATED ON THE PRIVATE SIDE OF THE PUBLIC FIRE BACKFLOW PREVENTER.
4. WORK SHALL INCLUDE REPLACEMENT OF ALL BROKEN PUBLIC SIDEWALK, CURB AND GUTTER. SUCH REPLACEMENT SHALL COMPLY WITH CURRENT STATE AND FEDERAL ACCESSIBILITY STANDARDS. THIS WORK SHOULD TAKE PLACE WHEN THERE IS NO FURTHER NEED FOR ENCROACHMENT OF HEAVY EQUIPMENT OVER WALKS AND PRIOR TO CITY APPROVAL OF THE BUILDING FOR OCCUPANCY AND/OR THE RIGHT-OF-WAY FOR ACCEPTANCE. THE ENGINEERING DIVISION INSPECTOR WILL MARK ALL BROKEN CURB, GUTTER AND SIDEWALK FOR REPLACEMENT UPON REQUEST.
5. THE ENGINEERING DIVISION WILL PLAN CHECK AND INSPECT THE MAIN WATER SERVICE TAP AND LATERAL, THE DOMESTIC METER ASSEMBLY AND THE DOMESTIC AND FIRE BACKFLOW ASSEMBLIES. ONSITE UNDERGROUND FIRE LINE INSTALLATIONS SHALL BE PLAN CHECKED AND INSPECTED BY THE BUILDING DEPARTMENT. ON-SITE FIRE HYDRANTS SHALL BE SPRAY PAINTED "SAFETY RED" AND RIGHT-OF-WAY FIRE HYDRANTS SHALL BE SPRAY PAINTED "SAFETY YELLOW" WITH ONE PRIMER COAT AND TWO FINISH COATS OF DEVFLEX 4208 SERIES WATERBORNE ACRYLIC GLOSS ENAMEL, AS MANUFACTURED BY ICI DEVOE COATINGS, OR APPROVED EQUAL.
6. A FIRE HYDRANT PERMIT WILL BE REQUIRED FOR CONSTRUCTION WATER THROUGH ANY FIRE HYDRANT WITHIN THE CITY. CONTACT PUBLIC WORKS AT (916) 617-4850 FOR REQUIREMENTS.
7. THE CONTRACTOR SHALL REMOVE ALL USA MARKINGS ATTRIBUTED TO THIS PROJECT PRIOR TO BUILDING PERMIT FINAL.
8. PAVEMENT DESIGN BY A GEOTECHNICAL ENGINEER SHALL BE REQUIRED. THE MINIMUM SURFACE SLOPE SHALL BE 1%. WRITTEN CERTIFICATION OF PAVEMENT GRADE BY A LICENSED CIVIL ENGINEER OR LAND SURVEYOR, AND CERTIFICATION OF THE STRUCTURAL SECTION AND COMPACTION BY A GEOTECHNICAL ENGINEER SHALL BE REQUIRED PRIOR TO THE ISSUANCE OF BUILDING PERMIT FINAL OR A CERTIFICATE OF OCCUPANCY.
9. THE GEOTECHNICAL ENGINEER SHALL BE ON-SITE TO MONITOR ALL GRADING OPERATIONS. THE GEOTECHNICAL ENGINEER SHALL PROVIDE WRITTEN CERTIFICATION THAT THE SITE GRADING WAS PERFORMED IN ACCORDANCE WITH THE SOILS REPORT BY ________________ (NO. ____________) PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
10. ALL UTILITY WORK INCLUDING ELECTRICAL, GAS, TELEPHONE, CABLE TV AND RAILROAD WORK SHALL BE SUBJECT TO AN ENCROACHMENT PERMIT. NORMALLY, THE UTILITY COMPANIES OBTAIN SEPARATE PERMITS FOR THEIR WORK. IT IS THE RESPONSIBILITY OF THE APPLICANT TO ENSURE THAT THIS HAS BEEN DONE PRIOR TO BEGINNING WORK.
11. ALL UNDERGROUND FACILITIES SHALL BE LOCATED BY THE APPROPRIATE AGENCIES PRIOR TO ANY EXCAVATION. THIS SHALL BE INITIATED THROUGH UNDERGROUND SERVICE ALERT (U.S.A.) BY CALLING 642-2444.
12. CONTRACTOR SHALL ADHERE TO NORMAL WORKING HOURS OF 7AM THROUGH 6PM MONDAY THROUGH FRIDAY, EXCLUDING CITY HOLIDAYS. CONSTRUCTION OUTSIDE OF NORMAL WORKING HOURS, OR ON SATURDAYS, SUNDAYS OR CITY HOLIDAYS MAY BE ALLOWED UPON PRIOR APPROVAL BY THE CITY ENGINEER. HOWEVER, WEEKEND AND CITY HOLIDAY WORK SHALL BE LIMITED TO 8AM TO 6PM UNLESS PRIOR APPROVAL IN WRITING IS OBTAINED FROM THE CITY ENGINEER. NIGHT WORK SHALL COMPLY WITH ALL CAL TRANS STANDARDS FOR SUCH WORK.
13. CONTRACTOR MUST GIVE THE CITY'S CONSTRUCTION INSPECTOR A MINIMUM OF TWO WORKING DAYS NOTICE OF INTENT TO WORK OUTSIDE OF NORMAL WORKING HOURS. CONSTRUCTION OUTSIDE OF NORMAL WORKING HOURS MAY INCUR ADDITIONAL OVERTIME INSPECTION REIMBURSEMENT CHARGES NOT COVERED BY PREVIOUSLY PAID PLAN CHECK AND INSPECTION FEES. THE CITY, IN ITS SOLE DISCRETION, MAY REQUIRE THE CONTRACTOR OR OWNER TO EXECUTE A REIMBURSEMENT AGREEMENT FOR SUCH ADDITIONAL CHARGES PRIOR TO ANY WORK OUTSIDE OF NORMAL WORKING HOURS.
14. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY EROSION CONTROL AT ALL TIMES. TEMPORARY EROSION CONTROL SHALL CONSIST OF, BUT NOT BE LIMITED TO, CONSTRUCTING SUCH FACILITIES AND TAKING SUCH MEASURES AS ARE NECESSARY TO PREVENT, CONTROL AND ABATE WATER, MUD AND EROSION DAMAGE TO PUBLIC AND PRIVATE PROPERTY AS A RESULT OF THE PROJECT. BY OCTOBER 15TH OF EACH YEAR, OR EARLIER IF CONDITIONS WARRANT, SUCH TEMPORARY EROSION CONTROL FEATURES AS ARE NECESSARY TO PREVENT DAMAGE DURING THE FORTHCOMING WINTER SEASON SHALL BE CONSTRUCTED AND FUNCTIONING. MUD AND SILT SHALL BE SETTLED OUT OF THE STORM RUNOFF BEFORE SAID RUNOFF LEAVES THE CONSTRUCTION SITE OR ENTERS THE CITY STORM DRAIN SYSTEMS, OR A NATURAL CHANNEL.
15. ANY WATER ENTERING THE SANITARY SEWER SYSTEM TO BE CONSTRUCTED UNDER THE APPROVED PLANS SHALL NOT BE DISCHARGED TO THE EXISTING SEWER SYSTEM. PLUGS SHALL BE INSTALLED IN EXISTING MANHOLES AS NECESSARY TO PERMIT PUMPING THE NEW SYSTEM CLEAR OF WATER AND DEBRIS PRIOR TO ACCEPTANCE BY THE CITY. CARE SHALL BE EXERCISED IN LOCATING PLUGS TO AVOID INTERRUPTING SERVICE TO EXISTING CONNECTIONS. MECHANICAL PLUGS OR MORTAR AND BRICK MUST BE INFLATABLE DEVICES ARE NOT ALLOWED.
16. LOCATIONS OF PERMANENT TRAFFIC CONTROL SIGNING AND POSTS SHOWN ON PLANS ARE SCHEMATIC. FINAL LOCATIONS SHALL BE APPROVED BY THE ENGINEERING DIVISION TRAFFIC/TRANSPORTATION SECTION IN THE FIELD PRIOR TO INSTALLATION.
17. ALL PERMANENT TRAFFIC STRIPING AND PAVEMENT MARKINGS SHALL BE THERMOPLASTIC UNLESS OTHERWISE NOTED. TEMPORARY PAVEMENT MARKINGS AND CAT-TRACKING SHALL BE INSTALLED AND APPROVED BY THE ENGINEERING DIVISION TRAFFIC/TRANSPORTATION SECTION IN THE FIELD PRIOR TO INSTALLATION OF FINAL STRIPING AND MARKING.
18. A DEWATERING PLAN SHALL BE SUBMITTED TO THE ENGINEERING DIVISION FOR APPROVAL PER DIVISION I, SECTION 22 OF THE CITY STANDARD SPECIFICATIONS PRIOR TO CONSTRUCTION.

CITY OF WEST SACRAMENTO SUBDIVISION LANDSCAPE & IRRIGATION GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF WEST SACRAMENTO STANDARD SPECIFICATIONS AND SHALL BE SUBJECT TO A CITY ENCROACHMENT PERMIT.
2. THE ENGINEERING DIVISION INSPECTOR WILL INSPECT THE MAIN WATER SERVICE TAP, DOMESTIC LATERAL AND DOMESTIC METER AND BACKFLOW ASSEMBLY; THE LANDSCAPE INSPECTOR WILL INSPECT THE IRRIGATION METER ASSEMBLY AND THE IRRIGATION BACKFLOW ASSEMBLY.
3. WORK SHALL INCLUDE REPLACEMENT OF ALL BROKEN PUBLIC SIDEWALK, CURB AND GUTTER. THIS WORK SHOULD TAKE PLACE WHEN THERE IS NO FURTHER NEED FOR ENCROACHMENT OF HEAVY EQUIPMENT OVER WALKS AND PRIOR TO CITY ACCEPTANCE OF THE IMPROVEMENTS. THE ENGINEERING DIVISION INSPECTOR WILL MARK ALL BROKEN CURB, GUTTER AND SIDEWALK FOR REPLACEMENT UPON REQUEST.
4. THE CONTRACTOR IS RESPONSIBLE FOR FINE GRADING AND POSITIVE SURFACE DRAINAGE IN ALL LANDSCAPE AREAS. THE CONTRACTOR SHALL VERIFY ALL ROUGH GRADES IN THE FIELD AND BRING ANY DISCREPANCIES TO THE ATTENTION OF THE LANDSCAPE ARCHITECT, CIVIL ENGINEER, AND THE CITY INSPECTOR FOR A DECISION PRIOR TO PROCEEDING WITH THE WORK.
5. A FIRE HYDRANT PERMIT WILL BE REQUIRED FOR CONSTRUCTION WATER THROUGH ANY FIRE HYDRANT WITHIN THE CITY. CONTACT THE PUBLIC WORKS DIVISION AT (916) 617-4850 FOR PERMIT REQUIREMENTS.
6. ALL UTILITY WORK INCLUDING ELECTRICAL, GAS, TELEPHONE, CABLE TV AND RAILROAD WORK SHALL BE SUBJECT TO AN ENCROACHMENT PERMIT. NORMALLY, THE UTILITY COMPANIES OBTAIN SEPARATE PERMITS FOR THEIR WORK. IT IS THE RESPONSIBILITY OF THE APPLICANT TO ENSURE THAT THIS HAS BEEN DONE PRIOR TO BEGINNING WORK.
7. ALL UNDERGROUND FACILITIES SHALL BE LOCATED BY THE APPROPRIATE AGENCIES PRIOR TO ANY EXCAVATION. THIS SHALL BE INITIATED THROUGH UNDERGROUND SERVICE ALERT (U.S.A.) BY CALLING (800) 642-2444.
8. SOIL AMENDMENTS SHALL BE DETERMINED BY AN AGRICULTURAL SUITABILITY ANALYSIS RUN BY A LICENSED SOILS LABORATORY FOR ON-SITE ROUGH GRADED SOILS, AND (IF REQUIRED) THE IMPORTED TOPSOIL. A MINIMUM OF THREE (3) REPRESENTATIVE SAMPLES OF ROUGH GRADED SOIL SHALL BE ANALYZED. IF SIGNIFICANTLY DIFFERENT SOILS ARE ENCOUNTERED BY THE SUITABILITY ANALYSIS, FURTHER SAMPLING MAY BE REQUIRED. A COPY OF THE SUITABILITY ANALYSIS WITH RECOMMENDATIONS SHALL BE SUBMITTED TO THE CITY INSPECTOR AND THE LANDSCAPE ARCHITECT AS SOON AS AVAILABLE. THE LANDSCAPE CONTRACTOR SHALL SUBMIT WRITTEN CERTIFICATION THAT SOIL AMENDMENTS WERE ADDED AS RECOMMENDED BY THE AGRICULTURAL SUITABILITY ANALYSIS PRIOR TO PARK ACCEPTANCE.
9. UPON RECEIPT OF THE SUITABILITY ANALYSIS RESULTS, THE LANDSCAPE ARCHITECT SHALL REVIEW THE APPROVED PLANTING PLAN AND MAKE ANY RECOMMENDATIONS FOR REVISIONS AS MAY BE REQUIRED TO BETTER ACCOMMODATE EXISTING SOILS.
10. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY EROSION CONTROL AT ALL TIMES. TEMPORARY EROSION CONTROL SHALL CONSIST OF, BUT NOT BE LIMITED TO, CONSTRUCTING SUCH FACILITIES AND TAKING SUCH MEASURES AS ARE NECESSARY TO PREVENT, CONTROL AND ABATE WATER, MUD AND EROSION DAMAGE TO PUBLIC AND PRIVATE PROPERTY AS A RESULT OF THE PROJECT. BY OCTOBER 15TH OF EACH YEAR, OR EARLIER IF CONDITIONS WARRANT, SUCH TEMPORARY EROSION CONTROL FEATURES AS ARE NECESSARY TO PREVENT DAMAGE DURING THE FORTHCOMING WINTER SEASON SHALL BE CONSTRUCTED AND FUNCTIONING. MUD AND SILT SHALL BE SETTLED OUT OF THE STORM RUNOFF BEFORE SAID RUNOFF LEAVES THE CONSTRUCTION SITE OR ENTERS THE CITY STORM DRAIN SYSTEMS, OR A NATURAL CHANNEL. THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL EROSION CONTROL REQUIREMENTS OF THE REGIONAL WATER QUALITY CONTROL BOARD.
11. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING A MINIMUM OF TWO (2) WORKING DAYS PRIOR TO THE COMMENCEMENT OF ANY WORK AT THE SITE. ATTENDEES SHALL INCLUDE AT A MINIMUM, CITY STAFF (PARKS AND COMMUNITY SERVICES, ENGINEERING), INVOLVED UTILITY REPRESENTATIVES, DEVELOPER REPRESENTATIVES, AND CONTRACTOR STAFF.
12. CONSTRUCTION ACTIVITIES SHALL LIMITED TO 7AM TO 7PM MONDAY THROUGH FRIDAY, AND 8AM TO 6PM SATURDAY, SUNDAY AND HOLIDAYS, UNLESS OTHERWISE APPROVED IN WRITING BY THE CITY ENGINEER.
13. OVERTIME CITY INSPECTIONS AFTER NORMAL WORKING HOURS DURING THE WEEK, OR ON SATURDAYS, SUNDAYS, OR HOLIDAYS SHALL BE PAID SEPARATELY BY THE CONTRACTOR OR DEVELOPER AT THE APPROPRIATE RATE, AS DETERMINED BY THE CITY, THROUGH A SEPARATE REIMBURSEMENT AGREEMENT WITH THE ENGINEERING DEPARTMENT'S INSPECTION SERVICES DIVISION. DAYS AND HOURS OF OVERTIME INSPECTIONS SHALL BE SUBJECT TO THE APPROVAL OF THE CITY INSPECTOR.
14. WARRANTIES SHALL BE AS DESCRIBED IN THE CITY STANDARD SPECIFICATIONS. PAY SPECIAL ATTENTION TO PLANTING MAINTENANCE AND WARRANTY PROVISIONS AND IRRIGATION CERTIFICATION AND WARRANTY PROVISIONS IN DIVISION IV, SECTIONS 16 AND 17.
15. THE CONTRACTOR SHALL REMOVE FROM THE SITE AND LEGALLY DISPOSE OF ALL DEBRIS AND UNSUITABLE MATERIAL GENERATED BY HIS OPERATIONS.
16. THE CONTRACTOR SHALL REMOVE ALL USA MARKINGS ATTRIBUTED TO THIS PROJECT PRIOR TO LANDSCAPING AND IRRIGATION ACCEPTANCE.
17. THE LANDSCAPE ARCHITECT/DESIGNER SHALL SUBMIT MYLAR AND DIGITAL COPIES OF RECORD DRAWINGS OF THE LANDSCAPE AND IRRIGATION PLANS PRIOR TO ACCEPTANCE OF IMPROVEMENTS. SUCH PLANS SHALL CONFORM TO THE CITY'S DIGITAL SUBMISSION POLICY.
18. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL REQUIRED PERMITS FROM THE RESPONSIBLE JURISDICTION(S) PRIOR TO CONSTRUCTION, INCLUDING BUT NOT LIMITED TO, ENCROACHMENT PERMITS, GRADING PERMITS, TRANSPORTATION PERMITS, BUILDING PERMITS, FIRE HYDRANT PERMITS, REGIONAL WATER QUALITY PERMITS, AND TREE REMOVAL PERMITS.

CITY OF WEST SACRAMENTO TRENCHING/BORING GENERAL NOTES

1. ALL WORK WITHIN CITY RIGHT-OF-WAYS AND EASEMENTS SHALL CONFORM TO CITY STANDARD SPECIFICATIONS AND DETAILS.
2. CONTACT UNDERGROUND SERVICE ALERT (USA) 48 HOURS IN ADVANCE OF CONSTRUCTION AT 1-800-227-2600 FOR LOCATION OF BURIED UTILITIES AND BEFORE ANY DIGGING, TRENCHING, BORING, GRADING, EXCAVATING, ETC.
3. CONTRACTOR SHALL NOTIFY ENGINEER OF RECORD AND CITY ENGINEERING INSPECTOR IMMEDIATELY OF ANY CONFLICTS OR DISCREPANCIES BETWEEN THE PLANS AND ACTUAL SITE CONDITIONS PRIOR TO DOING ANY STREET WORK. NO FIELD CHANGES SHALL BE MADE WITHOUT WRITTEN AUTHORIZATIONS FROM THE ENGINEER OF RECORD AND THE CITY OF WEST SACRAMENTO.
4. THE CITY ENGINEERING AND PUBLIC WORKS DEPARTMENTS SHALL BE NOTIFIED A MINIMUM OF ONE WORKING DAY PRIOR TO POTHOLING WITHIN ANY CITY RIGHT-OF-WAY. THE CITY ENGINEERING INSPECTOR SHALL BE KEPT INFORMED OF THE DAILY WORK SCHEDULE IN WRITING.
5. THE CONTRACTOR SHALL NOTIFY THE ADJACENT PROPERTY OWNERS IN WRITING A MINIMUM OF 72 HOURS IN ADVANCE OF CONSTRUCTION AT THE WORK SITE. DRIVEWAY CLOSURES SHALL BE COORDINATED WITH THE CITY INSPECTOR AND THE PROPERTY OWNER(S). SUCH CLOSURES SHALL REQUIRE MINIMUM 72 HOURS ADVANCE NOTICE IN WRITING, AND APPROVAL OF THE CITY INSPECTOR.
6. ALL TRAFFIC CONTROL SHALL CONFORM TO CAL TRANS' STANDARD HANDBOOK OF TRAFFIC CONTROLS, LATEST EDITION. ALL TRAFFIC CONTROL DEVICES SHALL BE IN PLACE BEFORE WORK IS STARTED. DEVICES NO LONGER REQUIRED SHALL BE REMOVED AS SOON AS POSSIBLE.
7. USE OF TRENCH PLATES SHALL BE MINIMIZED. MAXIMUM DURATION OF TRENCH PLATES IN ANY ONE LOCATION SHALL BE 10 DAYS EXCEPT AS PRE-APPROVED IN WRITING BY THE CITY OF WEST SACRAMENTO. TRENCH PLATES SHALL BE SIZED ACCORDING TO DEPTH AND WIDTH OF TRENCH.
8. PEDESTRIAN TRAFFIC SHALL BE MAINTAINED AT ALL TIMES. NO EQUIPMENT OR MATERIALS SHALL BE STORED ON THE SIDEWALK AT ANY TIME.
9. EXCAVATED MATERIAL SHALL BE STORED AWAY FROM THE PAVED ROADWAY WHENEVER POSSIBLE. STORAGE OF EQUIPMENT, MATERIALS AND/OR PORTABLE TOILET FACILITIES ON PRIVATE PROPERTY SHALL BE ACCOMPANIED BY WRITTEN PERMISSION OF THE PRIVATE PROPERTY ALL SPILLED MATERIAL SHALL BE REMOVED IMMEDIATELY TO AVOID SLIPPERY OR OTHERWISE HAZARDOUS CIRCUMSTANCES. NO EQUIPMENT OR MATERIALS SHALL BE STORED ON THE ROAD/ SIDEWALK SURFACE DURING NON-WORKING HOURS UNLESS ALLOWED BY THE CITY ENGINEER IN WRITING.
10. CONDUIT AND DUCTS SHALL BE INSTALLED WITH A MINIMUM COVER OF FIVE (5) FEET TO MINIMIZE CONFLICTS WITH EXISTING/FUTURE CITY UTILITIES. ANY EXCEPTIONS SHALL BE A CASE-BY-CASE BASIS WITH WRITTEN APPROVAL FROM THE CITY ENGINEER. ANY CONDUITS OR DUCTS REJECTED OR DAMAGED DURING BORING OR TRENCHING OPERATIONS SHALL BE REMOVED AND/ OR REPLACED PRIOR TO RE-BORE OR RE -TRENCH.
11. MINIMUM VERTICAL SEPARATION OF 24" SHALL BE MAINTAINED BETWEEN CROSSINGS OF NEW CONDUITS AND EXISTING UTILITIES. MINIMUM HORIZONTAL SEPARATIONS OF THREE (3) FEET BETWEEN NEW CONDUIT AND EXISTING WATER AND POWER UTILITIES THAT RUN PARALLEL AND FIVE (5) FEET BETWEEN NEW CONDUIT AND EXISTING SANITARY SEWER AND STORM DRAIN UTILITIES THAT RUN PARALLEL SHALL BE MAINTAINED. SUCH MINIMUM SEPARATIONS SHALL BE MAINTAINED UNLESS OTHERWISE PRE-APPROVED IN WRITING BY THE CITY.
12. ALL CONTRACTORS AND SUBCONTRACTORS SHALL ADHERE TO ALL APPLICABLE WORKER SAFETY REQUIREMENTS, AND CONSTRUCTION SITE SAFETY REQUIREMENTS AT ALL TIMES. THE CONTRACTOR SHALL SUBMIT A DETAILED PLAN SHOWING THE DESIGN OF SHORING, BRACING, SLOPING, OR OTHER PROVISIONS TO BE MADE FOR WORKER PROTECTION FOR ALL AREAS TO BE EXCAVATED TO A DEPTH OF FIVE FEET OR MORE BEFORE BEGINNING WORK. IF THE PLAN VARIES FROM THE SHORING SYSTEM STANDARDS, THE PLANS SHALL BE PREPARED AND STAMPED BY A REGISTERED CIVIL OR STRUCTURAL ENGINEER.
13. LOCATIONS OF SPLICE BOXES SHOWN ON THE PLANS ARE APPROXIMATE. FINAL LOCATIONS OF SPLICE BOXES SHALL BE DETERMINED IN THE FIELD WITH CITY APPROVAL AFTER ALL EXISTING UTILITIES IN THE AREA OF WORK HAVE BEEN LOCATED. TOPS OF SPLICE BOXES SHALL BE SET FOR FUTURE SIDEWALK INSTALLATION IN SPECIFIED LOCATIONS. ALL FUTURE SPLICE BOXES SHALL BE PLACED WITH PEDESTRIAN TRAFFIC SAFETY IN MIND UNTIL WORK IS COMPLETED. TRANSITIONS IN PEDESTRIAN AREAS SHALL BE 30:1. SPLICE BOXES PLACED IN SPECIFIED LOCATIONS OF FUTURE ROADWAY PAVEMENT SHALL BE TRAFFIC RATED.
14. EXISTING SIGNS, STRIPING, GUARDRAILS, MARKERS, TREES, SHRUBS, FENCES, WALKS, STEPS, ETC. THAT ARE DISTURBED BY THIS CONSTRUCTION SHALL BE REPLACED AND RESTORED TO THEIR ORIGINAL CONDITION OR BETTER, TO THE SATISFACTION OF THE ADJACENT PROPERTY OWNER(S) AND THE CITY OF WEST SACRAMENTO. REPAIRED/REPLACED LANDSCAPING, SHRUBS, SOD, ETC. SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL SUFFICIENT GROWTH IS ESTABLISHED TO THE SATISFACTION OF SAID PROPERTY OWNER(S) AND THE CITY OF WEST SACRAMENTO.
15. NO CUTTING ANY PART OF CITY TREES, INCLUDING ROOTS, SHALL BE DONE WITHOUT APPROVAL FROM THE CITY PARKS AND COMMUNITY SERVICES DIRECTOR, UNDER THE DIRECT SUPERVISION OF A CERTIFIED ARBORIST. NO OPEN TRENCHING SHALL OCCUR WITHIN THE DRIP LINE OF ANY EXISTING TREES WITHOUT THE APPROVAL OF A CERTIFIED ARBORIST. OPEN TRENCHING IN THE ROOT ZONE OF A PUBLIC TREE IS PROHIBITED EXCEPT IN CASES WHERE THE TRENCHING FALLS OUTSIDE OF THE DRIP LINE OF THE TREE INVOLVED. EXCEPTIONS WILL BE CONSIDERED BY THE CITY IF, IN THE OPINION OF THE ARBORIST, THE IMPACT OF TRENCHING UPON THE TREE WILL BE NEGLIGIBLE. CONTRACTOR SHALL BE RESPONSIBLE FOR HIRING AND PAYING FOR A CERTIFIED ARBORIST.
16. A LEAD PERSON OR FOREMAN SHALL BE ASSIGNED TO EACH WORKSITE. CONTRACTOR SHALL MAINTAIN A CURRENT LIST OF CONTACT NAMES AND PHONE NUMBERS FOR ALL PROJECT OWNERS, CONTRACTORS AND SUBCONTRACTORS, FOREMEN, ETC. SUCH LIST SHALL BE PROVIDED TO THE CITY INSPECTOR PRIOR TO PROJECT COMMENCEMENT, AND UPDATED AS NECESSARY DURING PROJECT CONSTRUCTION.
17. CONTRACTOR SHALL NOTIFY CITY INSPECTOR A MINIMUM OF 48 HOURS PRIOR TO ANY WORK OCCURRING NEAR OR AROUND ANY BURIED TRAFFIC SIGNAL LOOPS. SIGNAL LOOPS CUT OR DAMAGED SHALL BE REPLACED BY THE CONTRACTOR PER CITY SPECIFICATIONS AT NO COST TO THE CITY. THE CONTRACTOR SHALL LOCATE ALL TRAFFIC SIGNAL CIRCUITS AND INTERCONNECT CONDUITS PRIOR TO ANY TRENCHING OR BORING. THE CONTRACTOR SHALL ALSO MAINTAIN A MINIMUM OF FIVE (5) FEET OF SEPARATION BETWEEN NEW CONDUITS AND ALL TRAFFIC SIGNAL AND INTERCONNECT CONDUITS, CONTROLLERS, AND PULL BOXES. ALL TRAFFIC SIGNAL AND INTERCONNECT CONDUITS SHALL BE MAINTAINED AND PROTECTED DURING ALL CONTRACTOR WORK.
18. THE CONTRACTOR SHALL REPLACE ALL TRAFFIC STRIPING, PAVEMENT MARKINGS AND LEGENDS DAMAGED DURING THE COURSE OF CONSTRUCTION WITH THERMOPLASTIC MATERIALS PER CITY STANDARD SPECIFICATIONS TO THE CITY INSPECTOR'S SATISFACTION.
19. THE CITY INSPECTOR MAY REQUIRE TV INSPECTION OF SEWER MAINS AND LATERALS UPON SUSPECTED DAMAGE OF SUCH LINES DUE TO DIRECTIONAL BORING AT THE INSPECTOR'S DISCRETION. ANY SUCH TV INSPECTION SHALL BE COMPLETED AND EVALUATED PRIOR TO PERMIT ANY DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE CITY PRIOR TO PERMIT FINAL.
20. THE CITY WILL REQUIRE A SET OF RECORD DRAWINGS INCLUDING ALL POTHOLE DATA, AND A DIGITAL COPY OF THE RECORD DRAWINGS AFTER COMPLETION OF ALL WORK AND IN CONSIDERATION OF PERMIT FINAL.

CITY OF WEST SACRAMENTO CITY PARK GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF WEST SACRAMENTO STANDARD SPECIFICATIONS AND SHALL BE SUBJECT TO A CITY ENCROACHMENT PERMIT.
2. ALL UNDERGROUND WATER, SEWER, AND STORM DRAIN SYSTEMS INCLUDING THEIR APPURTENANCES WITHIN THE SITE PROPERTY UP TO WITHIN FIVE (5) FEET OF ANY BUILDING(S) SHALL CONFORM TO THE CITY OF WEST SACRAMENTO STANDARD SPECIFICATIONS AND SHALL BE INSPECTED BY THE ENGINEERING DIVISION WITH THE EXCEPTION OF UNDERGROUND FIRE LINES LOCATED ON THE PRIVATE SIDE OF THE PUBLIC FIRE BACKFLOW PREVENTER.
3. THE ENGINEERING DIVISION INSPECTOR WILL INSPECT THE MAIN WATER SERVICE TAP AND LATERAL, THE DOMESTIC METER ASSEMBLY AND THE DOMESTIC, IRRIGATION AND FIRE BACKFLOW ASSEMBLIES.
4. WORK SHALL INCLUDE REPLACEMENT OF ALL BROKEN PUBLIC SIDEWALK, CURB AND GUTTER. THIS WORK SHOULD TAKE PLACE WHEN THERE IS NO FURTHER NEED FOR ENCROACHMENT OF HEAVY EQUIPMENT OVER WALKS AND PRIOR TO CITY ACCEPTANCE OF THE PARK. THE ENGINEERING DIVISION INSPECTOR WILL MARK ALL BROKEN CURB, GUTTER AND SIDEWALK FOR REPLACEMENT UPON REQUEST.
5. PAVEMENT DESIGN BY A LICENSED SOILS (GEOTECHNICAL) ENGINEER SHALL BE REQUIRED. THE MINIMUM SURFACE SLOPE SHALL BE 1%. WRITTEN CERTIFICATION OF LINES AND GRADES BY A LICENSED CIVIL ENGINEER OR LAND SURVEYOR, AND CERTIFICATION OF THE STRUCTURAL SECTION AND COMPACTION BY A GEOTECHNICAL ENGINEER SHALL BE REQUIRED PRIOR TO PARK ACCEPTANCE.
6. THE CONTRACTOR IS RESPONSIBLE FOR FINE GRADING AND POSITIVE SURFACE DRAINAGE IN ALL LANDSCAPE AREAS. THE CONTRACTOR SHALL VERIFY ALL ROUGH GRADES IN THE FIELD AND BRING ANY DISCREPANCIES TO THE ATTENTION OF THE LANDSCAPE ARCHITECT, CIVIL ENGINEER, AND THE CITY INSPECTOR FOR A DECISION PRIOR TO PROCEEDING WITH THE WORK.
7. SOIL AMENDMENTS SHALL BE DETERMINED BY AN AGRICULTURAL SUITABILITY ANALYSIS RUN BY A LICENSED SOILS LABORATORY FOR ON-SITE ROUGH GRADED SOILS, AND (IF REQUIRED) THE IMPORTED TOPSOIL. A MINIMUM OF THREE (3) REPRESENTATIVE SAMPLES OF ROUGH GRADED SOIL SHALL BE ANALYZED. IF SIGNIFICANTLY DIFFERENT SOILS ARE ENCOUNTERED BY THE SUITABILITY ANALYSIS, FURTHER SAMPLING MAY BE REQUIRED. A COPY OF THE SUITABILITY ANALYSIS WITH RECOMMENDATIONS SHALL BE SUBMITTED TO THE CITY INSPECTOR AND THE LANDSCAPE ARCHITECT AS SOON AS AVAILABLE. THE LANDSCAPE CONTRACTOR SHALL SUBMIT WRITTEN CERTIFICATION THAT SOIL AMENDMENTS WERE ADDED AS RECOMMENDED BY THE AGRICULTURAL SUITABILITY ANALYSIS PRIOR TO PARK ACCEPTANCE.
8. UPON RECEIPT OF THE SUITABILITY ANALYSIS RESULTS, THE LANDSCAPE ARCHITECT SHALL REVIEW THE APPROVED PLANTING PLAN AND MAKE ANY RECOMMENDATIONS FOR REVISIONS AS MAY BE REQUIRED TO BETTER ACCOMMODATE EXISTING SOILS.
9. A FIRE HYDRANT PERMIT WILL BE REQUIRED FOR CONSTRUCTION WATER THROUGH ANY FIRE HYDRANT WITHIN THE CITY. CONTACT THE PUBLIC WORKS DEPARTMENT FOR PERMIT REQUIREMENTS.
10. ALL UTILITY WORK INCLUDING ELECTRICAL, GAS, TELEPHONE, CABLE TV AND RAILROAD WORK SHALL BE SUBJECT TO AN ENCROACHMENT PERMIT. NORMALLY, THE UTILITY COMPANIES OBTAIN SEPARATE PERMITS FOR THEIR WORK. IT IS THE RESPONSIBILITY OF THE APPLICANT TO ENSURE THAT THIS HAS BEEN DONE PRIOR TO BEGINNING WORK.
11. ALL UNDERGROUND FACILITIES SHALL BE LOCATED BY THE APPROPRIATE AGENCIES PRIOR TO ANY EXCAVATION. THIS SHALL BE INITIATED THROUGH UNDERGROUND SERVICE ALERT (U.S.A.) BY CALLING (800) 642-2444.
12. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY EROSION CONTROL AT ALL TIMES. TEMPORARY EROSION CONTROL SHALL CONSIST OF, BUT NOT BE LIMITED TO, CONSTRUCTING SUCH FACILITIES AND TAKING SUCH MEASURES AS ARE NECESSARY TO PREVENT, CONTROL AND ABATE WATER, MUD AND EROSION DAMAGE TO PUBLIC AND PRIVATE PROPERTY AS A RESULT OF THE PROJECT. BY OCTOBER 15TH OF EACH YEAR, OR EARLIER IF CONDITIONS WARRANT, SUCH TEMPORARY EROSION CONTROL FEATURES AS ARE NECESSARY TO PREVENT DAMAGE DURING THE FORTHCOMING WINTER SEASON SHALL BE CONSTRUCTED AND FUNCTIONING. MUD AND SILT SHALL BE SETTLED OUT OF THE STORM RUNOFF BEFORE SAID RUNOFF LEAVES THE CONSTRUCTION SITE OR ENTERS THE CITY STORM DRAIN SYSTEMS, OR A NATURAL CHANNEL. THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL EROSION CONTROL REQUIREMENTS OF THE REGIONAL WATER QUALITY CONTROL BOARD.
13. ANY WATER ENTERING THE SANITARY SEWER SYSTEM TO BE CONSTRUCTED UNDER THE APPROVED PLANS, SHALL NOT BE DISCHARGED TO THE EXISTING SEWER SYSTEM DURING SITE CONSTRUCTION. PLUGS SHALL BE INSTALLED IN EXISTING MANHOLES AS NECESSARY TO PERMIT PUMPING THE NEW SYSTEM CLEAR OF WATER AND DEBRIS PRIOR TO ACCEPTANCE BY THE CITY. CARE SHALL BE EXERCISED IN LOCATING PLUGS TO AVOID INTERRUPTING SERVICE TO EXISTING CONNECTIONS. MECHANICAL PLUGS OR MORTAR AND BRICK MUST BE USED. INFLATABLE DEVICES ARE NOT ALLOWED. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A CERTIFIED PLAYGROUND SAFETY INSPECTOR TO INSPECT PLAYGROUND INSTALLATION. PLAYGROUND INSPECTOR SHALL SUBMIT WRITTEN CERTIFICATION THAT PLAYGROUND INSTALLATION CONFORMS TO ALL PLAYGROUND SAFETY STANDARDS PRIOR TO PARK ACCEPTANCE.
14. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING A MINIMUM OF TWO (2) WORKING DAYS PRIOR TO THE COMMENCEMENT OF ANY WORK AT THE SITE. ATTENDEES SHALL INCLUDE AT A MINIMUM, CITY STAFF (PARKS AND COMMUNITY SERVICES, ENGINEERING), INVOLVED UTILITY REPRESENTATIVES, DEVELOPER REPRESENTATIVES, AND CONTRACTOR STAFF.
15. THE CONTRACTOR SHALL CONTACT THE CITY INSPECTOR (916-617-4692) AND THE PARKS AND COMMUNITY SERVICES DEPARTMENT ((916) 373-5860) AT THE FOLLOWING MILESTONES IN PARK CONSTRUCTION AS WELL AS OTHER TIMES SPECIFIED BY THE CITY INSPECTOR:
    ROUGH GRADING
    UNDERGROUND UTILITY INSTALLATION AND TESTING
    SOIL AMENDMENT ADDITIONS
    FINISH GRADING
    CONCRETE FORM WORK
    CONCRETE PLACEMENT
    IRRIGATION INSTALLATION AND TESTING
    LANDSCAPE PLANTING
16. WARRANTIES SHALL BE AS DESCRIBED IN THE CITY STANDARD SPECIFICATIONS. PAY SPECIAL ATTENTION TO PLANTING MAINTENANCE AND WARRANTY PROVISIONS AND IRRIGATION CERTIFICATION AND WARRANTY PROVISIONS IN DIVISION IV, SECTIONS 16 AND 17.
17. THE CONTRACTOR SHALL REMOVE FROM THE SITE AND LEGALLY DISPOSE OF ALL DEBRIS AND UNSUITABLE MATERIAL GENERATED BY HIS OPERATIONS.
18. THE CONTRACTOR SHALL REMOVE ALL USA MARKINGS ATTRIBUTED TO THIS PROJECT PRIOR TO PARK ACCEPTANCE.
19. THE LANDSCAPE ARCHITECT/DESIGNER SHALL SUBMIT MYLAR AND DIGITAL COPIES OF RECORD DRAWINGS OF THE PARK PLANS PRIOR TO PARK ACCEPTANCE.
20. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION, INCLUDING BUT NOT LIMITED TO, ENCROACHMENT PERMITS, GRADING PERMITS, TRASPORTATION PERMITS, BUILDING PERMITS, FIRE HYDRANT PERMITS, REGIONAL WATER QUALITY PERMITS, AND TREE REMOVAL PERMITS.

REVISIONS:		
#	REVISION ISSUE	DATED

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Woodland, CA
Phone (702)347-6137; (530)405-3780 • FAX (702)664-6237
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Civil Engineering•Land Planning and Zoning Entitlements •
Building Design and Improvements•Construction Consulting

TITLE
AGENCY NOTES

PROJECT
BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

REGISTERED PROFESSIONAL ENGINEER — HARSEV SINGH — No. 89917 — Civil — Exp. 06/30/2027 — STATE OF CALIFORNIA

DATE: 03/20/2026
JOB : LB-WS-01
DWG BY: KV
CHK BY: HS

C1.1

CONTINENTAL DEVELOPMENT CONTRACTOR NOTES

1. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE PROVISIONS OF OSHA IN THE CONSTRUCTION PRACTICES FOR ALL EMPLOYEES DIRECTLY ENGAGED IN THE COMPLETION OF THE PROJECT.
2. SHOULD IT APPEAR THAT THE WORK TO BE DONE, OR ANY MATTER RELATIVE THERETO, IS NOT SUFFICIENTLY DETAILED OR EXPLAINED ON THESE PLANS, THE CONTRACTOR SHALL CONTACT THE PROJECT ENGINEER FOR SUCH FURTHER EXPLANATIONS AS MAY BE NECESSARY.
3. THE PROJECT SHALL BE BUILT PER PLAN. ALL FIELD CHANGES MUST BE PRE-APPROVED BY THE DESIGN ENGINEER.
4. THE ACCESSIBLE PATH OF TRAVEL (INCLUDING SIDEWALK AND ASPHALT) SHALL SLOPE AT 5.0% MAX IN THE DIRECTION OF TRAVEL, AND 2.0% MAX CROSS-SLOPE, PER CBC 11B-403.3 THESE SLOPES (AND THE 2.0% AT THE PARKING STALL AND ACCESS AISLE) ARE MAXIMUMS, AS THE ABSOLUTE SLOPES SHOWN DONOT ACCOUNT FOR CONSTRUCTION TOLERANCES, PER CBC 11B-104.1.1.
5. EXCAVATION SHALL BE ADEQUATELY SHORED, BRACED, AND SHEETED TO PREVENT EARTH SLIDE/SETTLEMENT AND TO PROTECT EXISTING IMPROVEMENTS OF ANY KIND FROM DAMAGE. DAMAGE RESULTING FROM INADEQUATE SHORING, BRACING, AND SHEETING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND THE CONTRACTOR SHALL PERFORM NECESSARY REPAIRS OR RECONSTRUCTION AT THE CONTRACTOR'S OWN EXPENSE. ALL CONTRACTORS AND SUBCONTRACTORS PERFORMING WORK SHOWN ON OR RELATED TO THESE PLANS SHALL CONDUCT THEIR OPERATIONS IN A SAFE MANNER TO PROTECT BOTH THEIR EMPLOYEES AND THE PUBLIC. ALL CONTRACTOR AND SUBCONTRACTORS SHALL COMPLY WITH THE OCCUPATIONAL SAFETY AND HEALTH REGULATIONS OF THE U.S. DEPARTMENT OF LABOR AND WITH THE CALIFORNIA DEPARTMENT OF INDUSTRIAL RELATIONS CONSTRUCTION SAFETY ORDERS. CONTINENTAL DEVELOPMENT CONSULTANTS, ITS EMPLOYEES INCLUDING THE CIVIL ENGINEER AND CONSULTANTS SHALL NOT BE RESPONSIBLE IN ANY WAY FOR THE CONTRACTORS' AND SUBCONTRACTORS' COMPLIANCE WITH THE ABOVE STATED OCCUPATIONAL SAFETY AND HEALTH REGULATIONS AND CONSTRUCTION SAFETY ORDERS.
6. THE CONTRACTOR SHALL POST EMERGENCY TELEPHONE NUMBERS AT THE JOB SITE FOR PUBLIC WORKS, AMBULANCE, POLICE AND FIRE DEPARTMENTS. CONTRACTOR SHALL POST SIGN AT JOB SITE BEARING OWNER'S NAME AND SITE ADDRESS. PROPERTY CORNERS SHALL CLEARLY BE MARKED.
7. THE CONTRACTOR SHALL PROVIDE FOR INGRESS AND EGRESS FOR ANY PRIVATE PROPERTY ADJACENT TO THE WORK AREA THROUGHOUT THE PERIOD OF CONSTRUCTION.
8. PRIOR TO COMMENCEMENT OF ANY WORK ON ADJACENT PROPERTY, THE OWNER SHALL OBTAIN WRITTEN PERMISSION FROM AFFECTED PROPERTY OWNERS.
9. ENCROACHMENT PERMITS ARE REQUIRED FOR WORK WITHIN THE EXISTING PUBLIC RIGHT-OF-WAY. ENCROACHMENT PERMITS SHALL BE OBTAINED BY THE CONTRACTOR.
10. ALL EXISTING ELEVATIONS SHOWN ARE AS MEASURED IN THE FIELD, UNLESS OTHERWISE NOTED.
11. THE REMOVAL OF OBSTRUCTIONS (POWER POLES, FENCES, RETAINING WALLS, TREES, STRUCTURES, PIPELINES, PAVING, ETC.) SHALL BE AT THE CONTRACTOR'S EXPENSE.
12. ALL RECYCLABLE MATERIALS SHALL BE PROCESSED AND STORED AT THE SITES DESIGNATED ON THE PLANS APPROVED BY THE ENGINEER.
13. EXCESS MATERIAL SHALL BE PLACED AT AN APPROVED FILL SITE.
14. ALL STREETS SHALL BE SWEPT AND VACUUMED IN ACCORDANCE WITH THE STORM WATER POLLUTION PREVENTION PLAN FOR THE DURATION OF THE PROJECT WORK.
15. SURPLUS EXCAVATED MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OFF-SITE IN A MANNER APPROVED BY THE CITY ENGINEER. CONTRACTOR SHALL OBTAIN OFF-HAUL ROUTE APPROVAL FROM THE CITY ENGINEER A MINIMUM OF 14 CALENDAR DAYS PRIOR TO THE START OF EXCAVATION WORK.
16. DURING GRADING OPERATIONS, THE CONTRACTOR SHALL IMPLEMENT DUST CONTROL MEASURES ON SITES AND ON HAUL ROUTES.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING AN AIRBORNE DUST NUISANCE FROM THE CONSTRUCTION SITE BY WATERING AND/OR TREATING THE SITE IN SUCH A MANNER TO LIMIT THE EXTENT OF AIRBORNE DUST PARTICLES.
18. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGE TO THE SITE OR SURROUNDING AREA DUE TO DUST OR EROSION, RESULTING FROM WORK DONE BY THE CONTRACTOR.
19. ELECTRONIC FILES FURNISHED BY CONSULTANT IS SUBJECT TO APPROPRIATE ACCEPTANCE TESTS TO BE PERFORMED BY THE CONTRACTOR. RECIPIENT IS AWARE THAT DIFFERENCES MAY EXIST BETWEEN THE ELECTRONICS FILES DELIVERED AND THE PRINTED HARD COPY CONSTRUCTION DOCUMENTS PREPARED BY CONTINENTAL DEVELOPMENT CONSULTANTS AND ELECTRONIC FILES, THE SIGNED AND STAMPED OR SEALED HARD COPY OF CONSTRUCTION DOCUMENTS SHALL GOVERN.
20. THE PLANS AND DOCUMENTS ARE BEING PROVIDED FOR THE EXCLUSIVE USE OF THIS SITE BY THE CLIENT OR GENERAL CONTRACTOR, AS PER THE SCOPE OF WORK ESTABLISHED. IF CHANGES IN DESIGN BECOME NECESSARY OR IF DESIGN ITEMS ARE NOT INCORPORATED INTO PLANS, CONTINENTAL DEVELOPMENT CONSULTANTS SHOULD BE NOTIFIED FOR MODIFICATIONS.
21. ANY ITEMS NOT SPECIFICALLY ADDRESSED HEREIN TO COMPLY WITH THE REQUIREMENTS OF THE GOVERNING JURISDICTION.

CONTINENTAL DEVELOPMENT GRADING NOTES

1. ALL GRADING SHALL CONFORM TO THE CITY OF WEST SACRAMENTO GRADING CODE AND STANDARDS PERTAINING THERETO.
2. ALL CUT AND FILL SLOPES SHALL NOT BE STEEPER THAN 2 HORIZONTAL TO 1 VERTICAL WITHOUT USE OF A RETAINING WALL.
3. FILL AREAS SLOPING STEEPER THAN 5:1 SHALL BE KEYED AND BENCHED TO SUPPORT FILL.
4. ALL FILL AREAS SHALL BE CLEARED OF ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FOR A STRUCTURAL FILL AND THE AREAS SCARIFIED TO A DEPTH OF 6 INCHES.
5. FILL MATERIALS SHALL BE PLACED IN LAYERS NOT EXCEEDING 6 INCHES IN COMPACTED THICKNESS AND COMPACTED AT OPTIMUM MOISTURE CONTENT BY APPROVED METHOD, AS RECOMMENDED IN SOILS REPORT.
6. ALL FILL TO BE COMPACTED TO A MINIMUM OF 90% RELATIVE COMPACTION AND SO CERTIFIED BY TESTS AND REPORTS PERFORMED BY A SOILS ENGINEER.
7. BERMS OR DRAINAGE DEVICES SHALL BE PLACED AT THE TOP OF ALL FILL SLOPES.
8. ALL FILL MATERIAL SHALL NOT CONTAIN DETRIMENTAL AMOUNTS OF ORGANIC MATTER. NO ROCK OR IRREDUCIBLE MATERIAL WITH A MINIMUM DIMENSION GREATER THAN 12 INCHES SHALL BE BURIED OR PLACED IN FILLS.
9. EROSION AND SEDIMENTATION WILL BE CONTROLLED BY BERMS, PLANTING, RIP-RAP OR OTHER DEVICES OR METHODS.
10. GEOTECHINAL ENGINEER'S RECOMMENDATION NEEDS TO BE COMPLIED WITH AND THE REQUIRED SPECIAL INSPECTION(S) ARE TO BE DONE IN A TIMELY MANNER.
11. WATER TESTING REQUIRED FOR PAVING GRADES LESS THAN 1%.
12. STORM DRAINAGE FACILITIES AND DETENTION BASIN ARE DESIGNED IN ACCORDANCE WITH THE CITY OF WEST SACRAMENTO DESIGN STANDARDS. TYPE 1 FACILITIES ARE DESIGNED FOR THE 100-YEAR STORM EVENTS. TYPE 2 FACILITIES ARE DESIGNED IN ACCORDANCE WITH NOLTE METHOD CRITERIA.
13. SURFACE RUNOFF AND OVERLAND CONVEYANCE ARE INTENDED COMPONENTS OF THE APPROVED DRAINAGE DESIGN. TEMPORARY PONDING AND SURFACE FLOW MAY OCCUR AS PART OF NORMAL STORM WATER CONVEYANCE.
14. THE SITE HAS BEEN GRADED TO PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDING PADS AND TOWARD APPROVED DRAINAGE FACILITIES.
15. OPERATION OF THE STORM DRAIN AND SANITARY SEWER PUMP/LIFT STATION IS DEPENDENT UPON MECHANICAL PERFORMANCE, ELECTRICAL POWER AVAILABILITY, AND ROUTINE MAINTENANCE. PUMP STATION DESIGN BY OTHERS AND NOT A PART OF THESE PLANS.
16. MAINTENANCE OF PRIVATE DRAINAGE FACILITIES, DETENTION BASIN, AND PUMP STATIONS SHALL BE RESPONSIBILITY OF THE PROPERTY OWNER AND/OR HOMEOWNERS ASSOCIATION UNLESS OTHERWISE NOTED. PERFORMANCE OF THE DRAINAGE SYSTEM IS DEPENDENT UPON PROPER MAINTENANCE AND ABSENCE OF BLOCKAGE WITHIN PIPES, INLETS, AND OUTLET STRUCTURES.
17. BUILDING PAD ELEVATIONS (BPE) ARE ESTABLISHED BY THIS GRADING PLAN. FINISHED FLOOR ELEVATIONS (FFE) AND GARAGE FINISHED FLOOR ELEVATIONS (GFFE) SHALL BE A MINIMUM OF FOUR (4) INCHES ABOVE THE APPROVED BPE UNLESS OTHERWISE APPROVED BY THE BUILDING OFFICIAL. FINAL SLAB, GARAGE, AND THRESHOLD ELEVATIONS ARE DETERMINED BY THE ARCHITECT/STRUCTURAL ENGINEER AT TIME OF BUILDING PERMIT AND ARE NOT PART OF THESE CIVIL PLANS. CONTRACTOR SHALL VERIFY COMPLIANCE WITH MINIMUM ELEVATION AND DRAINAGE REQUIREMENTS PRIOR TO SLAB PLACEMENT.
18. DRIVEWAYS AND GARAGE FLOORS SHALL BE CONSTRUCTED TO PREVENT DRAINAGE FROM ENTERING THE GARAGE DURING DESIGN STORM CONDITIONS.

ENGINEER AND DESIGNER DISCLAIMER NOTE

CONTINENTAL DEVELOPMENT CONSULTANTS, PROJECT ENGINEER, AND DESIGNER IS NOT RESPONSIBLE FOR ANY MISTAKES OR ERRORS ON THE PLANS THAT MAY ARISE DUE TO LACK OF TOPOGRAPHICAL SURVEY OR CONSTRUCTION SITE INFORMATION. THE CONTRACTOR SHALL CONFIRM THE GROUND ELEVATIONS AND OVERALL TOPOGRAPHY OF THE SITE PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY CONTINENTAL DEVELOPMENT CONSULTANTS, INC. IN WRITING IMMEDIATELY OF ANY DIFFERENCES IN TOPOGRAPHY FROM THAT SHOWN ON THIS PLAN WHICH MAY REQUIRE CHANGES IN DESIGN. THIS DESIGN IS VALID FOR CONDITIONS AS THEY EXIST IN THE TOPOGRAPHIC SURVEY DONE BY OTHERS.

CUT AND FILL CALCULATIONS NOTE

1. FOR CUT/FILL QUANTITIES REFER SHEET C3.0, C3.1, C3.2 AND C3.3 THIS CALCULATION WAS DONE USING CIVIL 3D VOLUME CALCULATOR FROM EXISTING GRADE AND PROPOSED FINISH GRADE TERRAIN MODELS, USING THE GRID METHOD. CUT/FILL QUANTITIES PROVIDED IN THESE PLANS ARE ONLY ESTIMATES. QUANTITIES TAKE NO SHRINKAGE OR SWELL INTO ACCOUNT AND ARE PROVIDED FOR ROUGH ESTIMATING PURPOSES ONLY.
2. CONTINENTAL DEVELOPMENT CONSULTANTS, ITS EMPLOYEES INCLUDING THE CIVIL ENGINEER AND CONSULTANTS ARE NOT ACCOUNTABLE FOR ANY ERRORS. DUE TO THE NATURE OF CUT AND FILL, EXACT VOLUME WILL BE DETERMINED AT THE TIME OF FIELD EXCAVATION. DEVELOPER AND/OR CONTRACTOR IS ADVISED TO PERFORM THEIR OWN QUANTITY TAKEOFF.
3. THE PAVEMENT SECTIONS SHOWN ON THIS PLAN SHOULD BE VERIFIED AFTER ROUGH GRADING BASED ON THE USE OF SELECT FILL OR LIME TREATMENT AND IN-SITU R-VALUES OBTAINED FROM FIELD TESTING. ANY REVISIONS TO THE PAVEMENT SECTIONS MAY AFFECT THE EARTHWORK QUANTITY SUMMARY.
4. STRUCTURAL PAVEMENT AND CONCRETE SECTION VOLUMES (INCLUDING ASPHALT CONCRETE, AGGREGATE BASE, SIDEWALK, CURB AND GUTTER, AND ASSOCIATED SUBGRADE MATERIALS) HAVE BEEN SEPARATELY QUANTIFIED AND DEDUCTED FROM THE NET EARTHWORK QUANTITIES TO ESTIMATE THE APPROXIMATE SOIL IMPORT REQUIRED. THESE QUANTITIES ARE PROVIDED FOR PLANNING AND ESTIMATING PURPOSES ONLY, AND THE CONTRACTOR SHALL VERIFY ALL QUANTITIES PRIOR TO CONSTRUCTION.

ESTIMATED SITEWORK QUANTITIES ADDED AS CUT TO EARTHWORK	VOLUME (CU.YD.)
3.0 INCH ASPHALT CONCRETE	3,945
18.0 INCH PAVEMENT AGGREGATE BASE	23,670
4.0 INCH CONCRETE SIDEWALK	1,633
4.0 INCH SIDEWALK AGGREGATE BASE	1,633
CONCRETE CURB & GUTTER	1,497
4.0 INCH CURB & GUTTER AGGREGATE BASE	762
STORM AND SANITARY DRAINS OCCUPIED VOLUME	1,950
TOTAL VOLUME	35,090

STRUCTURAL QUANTITIES	VOLUME (CU.YD.)
NET CUT/FILL PER NOTE 1 IN THIS SECTION	119,443
REDUCTION IN FILL PER TABLE ABOVE	35,090
OVERALL FILL	84,353

UTILITY NOTES

1. EXISTING UNDERGROUND UTILITIES AND IMPROVEMENTS ARE SHOWN IN THEIR APPROXIMATE LOCATIONS BASED UPON RECORD INFORMATION AVAILABLE TO THE ENGINEER AT THE TIME OF PREPARATION OF THESE PLANS. LOCATIONS MAY NOT HAVE BEEN VERIFIED IN THE FIELD AND NO GUARANTEE IS MADE AS TO THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL NOTIFY UTILITY COMPANIES AT LEAST THREE WORKING DAYS IN ADVANCE OF CONSTRUCTION TO FIELD LOCATE UTILITIES. CALL UNDERGROUND SERVICE ALERT (U.S.A.). AT 811. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THESE LOCATIONS AT THE PROPOSED POINTS OF CONNECTION AND IN AREAS OF POSSIBLE CONFLICT WITH NEW UTILITY INSTALLATION PRIOR TO BEGINNING CONSTRUCTION. SHOULD THE CONTRACTOR FIND ANY DISCREPANCIES BETWEEN THE CONDITIONS EXISTING IN THE FIELD AND THE INFORMATION SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION.
2. DRY UTILITY POWER, GAS, CABLE & TELEPHONE TO BE DESIGNED & APPROVED BY RESPECTIVE UTILITY COMPANIES, CONTRACTOR TO MEET COMPANIES PRIOR TO CONSTRUCTION.
3. OWNER, AT OWNER'S SOLE COST AND EXPENSE, SHALL MAINTAIN THE PRIVATE DRAINAGE PIPELINE IN GOOD WORKING ORDER AND REPAIR COMMENSURATE WITH THE CITY'S STANDARDS FOR SIMILAR DRAINAGE PIPELINES SUCH THAT WATER FLOWS FREELY THROUGH THE SYSTEM AS AND WHEN WEATHER EVENTS OR OTHER SOURCES OF SURFACE WATER RUNOFF OCCUR. OWNER SHALL AT ALL TIMES TAKE ALL NECESSARY ACTIONS TO KEEP THE DRAINAGE PIPELINE FREE FROM DEBRIS, TRASH, FOLIAGE AND ANY OTHER OBSTRUCTION WHICH MAY DISRUPT, ALTER, IMPEDE OR CHANGE THE FLOW OF WATER. OWNER SHALL ALSO PERFORM ANY RELOCATION OF THE DRAINAGE PIPELINE PURSUANT TO THE STANDARD SPECIFICATIONS OF THE CITY SHOULD RELOCATION BE NECESSARY DUE TO PIPE FAILURE OR BLOCKAGE, AS DETERMINED NECESSARY BY THE CITY.
4. WATER MAINS AND SERVICES, INCLUDING THE METERS, MUST BE LOCATED AT LEAST 10 FT. HORIZONTALLY FROM AND 1 FT. VERTICALLY ABOVE ANY PARALLEL PIPELINE CONVEYING UNTREATED SEWAGE (INCLUDING SANITARY SEWER LATERALS), AND AT LEAST 4 FT. FROM AND ONE FOOT VERTICALLY ABOVE ANY PARALLEL PIPELINE CONVEYING STORM DRAINAGE.
5. THE EXISTENCE & LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURE SHOWN ON THIS PLAN ARE OBTAINED BY A SEARCH OF AVAILABLE RECORDS OR PROVIDED BY RESPECTIVE AHJ'S. THE CONTRACTOR IS REQUIRED TO VERIFY/LOCATE ALL ONSITE AND OFFSITE UNDERGROUND UTILITY LINES PRIOR TO CONSTRUCTION AND WIRESPECTIVE UTILITY PURVEYORS IN ADVANCE AND TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THESE DRAWINGS. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION ON DATA. UNDERGROUND SERVICE ALERT SHALL BE CONTACTED TWO WORKING DAYS PRIOR TO CONSTRUCTION @ 1-800-227-2600.
6. ALL DISTURBED IMPROVEMENTS SHALL BE REPLACED IN KIND.
7. FIELD VERIFY IF ANY EXISTING PULL BOXES ARE IN CONFLICT OF NEW DRIVEWAYS OR ADA RAMPS. REPLACE IN KIND TO THE SATISFACTION OF AHJ.
8. REFER AND COORDINATE JOINT TRENCH PLAN BY OTHERS FOR POWER, GAS, CABLE AND TELEPHONE UTILITIES.

811 know what's below call 811 before you dig

REVISIONS:

	REVISION ISSUE	DATED
A		

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Building Design and Improvements Construction Consulting

TITLE
CONSULTANT'S NOTES

PROJECT
BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

REGISTERED PROFESSIONAL ENGINEER HARSHIV SINGH No. 89913 Civil Exp. 06/30/2027 STATE OF CALIFORNIA

DATE: 04/24/2026
JOB : LB-WS-01
DWG BY: AK
CHK BY: KV

C1.2



BASIS OF BEARINGS:

BEING THE CALCULATED BEARING ACCEPTED AS NORTH 77°05'29" EAST BETWEEN THE CERTAIN FOUND MONUMENTS AT THE INTERSECTION OF SOUTHPORT PARKWAY WITH BRIDGEWAY LAKES DRIVE AND THE INTERSECTION OF MARSHALL ROAD WITH OTIS AVENUE, AS SHOWN ON THAT CERTAIN SUBDIVISION MAP FOUND IN BOOK 2005 OF MAPS, PAGE 42 OF YOLO COUNTY RECORDS.

PROJECT BENCHMARK:

SET REBAR & CAP. ELEVATION BASED UPON A FAST-STATIC GPS OBSERVATION WITH A NATIONAL GEODETIC SURVEY (NGS) OPUS SOLUTION.

ELEVATION = 11.06' (NAVD88)

SURVEY NOTES:

1. RECORD EASEMENT & BOUNDARY INFORMATION SHOWN HEREON AS PROVIDED BY RECORD DOCUMENTS IN THE PRELIMINARY TITLE REPORT BY PLACER TITLE COMPANY, ORDER NUMBER P-477290, DATED JULY 14, 2021. THIS IS NOT A RECORD OF SURVEY NOR SHOULD BE CONSTRUED AS ONE.
2. OTHER EASEMENTS OF RECORD MAY EXIST WHICH ARE NOT SHOWN HEREON.

UTILITY NOTES:

1. UTILITIES SHOWN HEREON ARE BASED UPON FIELD OBSERVATIONS AND CITY OF WEST SACRAMENTO GIS MAPS.

LEGEND:

APN	ASSESSOR'S PARCEL NUMBER
BM	BOOK OF MAPS, YCR
FH	FIRE HYDRANT
INV	INVERT ELEVATION
JP	JOINT POLE
R.O.W.	RIGHT-OF-WAY
SDDI	STORM DRAIN INLET
SDMH	STORM DRAIN MANHOLE
SL	STREET LIGHT
SLB	STREET LIGHT BOX
SSMH	SANITARY SEWER MANHOLE
WM	WATER METER
WV	WATER VALVE
YCR	YOLO COUNTY RECORDS

DRAIN INLET
ELECTRIC BOX
FIRE HYDRANT
JOINT POLE
SEWER MANHOLE
SIGN
STORM DRAIN MANHOLE
STREET LIGHT
STREET LIGHT BOX
WATER METER
WATER VALVE

SUBJECT BOUNDARY LINE
INTERIOR PARCEL LINE
ADJACENT BOUNDARY LINE
STREET CENTERLINE
EASEMENT, AS SHOWN
FENCE – CHAIN LINK
FENCE – WOOD
GAS LINE
OVERHEAD UTILITY LINE
SEWER LINE
STORM DRAIN LINE
WATER LINE

100 0 100 200
Scale 1" = 100'

LEGAL DESCRIPTION:

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF WEST SACRAMENTO, COUNTY OF YOLO, STATE OF CALIFORNIA AND IS DESCRIBED AS FOLLOWS:

PARCEL ONE:

LOTS 5 AND 10, MIDLAND SUBDIVISION OF WEST SACRAMENTO COMPANY'S PROPERTIES, ACCORDING TO THE OFFICIAL PLAT THEREOF FILED IN THE OFFICE OF THE RECORDER OF YOLO COUNTY, CALIFORNIA ON APRIL 8, 1913, IN BOOK 2 OF MAPS, PAGE 75.

EXCEPTING FROM LOT 10, ALL THAT PORTION LYING WITHIN THE PARCEL OF LAND DESCRIBED IN THE DEED RECORDED AUGUST 21, 1963, IN BOOK 725, OF OFFICIAL RECORDS, AT PAGE 102.

APN: 045-260-008-000

PARCEL TWO:

LOT 83, BOULEVARD SUBDIVISION OF WEST SACRAMENTO COMPANY'S PROPERTIES, ACCORDING TO THE OFFICIAL PLAT THEREOF FILED IN THE OFFICE OF THE RECORDER OF YOLO COUNTY, CALIFORNIA, ON MARCH 4, 1913, IN BOOK 2 OF MAPS, PAGE 74.

APN: 045-270-002-000

PARCEL THREE:

LOT 82, BOULEVARD SUBDIVISION OF WEST SACRAMENTO COMPANY'S PROPERTIES, ACCORDING TO THE OFFICIAL PLAT THEREOF FILED IN THE OFFICE OF THE RECORDER OF YOLO COUNTY, CALIFORNIA, ON MARCH 4, 1913, IN BOOK 2 OF MAPS, PAGE 74.

ALSO LOTS 4 AND 11, MIDLAND SUBDIVISION OF WEST SACRAMENTO COMPANY'S PROPERTIES, ACCORDING TO THE OFFICIAL PLAT THEREOF FILED IN THE OFFICE OF THE RECORDER OF YOLO COUNTY, CALIFORNIA ON APRIL 8, 1913, IN BOOK 2 OF MAPS, PAGE 75.

APN: 045-270-001-000, 045-260-010-000

PARCEL FOUR:

THAT PORTION OF LOT 10, MIDLAND SUBDIVISION OF WEST SACRAMENTO COMPANY'S PROPERTIES, ACCORDING TO THE OFFICIAL PLAT THEREOF FILED IN THE OFFICE OF THE RECORDER OF YOLO COUNTY, CALIFORNIA ON APRIL 8, 1913, IN BOOK 2 OF MAPS, PAGE 75, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF SAID LOT 10 OF MIDLAND SUBDIVISION, THE SAME BEING AT THE INTERSECTION OF THE CENTER LINE OF MARSHALL ROAD WITH THE CENTER LINE OF A CANAL RESERVE, 20 FEET WIDE, AS SAID ROAD AND CANAL RESERVE ARE SHOWN ON THE AFOREMENTIONED MAP; THENCE FROM SAID POINT OF BEGINNING EAST ALONG THE NORTH LINE OF SAID LOT 10 AND THE CENTER LINE OF MARSHALL ROAD 208 FEET TO A POINT; THENCE LEAVING SAID LAST MENTIONED LINE SOUTH, PARALLEL WITH THE WEST LINE OF SAID LOT 10, A DISTANCE OF 208 FEET; THENCE WEST, PARALLEL WITH THE NORTH LINE OF SAID LOT 10, A DISTANCE OF 208 FEET TO A POINT ON THE WEST LINE OF SAID LOT 10; THENCE NORTH, ALONG THE SAID WEST LINE OF LOT 10 AND THE CENTER LINE OF THE AFOREMENTIONED CANAL RESERVE, 208 FEET TO THE POINT OF BEGINNING.

APN 045-260-009-000

SURVEYOR'S STATEMENT:

THIS MAP REPRESENTS A TOPOGRAPHIC SURVEY COMPILED FROM A GROUND AND AERIAL SURVEY BY CSA, INC. IN DECEMBER, 2021.

ALL INFORMATION SHOWN HEREON REGARDING THE BOUNDARY IS COMPILED FROM RECORD ONLY (SEE NOTE 1) AND DOES NOT REPRESENT A BOUNDARY SURVEY. NO WARRANTY, EXPRESSED OR IMPLIED, IS GIVEN AS TO THE ACCURACY OR COMPLETENESS OF THE BOUNDARY INFORMATION SHOWN HEREON.

PREPARED UNDER DIRECTION OF:

CHRIS M. FERRUCCI
02/16/2022
DATE

PROFESSIONAL LAND SURVEYOR
CHRIS M. FERRUCCI
No. 9430
STATE OF CALIFORNIA

BY	DESCRIPTION	REV. DATE

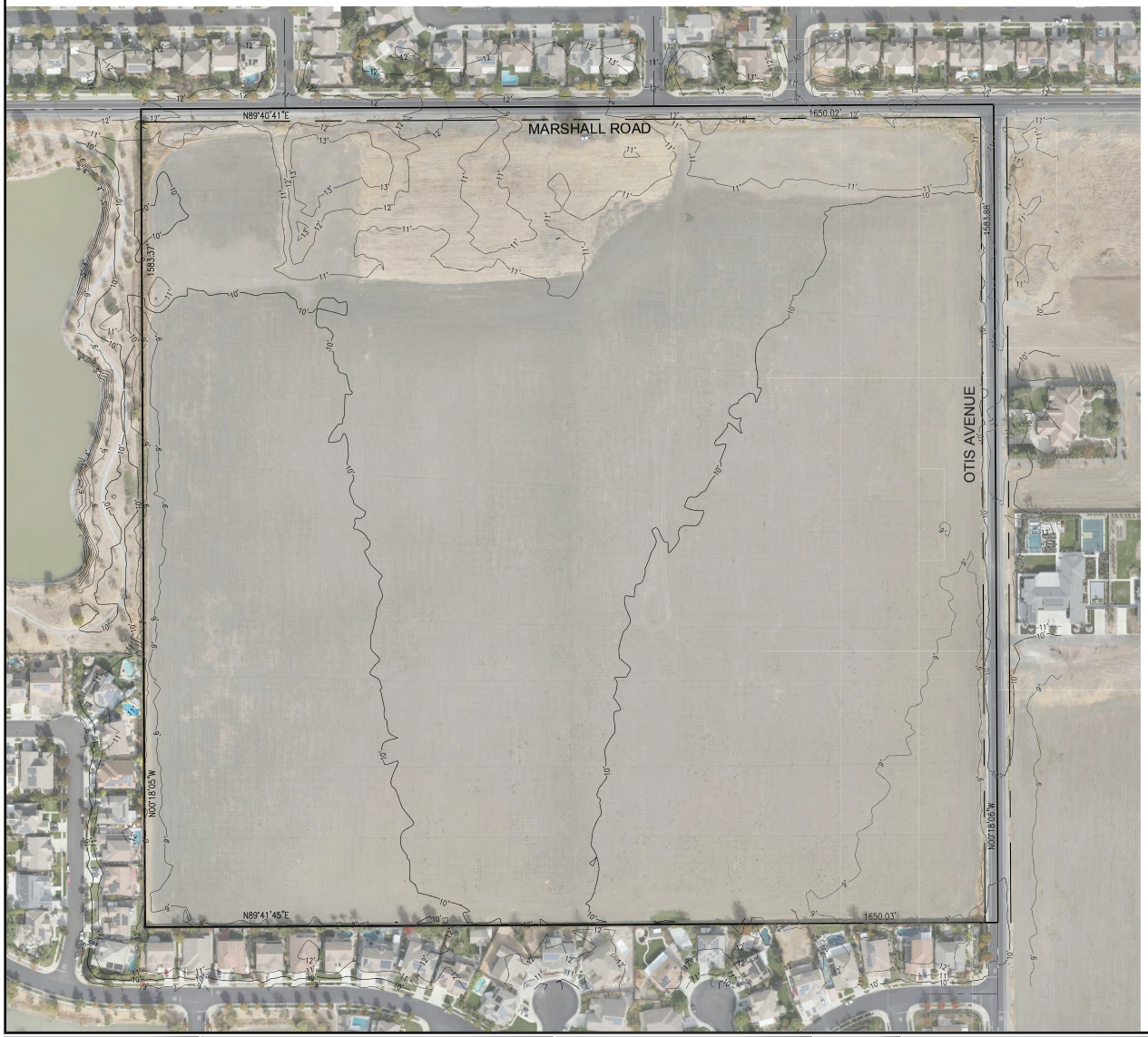
Cullen-Sherry & Associates, Inc.
Civil Engineering - Surveying
1090 Adams Street, Suite A - P.O. Box 691, Benicia, California 94510
(707) 745-3219 Fax (707) 745-9436
csa-engineers.com
Dan Cullen RCE 28182 Brad Sherry RCE 51057

TOPOGRAPHIC SURVEY

3425 MARSHALL ROAD

WEST SACRAMENTO, CALIFORNIA
PREPARED FOR: LAKESHFIRST SINGH

SCALE:	AS NOTED
DATE:	02/16/2022
DESIGN BY:	
DRAWN BY:	CF
CHECKED BY:	CF
FIELD BOOK:	
SHEET NUMBER:	C2.0
PROJECT #	21225



AERIAL SURVEY NOTES:

1) TOPOGRAPHIC INFORMATION SHOWN HEREON IS FROM AERIAL PHOTOGRAMMETRY PERFORMED BY JTS ENGINEERING ON OCTOBER 25, 2024. SURFACE IMPROVEMENTS ARE NOT SHOWN HEREON.

2) VERTICAL CONTROL DATA USED FOR THIS AERIAL SURVEY IS IDENTICAL WITH A TOPOGRAPHIC SURVEY PREPARED BY CULLEN-SHERRY AND ASSOCIATES AND PROVIDED TO USE FOR THIS PROJECT.

3) THE MINOR CONTOUR INTERVAL SHOWN HEREON IS 1 FOOT, AND THE MAJOR CONTOUR INTERVAL IS 5 FEET.

4) BOUNDARY INFORMATION SHOWN HEREON IS BASED ON A FIELD SURVEY. THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CENTERLINE OF MARSHALL ROAD, AS SHOWN ON THE PLAT OF SUBDIVISION NO. 4717, BRIDGEWAY LAKES II- PHASE 1, FILED IN BOOK 2005 OF MAPS AND PLATS, AT PAGE 42-60, THE BEARING OF WHICH IS N89°40'41"E.

NORTH

0 50 100 200

SCALE 1"=100'

CONTOUR INTERVALS

MAJOR CONTOUR LINES: 5 FOOT INTERVALS
MINOR CONTOUR LINES: 1 FOOT INTERVALS

BENCHMARK ELEVATION: _____

JTS ENGINEERING CONSULTANTS, INC.
1808 J STREET
SACRAMENTO, CALIFORNIA 95811 TEL: (916) 441-6708

DESIGNED:	N/A	SCALE:	
DRAWN:	CTR	H:	1"=100'
CHECKED:	JTS	V:	
SUBMITTED:	JAVED T. SIDDIQUI	RCE:	25924

REGISTERED PROFESSIONAL ENGINEER JAVED T. SIDDIQUI No 25924 CIVIL STATE OF CALIFORNIA

NO.	DESCRIPTION	ENGR INIT	APPROVAL BY	APPROVAL DATE

AERIAL SURVEY

3425 MARSHALL ROAD

CITY OF WEST SACRAMENTO APN:045-260-008, 009, 010 AND 045-270-001, 002 CALIFORNIA

DATE: 11/5/2024

SHEET C2.1

JOB NO: _____

EXISTING LEGAL DESCRIPTION:

BEING LOTS 4, 5, 10, AND 11 OF "WIDLAND SUBDIVISION" FILED IM THE OFFICE OF THE RECORDER OF YOLO COUNTY, CALIFORNIA, IM BOOK 2 OF MAPS, PAGE 75, AND BEING LOTS 82 AMD 83 OF "BOULEVARD SUBDIVISION", FILED IN THE RECORDER OF BOOK YOLO COUNTY, IN BOOK 2 OF MAPS, MAP NO. 70.

SHEET INDEX
SHEET 1. TENTATIVE SUBDIVISION MAP NORTHERLY PORTION
SHEET 2. TENTATIVE SUBDIVISION MAP SOUTHERLY PORTION
SHEET 3. STREET CROSS SECTION

0 30 60 120
SCALE 1"=60'

APN: 045-260-008, 009, 010
045-270-001, 002

OWNER: RBS HOLDINGS, LLC
C/O: RYAN HOOPER
1730 I STREET, SUITE 220
SACRAMENTO, CA 95811
TEL: (916) 443-6956
EMAIL: INFO@THATCHLAW.COM

APPLICANT/ENGINEER: JTS ENGINEERING CONSULTANTS INC.
1808 J STREET
SACRAMENTO, CA 95814
TEL: (916) 441-6708
FAX: (916) 441-5336
CONTACT: JAVED T. SIDDIQUI, P.E.
EMAIL: javed.siddiqui@jtsengineering.com

PROJECT ADDRESS: 3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

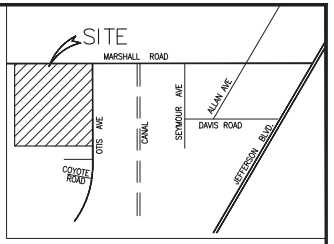
SCHOOL DISTRICT: WASHINGTON UNIFIED

	EXISTING	PROPOSED
ZONING:	R-E	R-1A
USE:	RESIDENTIAL	NO CHANGE
PARCELS:	1	275 TOTAL LOTS
		259: RESIDENTIAL LOTS 1: DETENTION BASIN: LOT A 1: PARK AMENITIES: LOT B 1: PARKLET: LOTS C 13: LANDSCAPE LOTS: LOT L-1 THRU L-13
AREA: (GROSS)	60.0±AC	AS SHOWN

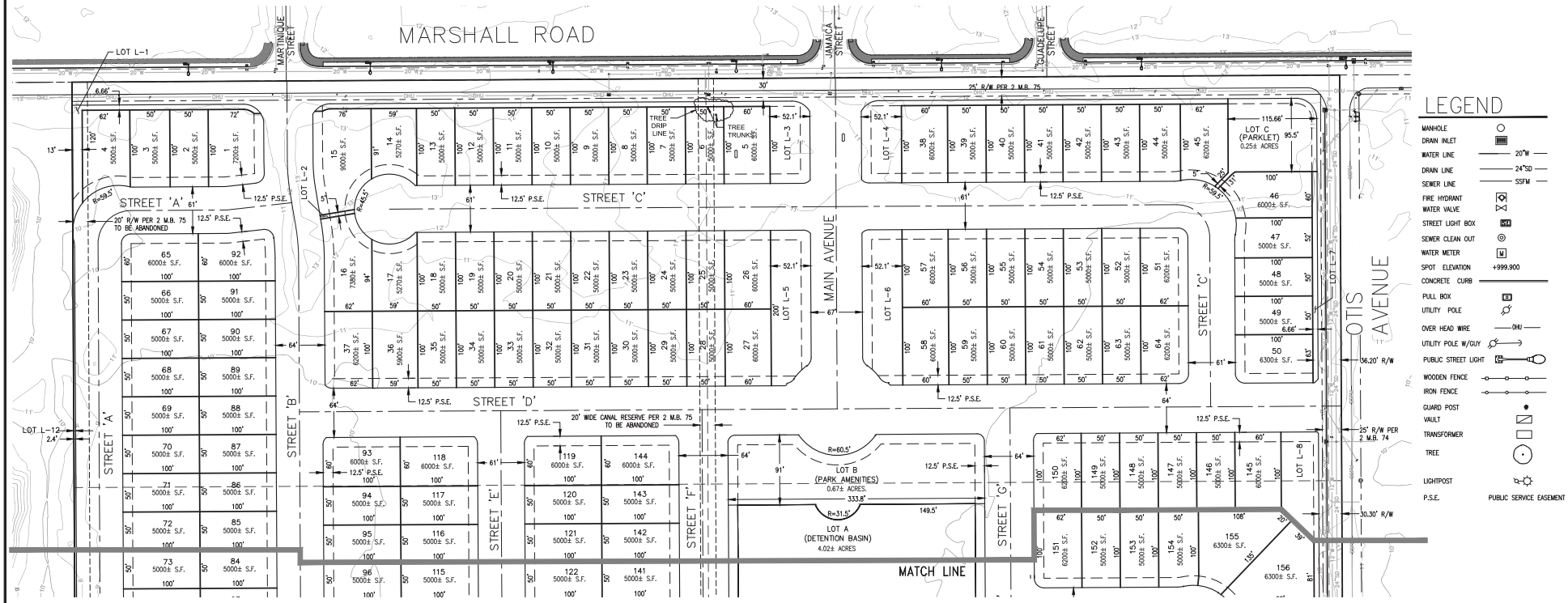
REQUEST:

1. ENTITLEMENTS TO SUBDIVIDE AN EXISTING PARCEL INTO TWO HUNDRED FIFTY NINE RESIDENTIAL LOTS AND 16 OPEN SPACE LOTS.
2. REQUEST TO ABANDON THE FOLLOWING EASEMENTS PERSUANT TO SECTION 66499.201/2 OF GOVERNMENT CODE:
   1) GOODELL AVENUE WITHIN THE LOTS 4 & 11 AS SHOWN ON 2 M.B. 75; AND WITHIN LOT 82 AS SHOWN ON 2 M.B. 74
   2) 20 FEET WIDE CANAL RESERVE WITHIN LOTS 10 & 11 AMD 4 & 5 AS SHOWN ON 2 M.B. 75; AND WITHIN LOTS 82 & 83 OF 2 M.B. 74

UTILITY CONTACTS			
TELEPHONE	AT&T		(916) 453-7017
GAS	PG&E	DON HENDRICKS	(916) 386-5469
ELECTRICITY	PG&E	DON HENDRICKS	(916) 386-5469
WATER	CITY OF WEST SACRAMENTO		(916) 617-4645
CABLE	CHARTER COMMUNICATIONS		(916) 372-3030
DRAINAGE	CITY OF WEST SACRAMENTO		(916) 617-4645
SEWER	CITY OF WEST SACRAMENTO		(916) 617-4645
FIRE	CITY OF WEST SACRAMENTO		(916) 617-4600
UNDERGROUND SERVICE ALERT	UNDERGROUND SERVICE ALERT		(800) 227-2600



VICINITY MAP (NO SCALE)



LEGEND

MANHOLE
DRAIN INLET
WATER LINE 20"W
DRAIN LINE 24"SD
SEWER LINE SSFM
FIRE HYDRANT
WATER VALVE
STREET LIGHT BOX
SEWER CLEAN OUT
WATER METER
SPOT ELEVATION +999.900
CONCRETE CURB
PULL BOX
UTILITY POLE
OVER HEAD WIRE OHU
UTILITY POLE W/GUY
PUBLIC STREET LIGHT
WOODEN FENCE
IRON FENCE
GUARD POST
VAULT
TRANSFORMER
TREE
LIGHTPOST
P.S.E. PUBLIC SERVICE EASEMENT

SEE SHEET 2

BENCHMARK ELEV. _____
FIELD BOOK NO._____ PG.___

JTS ENGINEERING CONSULTANTS, INC.
1808 J STREET
SACRAMENTO CALIFORNIA 95811 (916) 441-6708

DESIGNED: N/A
DRAWN: FMA
CHECKED: JTS/Amin
SUBMITTED: JAVED T. SIDDIQUI, P.E.
SCALE: 1"=60'
RCE: 25924

REGISTERED PROFESSIONAL ENGINEER JAVED T. SIDDIQUI No.25924 CIVIL STATE OF CALIFORNIA

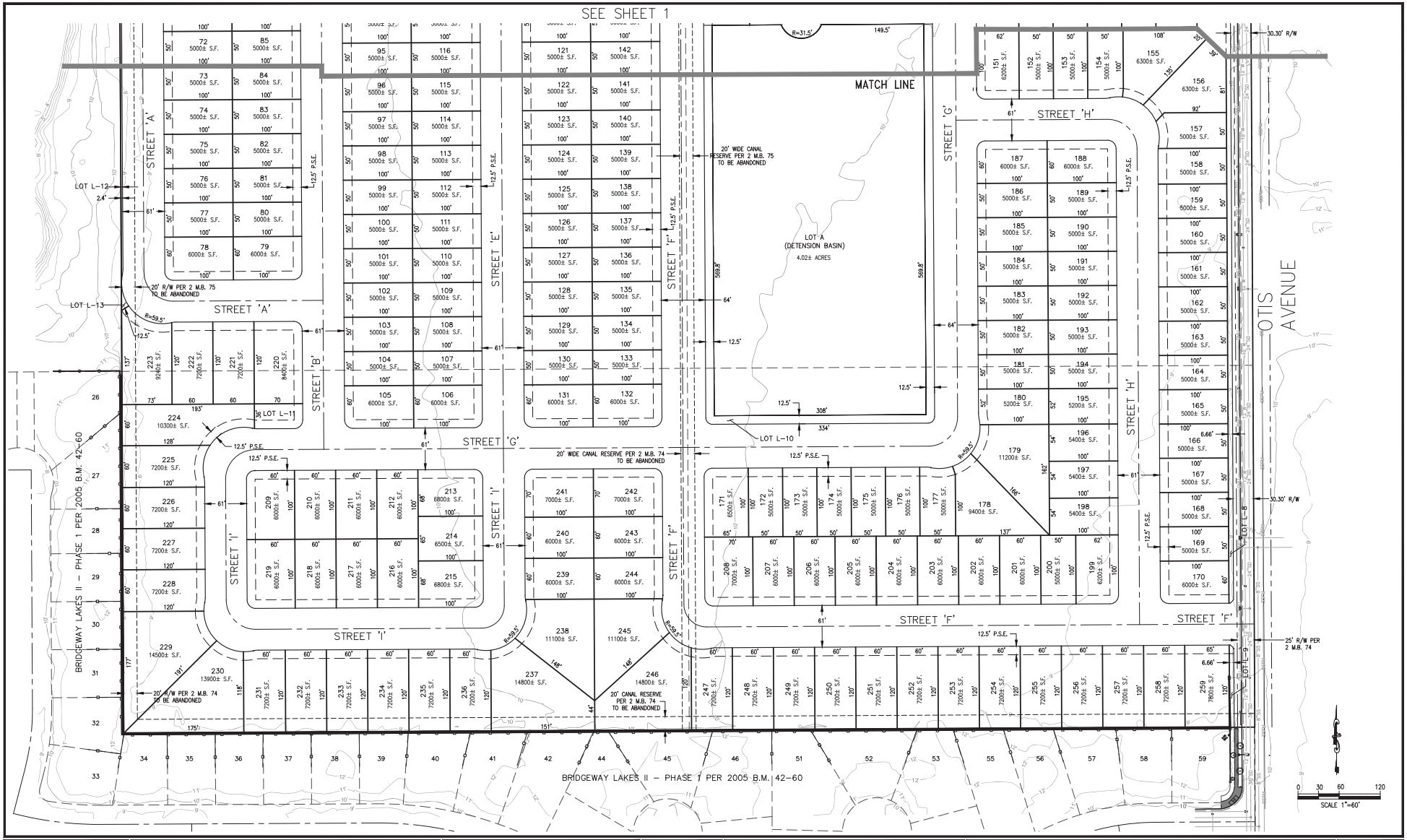
NO	DATE	REVISION	APPROVAL	BY

TENTATIVE SUBDIVISION MAP, MAP # 5257
BRAR FARMS
3425 MARSHALL ROAD
CITY OF WEST SACRAMENTO APN: 045-260-008, 009, 010 AND 045-270-001, 002 CALIFORNIA

X-REF:

DATE: 10/28/2024
SHEET C2.2

JOB NO: 2024-047



BENCHMARK ELEV. _____

FIELD BOOK NO._____ PG.___

JTS ENGINEERING CONSULTANTS, INC.
1808 J STREET
SACRAMENTO CALIFORNIA 95811 (916) 441-6708

DESIGNED: N/A
DRAWN: FMA
CHECKED: JTS/Amin
SUBMITTED: JAVED T. SIDDIQUI, P.E. RCE: 25924

SCALE: 1"=60'

REGISTERED PROFESSIONAL ENGINEER JAVED T. SIDDIQUI No.25924 CIVIL STATE OF CALIFORNIA

NO	DATE	REVISION	APPROVAL	BY

TENTATIVE SUBDIVISION MAP, MAP # 5257

BRAR FARMS

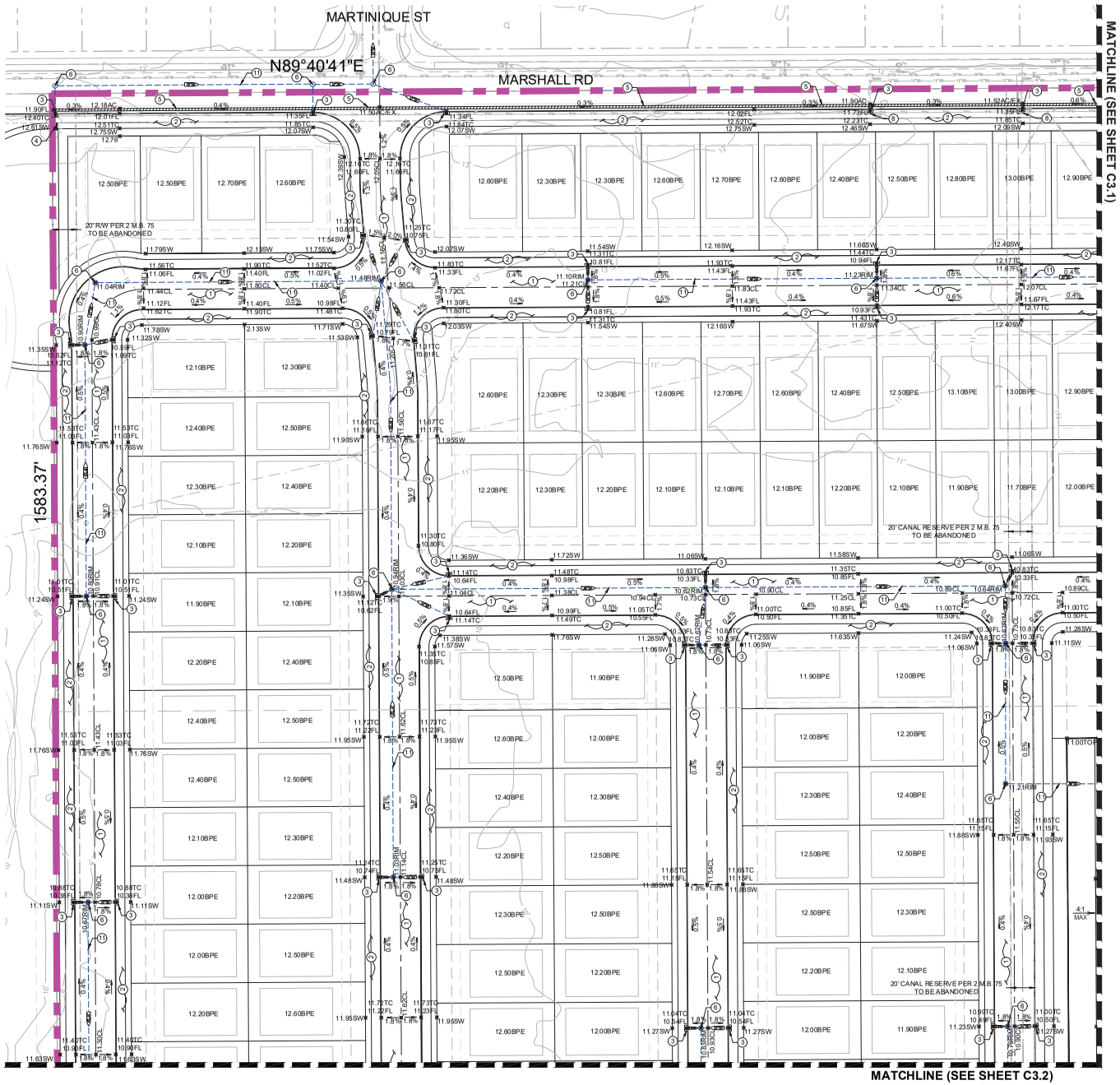
3425 MARSHALL ROAD

CITY OF WEST SACRAMENTO APN: 045-260-008, 009, 010 AND 045-270-001, 002 CALIFORNIA

X-REF:

DATE: 10/28/2024
SHEET C2.3

JOB NO: 2024-047



LEGEND

- PROPERTY LINE
- ROAD CENTERLINE
- PROPOSED CMU WALL
- MINIMUM 2 FT WIDE SAWCUT
- STORM DRAIN INLET
- 10.00 PROPOSED SPOT ELEVATION
- 3.50% PROPOSED SURFACE FLOW SLOPE

ABBREVIATIONS

SW	SIDEWALK
TC	TOP OF CURB
FL	FLOWLINE
AC	ASPHALT PAVING
EX	EXISTING
CL	CENTERLINE
TOW	TOP OF WALL
TOP	TOP OF POND
BOP	BOTTOM OF POND
BPE	BUILDING PAD ELEVATION

EARTHWORK QUANTITIES

(REFER NOTES ON C1.2)

FILL	=	149,145 CU.YD.
CUT (SITE WORK QUANTITIES + EXCAVATION) =		64,792 CU.YD.
NET CUT/FILL	=	84,353 CU.YD.

TOPOGRAPHIC SURVEY NOTE

INFORMATION SHOWN ON THIS PLAN IS BASED ON TOPOGRAPHIC SURVEY DATED 11/05/2024, PREPARED BY JTS ENGINEERING CONSULTANTS, INC. AND SHOWN ON SHEET C2.1.

BENCHMARK ELEVATION

NAVD88 = 11.06' (CURRENT DATUM FOR ELEVATIONS SHOWN)

CONSTRUCTION NOTES

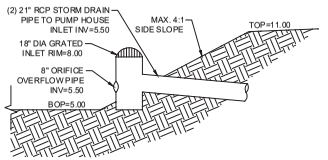
1. INSTALL 3 INCH A.C. OVER 18.0 INCH OF CLASS 2 A.B. COMPACTED TO 95 % MAXIMUM DENSITY. GEOTEXTILE FABRIC REQUIRED BETWEEN THE PAVEMENT SUBGRADE AND AGGREGATE BASE (UNTREATED SUBGRADES, R-VALUE = 5).
2. CONSTRUCT CURB GUTTER & SIDEWALK PER STANDARD DETAIL 202 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL WITH 5.0% MAX. LONGITUDINAL SLOPE AND 2.0% MAX. TRANSVERSE SLOPE, REFER SHEET C7.0 FOR DETAILS.
3. CONSTRUCT CURB AND GUTTER TRANSITIONS FOR DRAIN INLETS PER STANDARD DETAIL 207 AND CURB INLETS AND CATCH BASIN PER STANDARD DETAIL 301 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.0 FOR DETAILS.
4. INSTALL SIDEWALK BARRICADE PER STANDARD DETAIL 242 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.0 FOR DETAILS.
5. MATCH TO EXISTING GRADES.
6. INSTALL STORM DRAIN MANHOLE PER STANDARD DETAIL 302, 303 AND 306 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.0 AND C7.1 FOR DETAILS.
7. CONSTRUCT PUMP/LIFT STATION TO BE DESIGNED BY OTHERS.
8. RELOCATE EXISTING STORM DRAIN INLET.
9. PROVIDE 12.0 INCH D50 RIP RAP. APRON TO BE 10.0 FT LONG, 12.0 FT WIDE AND 24.0 INCH IN DEPTH.
10. CONSTRUCT FLARED END SECTION, REFER SHEET C7.1 FOR DETAILS.
11. TRENCH BACKFILL PER STANDARD DETAIL 110 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.1 FOR DETAILS.
12. INSTALL INLET/OUTLET STRUCTURE FOR DETENTION POND. REFER DETAIL ON THIS SHEET.

NOTES:

1. FINISHED FLOOR ELEVATIONS (FFE) AND GARAGE FINISHED FLOOR ELEVATIONS (GFFE) SHALL BE A MINIMUM OF FOUR (4) INCHES ABOVE THE APPROVED BUILDING PAD ELEVATION (BPE) UNLESS OTHERWISE APPROVED BY THE BUILDING OFFICIAL.
3. THE PAVEMENT SECTIONS SHOWN ON THIS PLAN SHOULD BE VERIFIED AFTER ROUGH GRADING BASED ON THE USE OF SELECT FILL OR LIME TREATMENT AND IN-SITU R-VALUES OBTAINED FROM FIELD TESTING. ANY REVISIONS TO THE PAVEMENT SECTIONS MAY AFFECT THE EARTHWORK QUANTITY SUMMARY.
4. EXISTING DRAINAGE CHANNEL ALONG SOUTH BOUNDARY LINE TO BE DEMOLISHED.
5. UTILITIES TO BE UNDERGROUND ALONG PROJECT FRONTAGE.

STORM DRAIN NETWORK NOTES:

1. REFER UTILITIES PLAN SHEETS FOR STORM DRAIN NETWORK DETAILS.
2. ALL STORM DRAINS TO BE RCP. SIZE, SLOPE, ELEVATIONS AND LENGTH PER PLAN.



DETENTION POND OUTLET STRUCTURE DETAILS

N.T.S

811 know what's below call 811 before you dig

NORTH

GRAPHIC SCALE

-40 0 20 40 80 160

(IN FEET)
1 INCH = 40 ft.

REVISIONS:

	REVISION ISSUE	DATED
A		

Continental Development Consultants, Inc.
Las Vegas, NV Woodland, CA
Phone (702)347-6137, (530)405-3780 ● FAX (702)664-6237
Email: Contact @ continentaldc.com
Civil Engineering ■ Land Planning and Zoning Entitlements ●
Building Design and Improvements ■ Construction Consulting

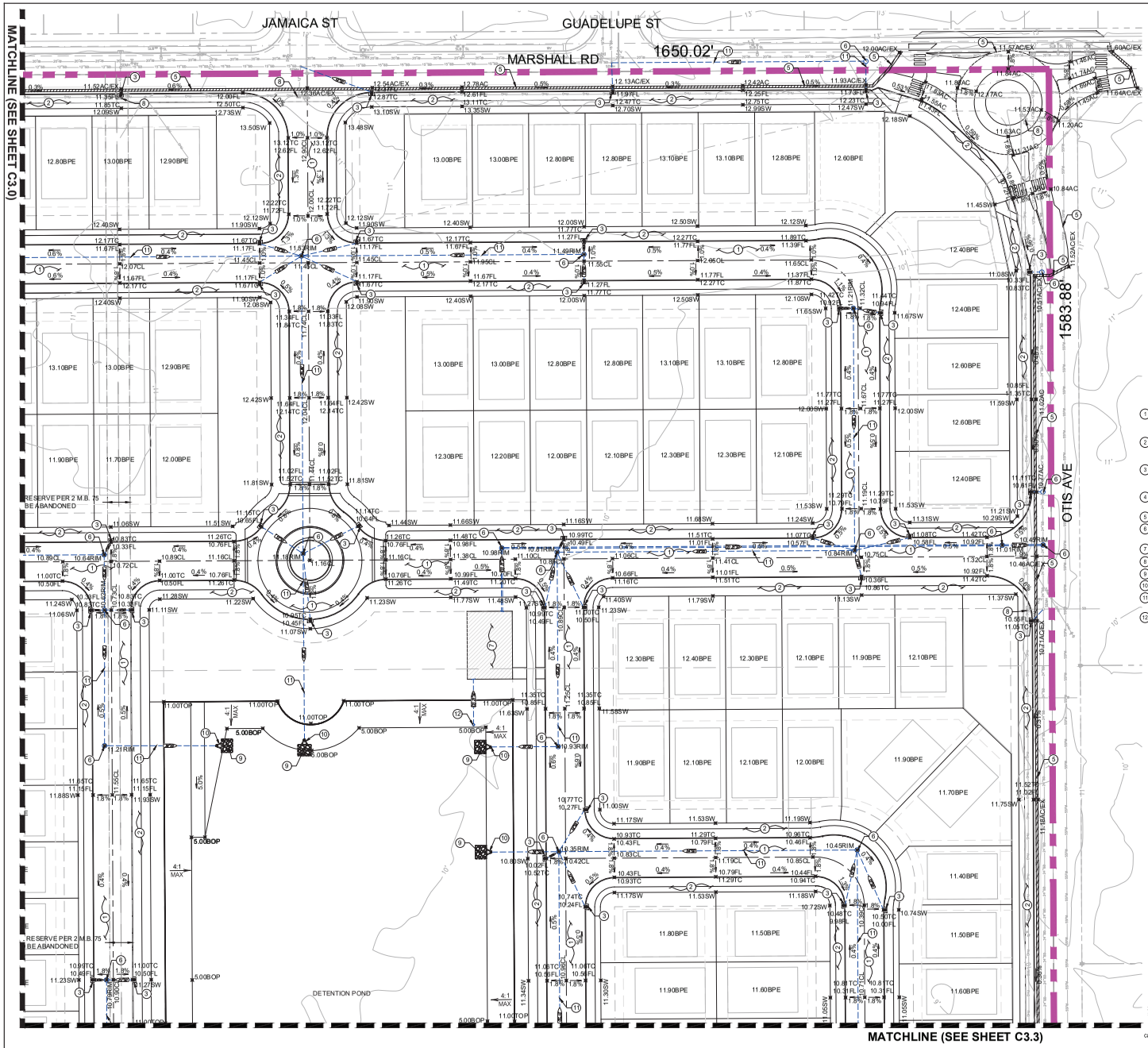
TITLE: PRELIMINARY GRADING & DRAINAGE PLAN

PROJECT: BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

REGISTERED PROFESSIONAL ENGINEER
HARSHEY SINGH
No. 89913
Civil
Exp. 06/30/2027
STATE OF CALIFORNIA

DATE: 04/25/2026
JOB : LB-WS-01
DWG BY: KV
CHK BY: HS

C3.0



LEGEND

- PROPERTY LINE
- ROAD CENTERLINE
- PROPOSED CMU WALL
- MINIMUM 2 FT WIDE SAWCUT
- STORM DRAIN INLET
- 10.00 PROPOSED SPOT ELEVATION
- 2.00% PROPOSED SURFACE FLOW/SLOPE

ABBREVIATIONS

SW	SIDEWALK	
TC	TOP OF CURB	
FL	FLOWLINE	
AC	ASPHALT PAVING	
EX	EXISTING	
CL	CENTERLINE	
TOW	TOP OF WALL	
TOP	TOP OF POND	
BOP	BOTTOM OF POND	
BPE	BUILDING PAD ELEVATION	

EARTHWORK QUANTITIES

(REFER NOTES ON C1.2)

FILL	=	149,145 CU.YD.
CUT (SITE WORK QUANTITIES + EXCAVATION)	=	64,792 CU.YD.
NET CUT/FILL	=	84,353 CU.YD.

TOPOGRAPHIC SURVEY NOTE

INFORMATION SHOWN ON THIS PLAN IS BASED ON TOPOGRAPHIC SURVEY DATED 11/05/2024, PREPARED BY JTS ENGINEERING CONSULTANTS, INC. AND SHOWN ON SHEET C2.1.

BENCHMARK ELEVATION

NAVD88 = 11.06' (CURRENT DATUM FOR ELEVATIONS SHOWN)

CONSTRUCTION NOTES

1. INSTALL 3 INCH A.C. OVER 18.0 INCH OF CLASS 2 A.B. COMPACTED TO 95 % MAXIMUM DENSITY. GEOTEXTILE FABRIC REQUIRED BETWEEN THE PAVEMENT SUBGRADE AND AGGREGATE BASE (UNTREATED SUBGRADES, R-VALUE = 5).
2. CONSTRUCT CURB GUTTER & SIDEWALK PER STANDARD DETAIL 202 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL WITH 5.0% MAX. LONGITUDINAL SLOPE AND 2.0% MAX. TRANSVERSE SLOPE, REFER SHEET C7.0 FOR DETAILS.
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STORM DRAIN NETWORK NOTES:

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2. ALL STORM DRAINS TO BE RCP. SIZE, SLOPE, ELEVATIONS AND LENGTH PER PLAN.

811 know what's below call 811 before you dig

NORTH

GRAPHIC SCALE
-40 0 20 40 80 160
(IN FEET)
1 INCH = 40 ft.

REVISIONS:

	REVISION ISSUE	DATED
A		

Continental Development Consultants, Inc.
Las Vegas, NV Woodland, CA
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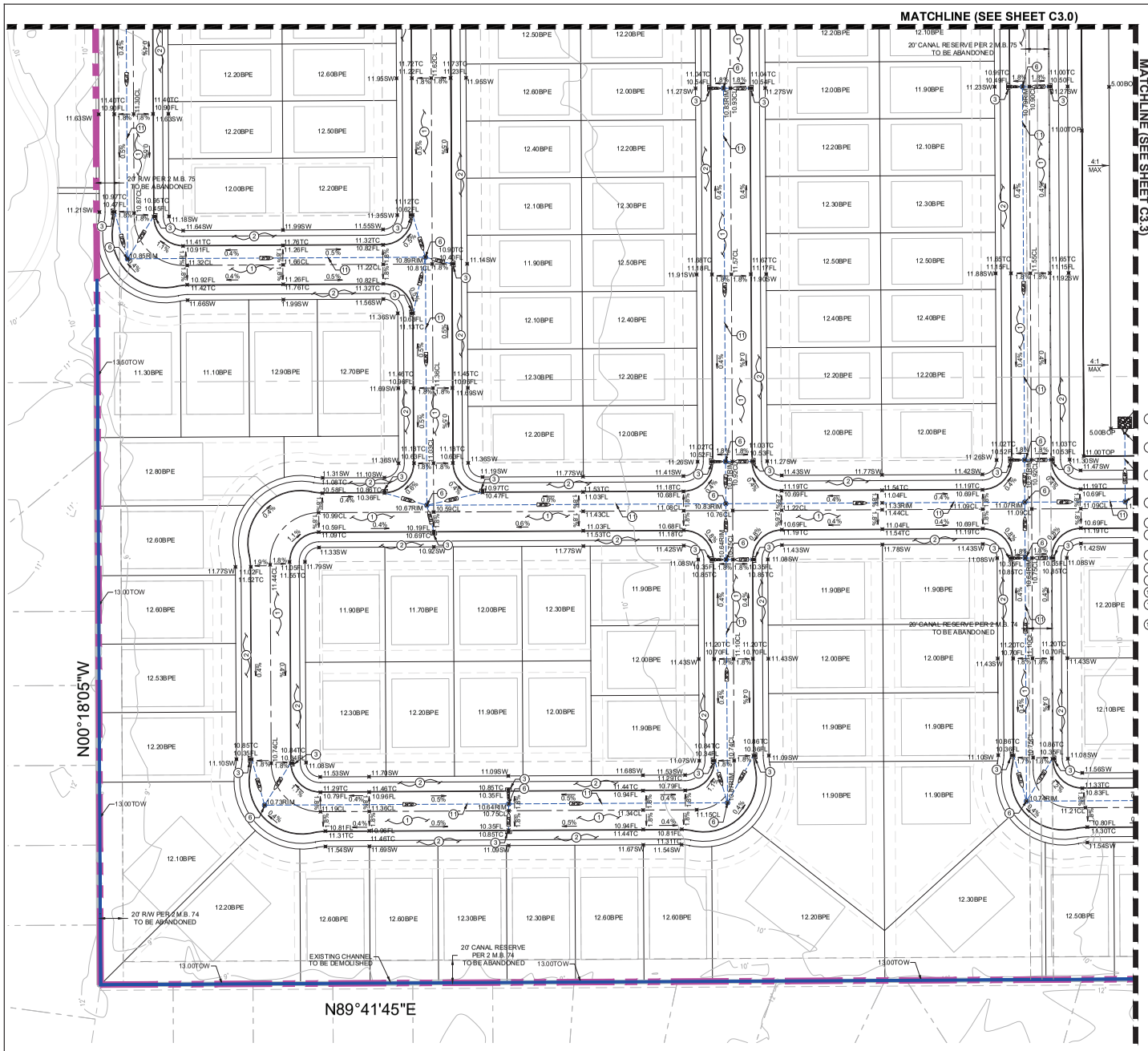
TITLE: PRELIMINARY GRADING & DRAINAGE PLAN

PROJECT: BRAR FARMS
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REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA

DATE: 04/25/2026
JOB : LB-WS-01
DWG BY: KV
CHK BY: HS

C3.1



LEGEND

- PROPERTY LINE
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ABBREVIATIONS

SW	SIDEWALK
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FL	FLOWLINE
AC	ASPHALT PAVING
EX	EXISTING
CL	CENTERLINE
TOW	TOP OF WALL
TOP	TOP OF POND
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EARTHWORK QUANTITIES

(REFER NOTES ON C1.2)

FILL	=	149,145 CU.YD.
CUT (SITE WORK QUANTITIES + EXCAVATION) =		64,792 CU.YD.
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TOPOGRAPHIC SURVEY NOTE

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NOTES:

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2. ALL STORM DRAINS TO BE RCP. SIZE, SLOPE, ELEVATIONS AND LENGTH PER PLAN.

811 know what's below call 811 before you dig

REVISIONS:

	REVISION ISSUE	DATED
A		

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Las Vegas, NV Woodland, CA
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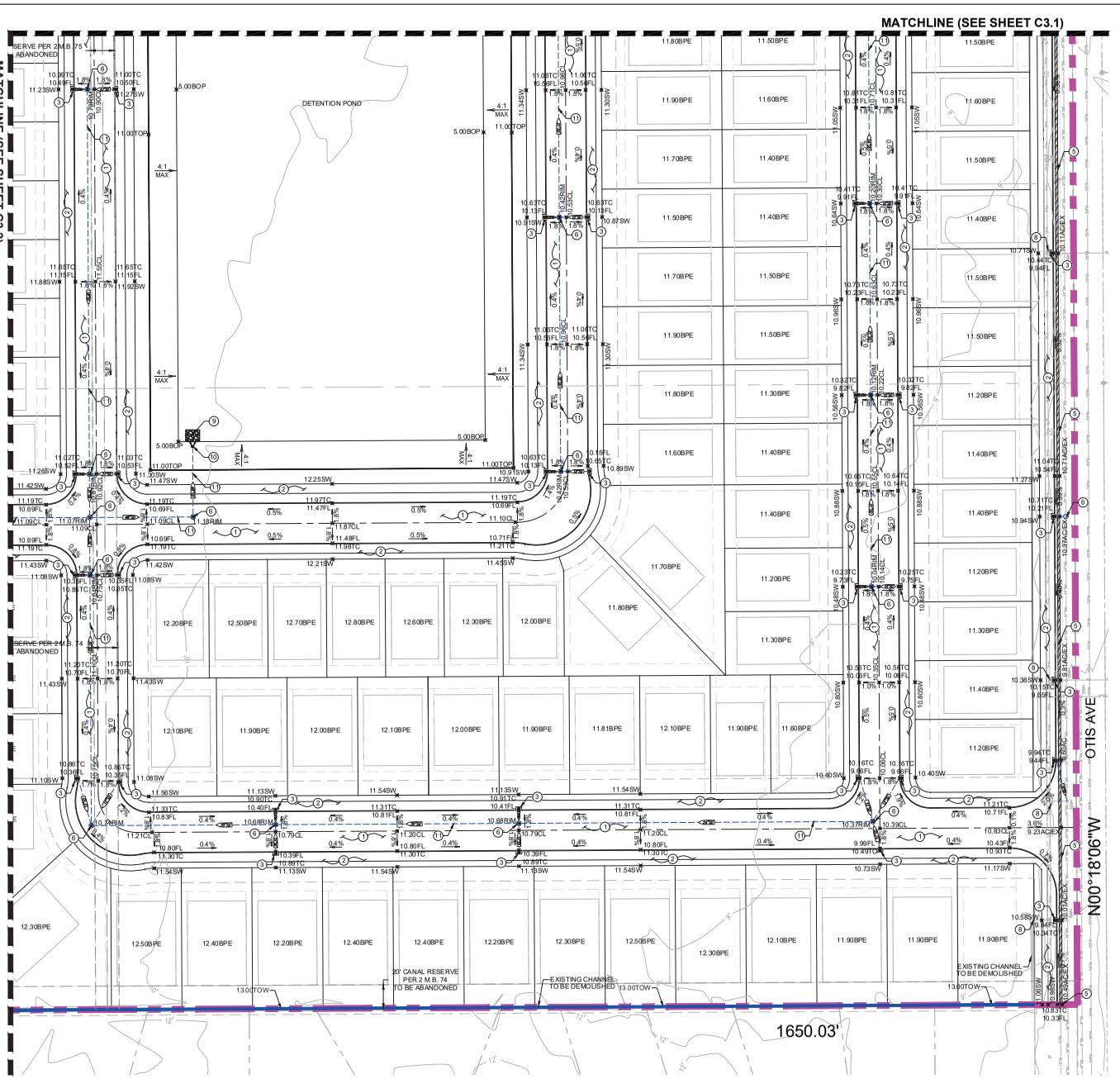
TITLE: PRELIMINARY GRADING & DRAINAGE PLAN

PROJECT: BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

REGISTERED PROFESSIONAL ENGINEER — HARSHEY SINGH — No. 89981 — Civil — Exp. 06/30/2027 — STATE OF CALIFORNIA

DATE: 04/25/2026
JOB : LB-WS-01
DWG BY: KV
CHK BY: HS

C3.2



LEGEND

- PROPERTY LINE
- ROAD CENTERLINE
- PROPOSED CMU WALL
- MINIMUM 2 FT WIDE SAWCUT
- STORM DRAIN INLET
- 10.00 PROPOSED SPOT ELEVATION
- 3.52% PROPOSED SURFACE FLOW/SLOPE

ABBREVIATIONS

SW	SIDEWALK
TC	TOP OF CURB
FL	FLOWLINE
AC	ASPHALT PAVING
EX	EXISTING
CL	CENTERLINE
TOW	TOP OF WALL
TOP	TOP OF POND
BOP	BOTTOM OF POND
BPE	BUILDING PAD ELEVATION

EARTHWORK QUANTITIES

(REFER NOTES ON C1.2)

FILL	=	149,145 CU.YD.
CUT (SITE WORK QUANTITIES + EXCAVATION)	=	64,792 CU.YD.
NET CUT/FILL	=	84,353 CU.YD.

TOPOGRAPHIC SURVEY NOTE

INFORMATION SHOWN ON THIS PLAN IS BASED ON TOPOGRAPHIC SURVEY DATED 11/05/2024, PREPARED BY JTS ENGINEERING CONSULTANTS, INC. AND SHOWN ON SHEET C2.1.

BENCHMARK ELEVATION

NAVD88 = 11.06' (CURRENT DATUM FOR ELEVATIONS SHOWN)

CONSTRUCTION NOTES

1. INSTALL 3 INCH A.C. OVER 18.0 INCH OF CLASS 2 A.B. COMPACTED TO 95% MAXIMUM DENSITY. GEOTEXTILE FABRIC REQUIRED BETWEEN THE PAVEMENT SUBGRADE AND AGGREGATE BASE (UNTREATED SUBGRADES, R-VALUE = 5).
2. CONSTRUCT CURB GUTTER & SIDEWALK PER STANDARD DETAIL 202 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL WITH 5.0% MAX. LONGITUDINAL SLOPE AND 2.0% MAX. TRANSVERSE SLOPE, REFER SHEET C7.0 FOR DETAILS.
3. CONSTRUCT CURB AND GUTTER TRANSITIONS FOR DRAIN INLETS PER STANDARD DETAIL 207 AND CURB INLETS AND CATCH BASIN PER STANDARD DETAIL 301 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.0 FOR DETAILS.
4. INSTALL SIDEWALK BARRICADE PER STANDARD DETAIL 242 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.0 FOR DETAILS.
5. MATCH TO EXISTING GRADES.
6. INSTALL STORM DRAIN MANHOLE PER STANDARD DETAIL 302, 303 AND 306 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.0 AND C7.1 FOR DETAILS.
7. CONSTRUCT PUMP/LIFT STATION TO BE DESIGNED BY OTHERS.
8. RELOCATE EXISTING STORM DRAIN INLET.
9. PROVIDE 12.0 INCH D50 RIP RAP. APRON TO BE 10.0 FT LONG, 12.0 FT WIDE AND 24.0 INCH IN DEPTH.
10. CONSTRUCT FLARED END SECTION, REFER SHEET C7.1 FOR DETAILS.
11. TRENCH BACKFILL PER STANDARD DETAIL 110 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.1 FOR DETAILS.
12. INSTALL INLET/OUTLET STRUCTURE FOR DETENTION POND. REFER DETAIL ON SHEET C3.0.

NOTES:

1. FINISHED FLOOR ELEVATIONS (FFE) AND GARAGE FINISHED FLOOR ELEVATIONS (GFFE) SHALL BE A MINIMUM OF FOUR (4) INCHES ABOVE THE APPROVED BUILDING PAD ELEVATION (BPE) UNLESS OTHERWISE APPROVED BY THE BUILDING OFFICIAL.
3. THE PAVEMENT SECTIONS SHOWN ON THIS PLAN SHOULD BE VERIFIED AFTER ROUGH GRADING BASED ON THE USE OF SELECT FILL OR LIME TREATMENT AND IN-SITU R-VALUES OBTAINED FROM FIELD TESTING. ANY REVISIONS TO THE PAVEMENT SECTIONS MAY AFFECT THE EARTHWORK QUANTITY SUMMARY.
4. EXISTING DRAINAGE CHANNEL ALONG SOUTH BOUNDARY LINE TO BE DEMOLISHED.
5. UTILITIES TO BE UNDERGROUND ALONG PROJECT FRONTAGE.

STORM DRAIN NETWORK NOTES:

1. REFER UTILITIES PLAN SHEETS FOR STORM DRAIN NETWORK DETAILS.
2. ALL STORM DRAINS TO BE RCP. SIZE, SLOPE, ELEVATIONS AND LENGTH PER PLAN.

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NORTH

GRAPHIC SCALE
-40 0 20 40 80 160
(IN FEET)
1 INCH = 40 ft.

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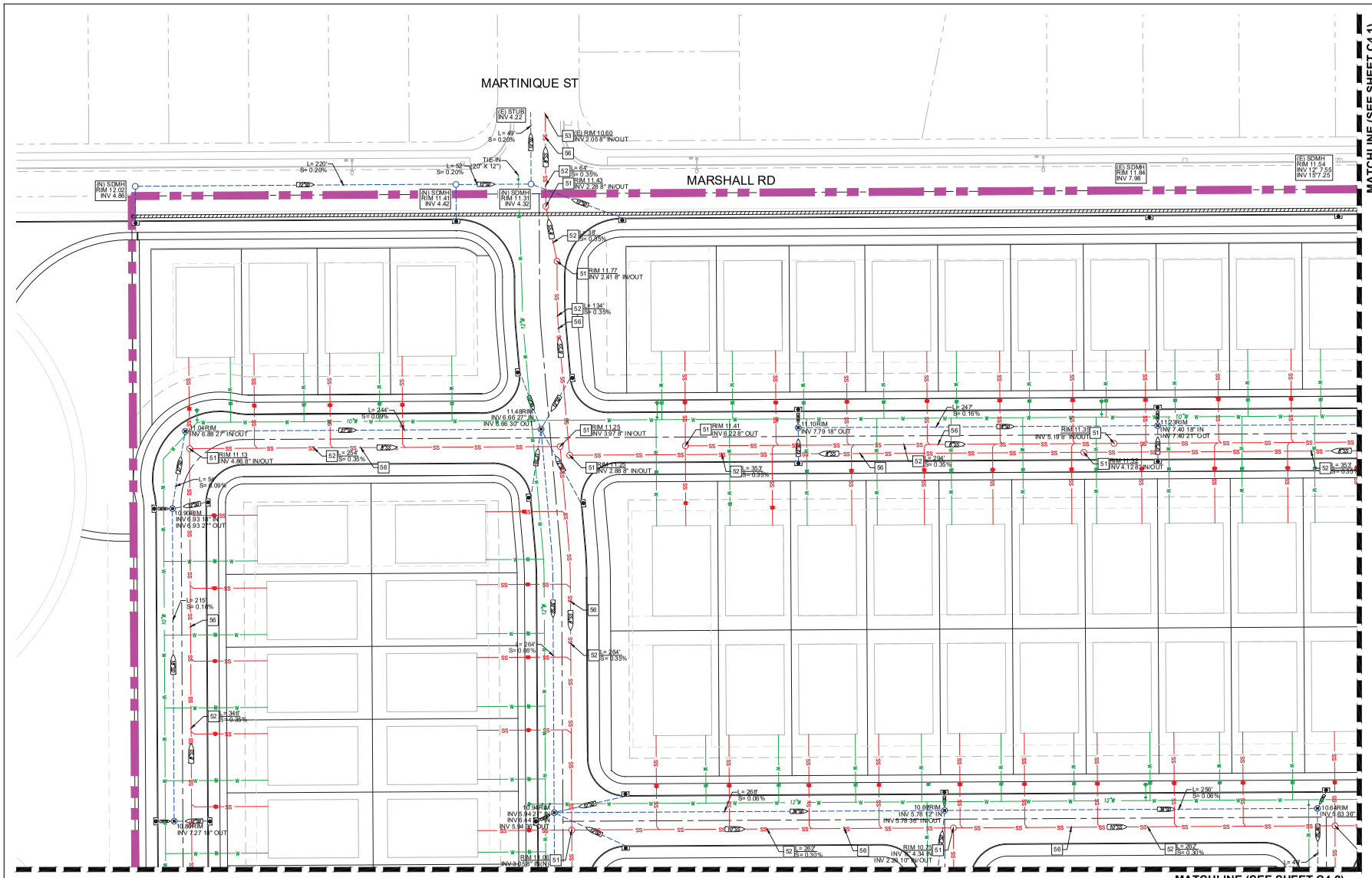
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GENERAL NOTES

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2. ALL SEWER AND WATER SERVICES MUST BE EXTENDED TO THE BACK OF THE PSE.
3. ALL CROSSINGS WILL MAINTAIN 1.0 FT MINIMUM VERTICAL CLEARANCE.
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SANITARY SEWER CONSTRUCTION NOTES

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52. INSTALL NEW SDR-35 SEWER PIPE. SIZE, SLOPE AND LENGTH PER PLANS.
53. TIE-IN TO EXISTING SANITARY SEWER MANHOLE, CONTRACTOR TO VERIFY INVERT ELEVATION, SIZE AND SLOPE IN FIELD.
54. NOT USED.
55. SANITARY SEWER CONNECTION TO PUMP/LIFT STATION, DESIGN BY OTHERS.
56. TRENCH BACKFILL PER STANDARD DETAIL 110 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.1 FOR DETAILS.

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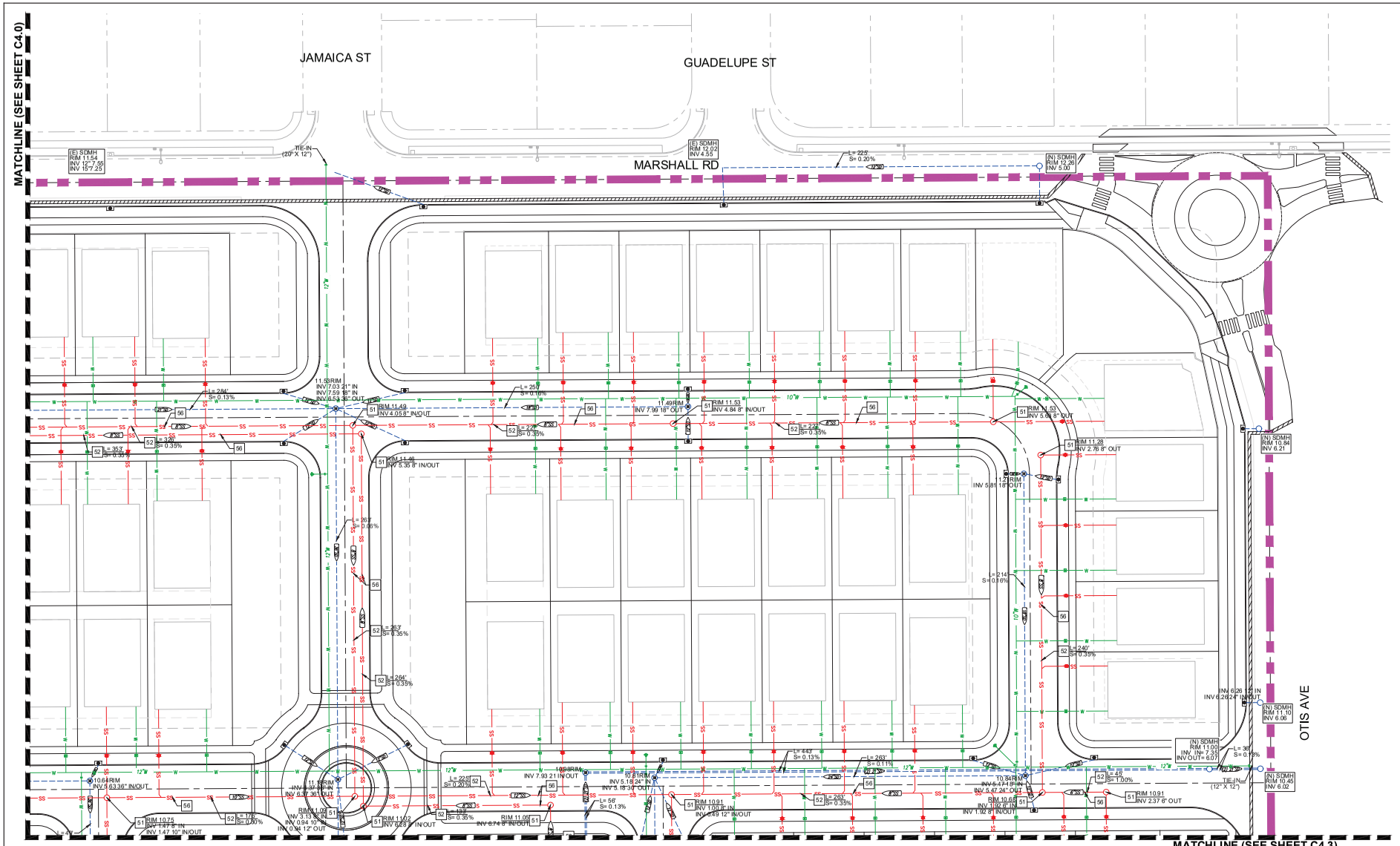
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C4.0



LEGEND

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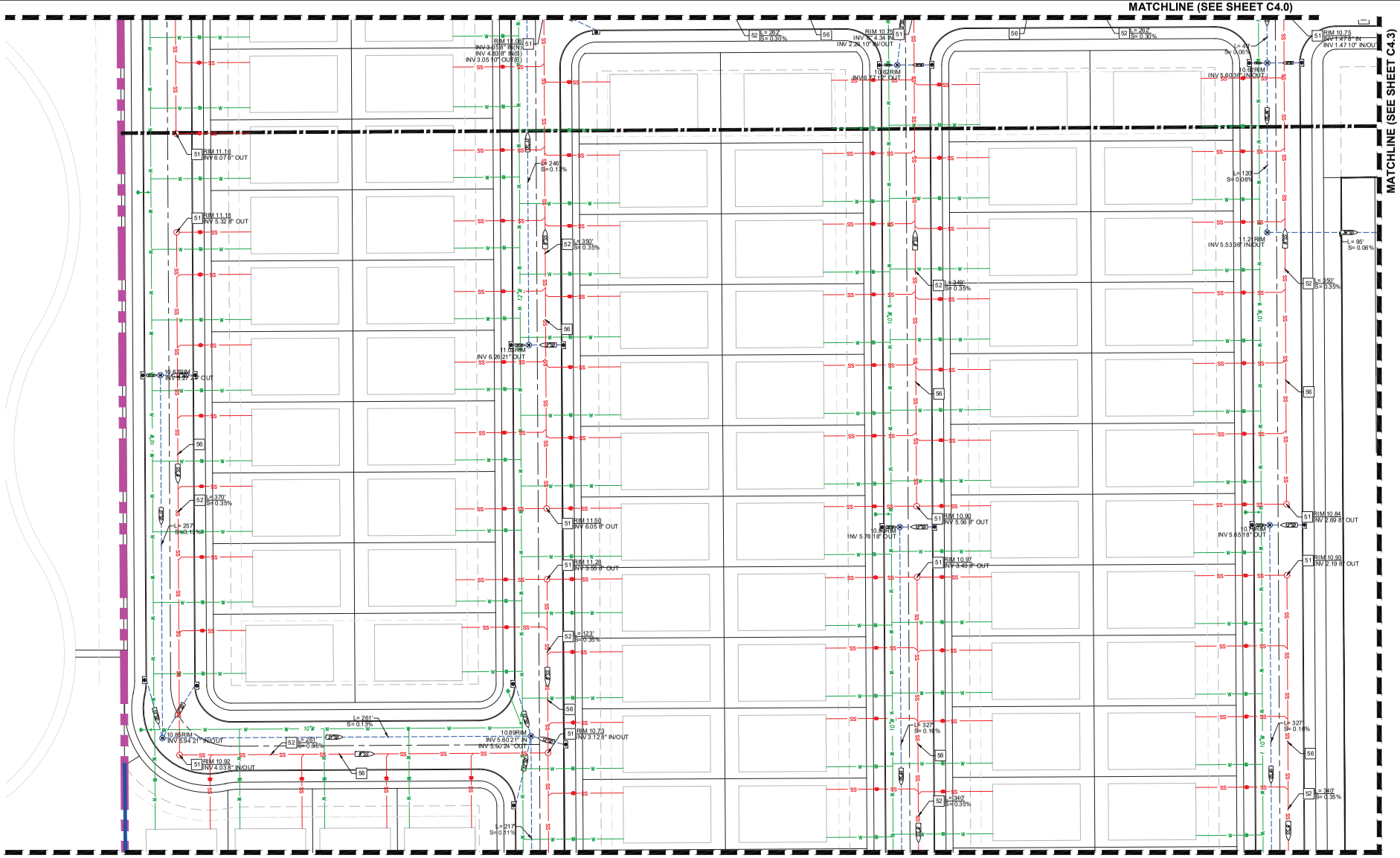
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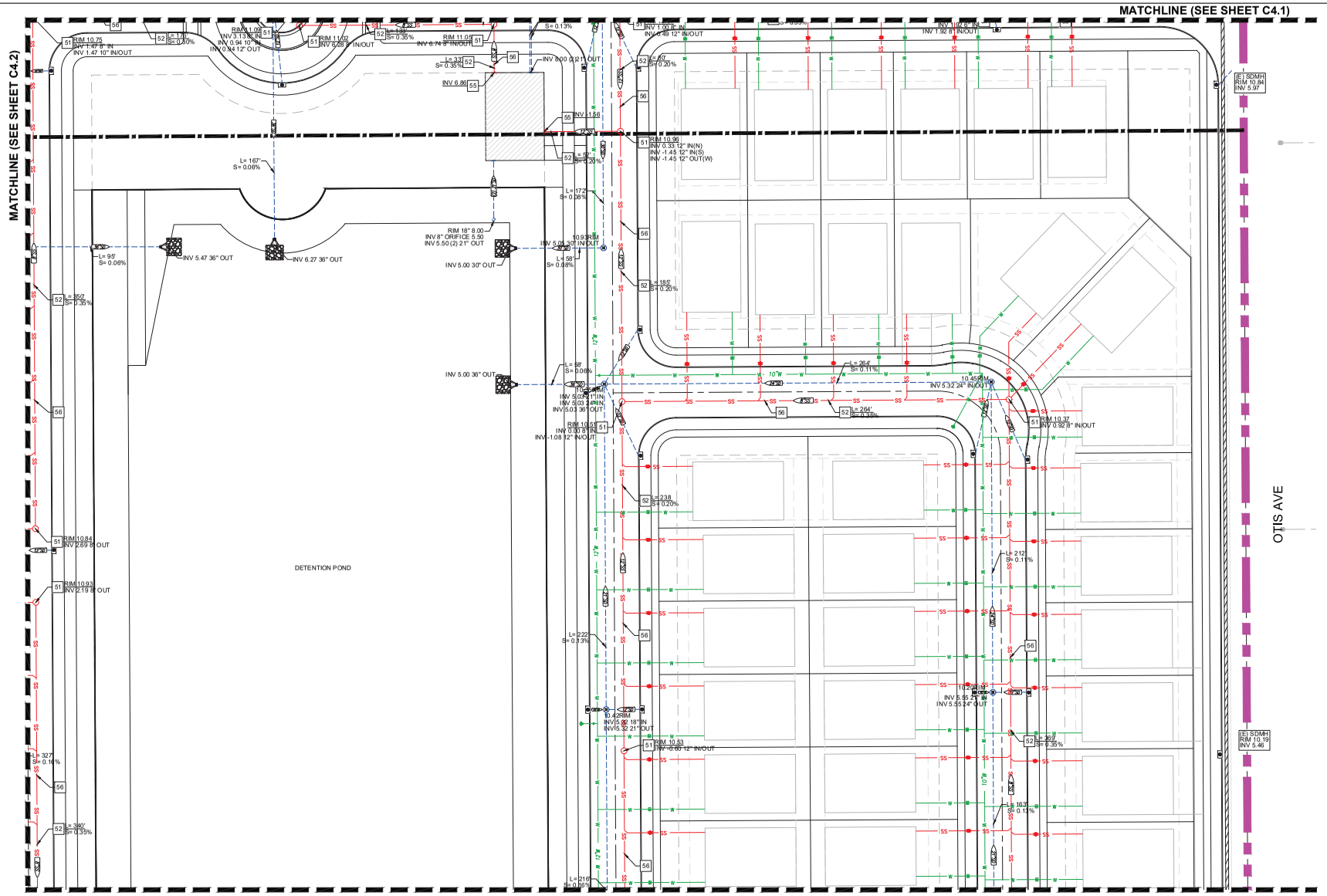
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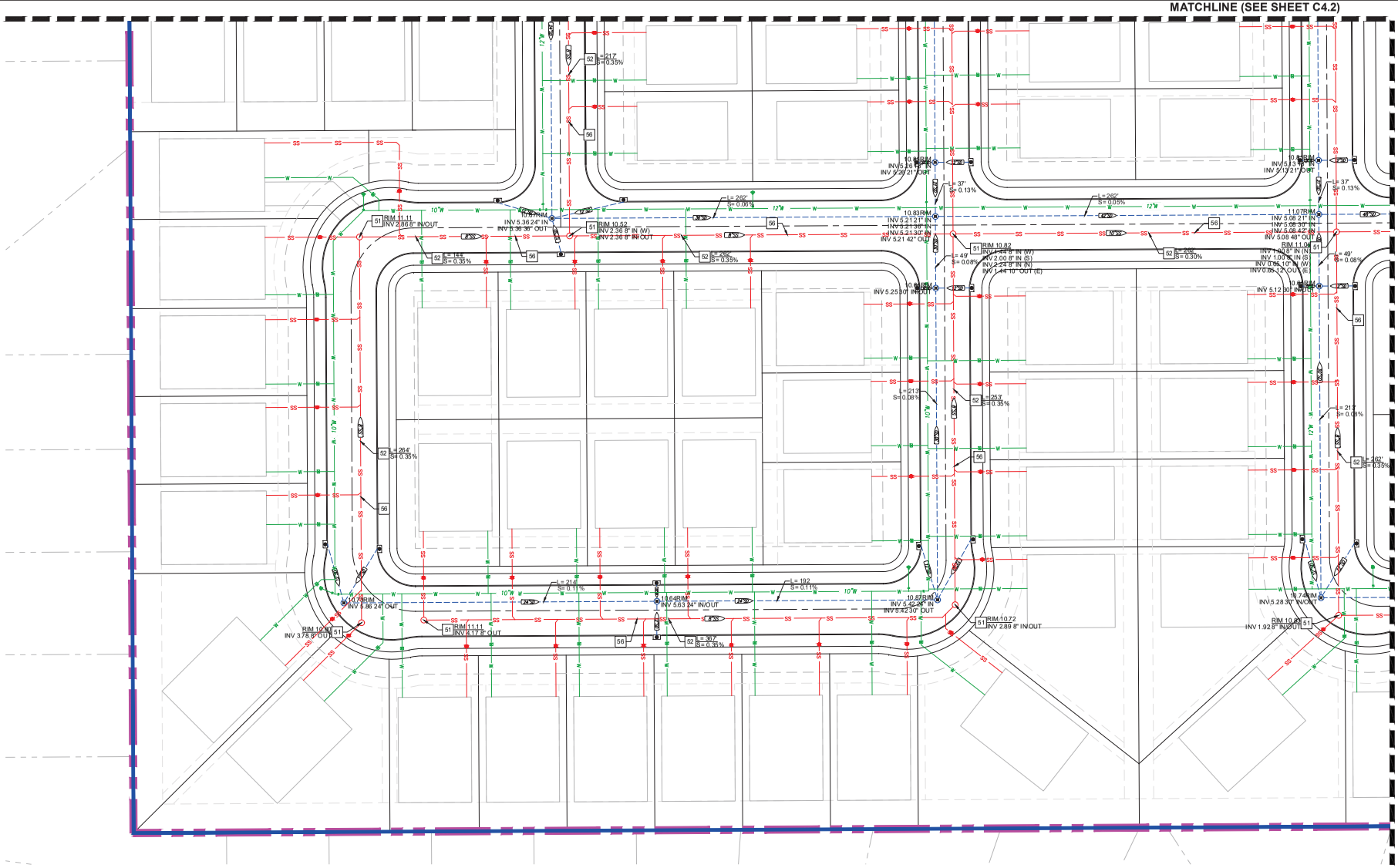
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3. INSTALL FIRE HYDRANT LATERAL AND VALVE ASSEMBLY PER STANDARD DETAIL 515, 516 AND 517 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.2 FOR DETAILS.
4. INSTALL THRUST RESTRAINED ASSEMBLY AND THRUST BLOCK PER STANDARD DETAIL 518 AND 519 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.2 AND C7.3 FOR DETAILS.

SANITARY SEWER CONSTRUCTION NOTES

51. INSTALL SEWER MANHOLE PER STANDARD DETAIL 404 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.3 FOR DETAILS.
52. INSTALL NEW SDR-35 SEWER PIPE. SIZE, SLOPE AND LENGTH PER PLANS.
53. TIE-IN TO EXISTING SANITARY SEWER MANHOLE, CONTRACTOR TO VERIFY INVERT ELEVATION, SIZE AND SLOPE IN FIELD.
54. NOT USED.
55. SANITARY SEWER CONNECTION TO PUMP/LIFT STATION, DESIGN BY OTHERS.
56. TRENCH BACKFILL PER STANDARD DETAIL 110 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.1 FOR DETAILS.

811 know what's below call 811 before you dig

NORTH

GRAPHIC SCALE

-30 0 15 30 60 120

(IN FEET)
1 INCH = 30 ft.

REVISIONS:

	REVISION	ISSUE	DATED
A			

Continental Development Consultants, Inc. Woodland, CA
Las Vegas, NV
Phone (702)347-6137; (530)405-3780 ● FAX (702)664-6237
Email: Contact @ continentaldc.com
Civil Engineering ■ Land Planning and Zoning Entitlements ●
Building Design and Improvements ■ Construction Consulting

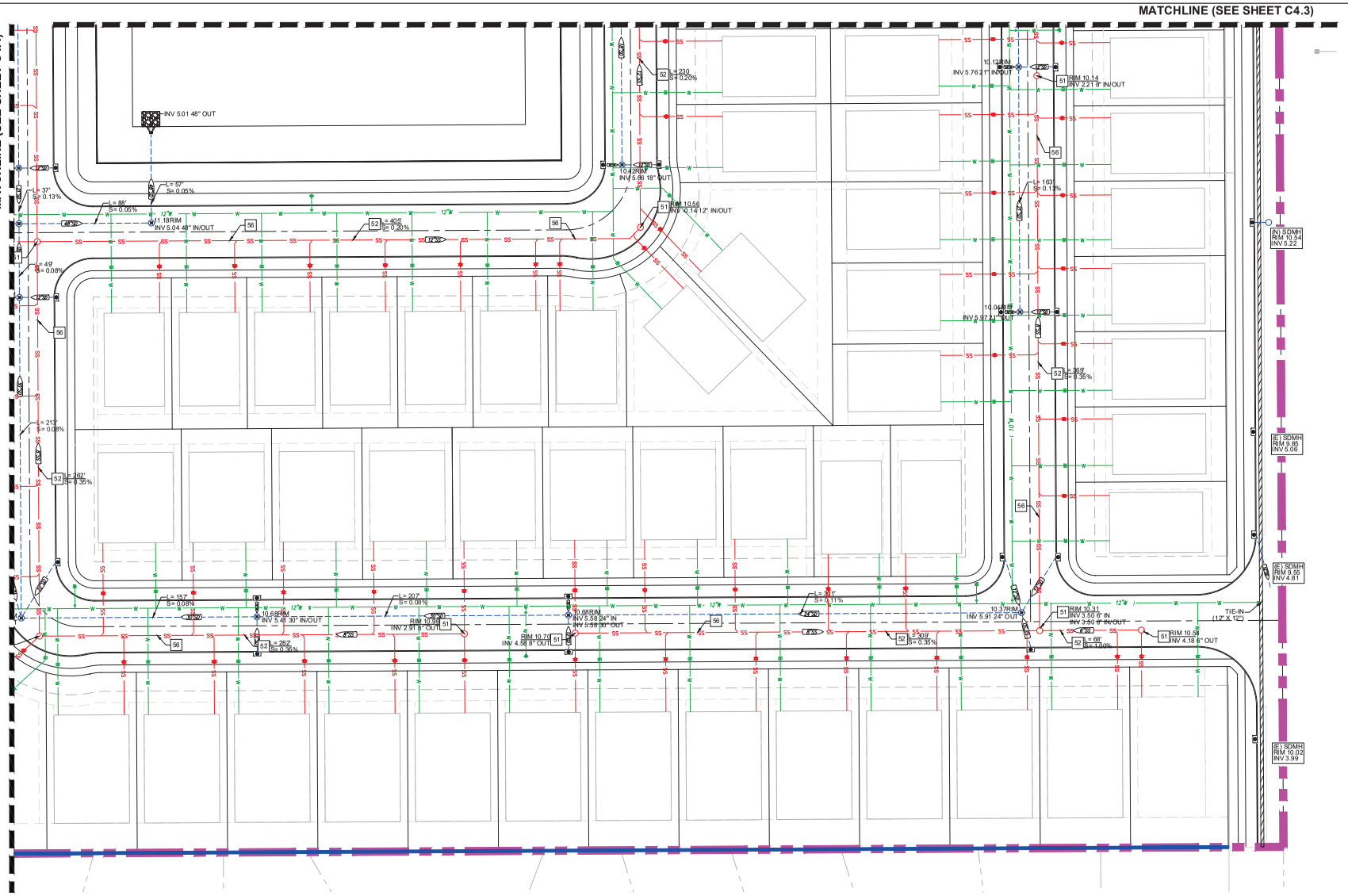
TITLE: PRELIMINARY UTILITIES PLAN

PROJECT:
BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

REGISTERED PROFESSIONAL ENGINEER
HARSHEY SINGH
No. 89913
Civil
Exp. 06/30/2027
STATE OF CALIFORNIA

DATE: 04/25/2026
JOB : LB-WS-01
DWG BY: AK
CHK BY: KV

C4.4



LEGEND

- PROPERTY LINE
- ROAD CENTERLINE
- DOMESTIC WATER LATERAL
- SANITARY SEWER LATERAL
- STORM DRAIN LATERAL
- STORM DRAIN INLET
- FIRE HYDRANT
- WATER METER
- GATE VALVE

GENERAL NOTES

1. CAP UTILITY LINE WITHIN 5 FEET OF PROPOSED BUILDING. CONTRACTOR TO MARK STUB OUT LOCATION WITH WOODEN 2X4 AND MARK UTILITY AS APPLICABLE.
2. ALL SEWER AND WATER SERVICES MUST BE EXTENDED TO THE BACK OF THE PSE.
3. ALL CROSSINGS WILL MAINTAIN 1.0 FT. MINIMUM VERTICAL CLEARANCE.
4. WATER MAINS AND SERVICES, INCLUDING THE METERS, MUST BE LOCATED AT LEAST 10 FT. HORIZONTALLY FROM AND 1 FT. VERTICALLY ABOVE ANY PARALLEL PIPELINE CONVEYING UNTREATED SEWAGE (INCLUDING SANITARY SEWER LATERALS), AND AT LEAST 4 FT. FROM AND ONE FOOT VERTICALLY ABOVE ANY PARALLEL PIPELINE CONVEYING STORM DRAINAGE.
5. NO JOINTS OR FITTINGS ARE ALLOWED WITHIN 10 FT OF THE UTILITY CROSSING.
6. PROVIDE SEWER/WATER SEPARATION PER STANDARD DETAIL 409 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.1 FOR DETAILS.
7. INSTALL RESIDENTIAL SEWER SERVICE WITH CLEANOUT PER STANDARD DETAIL 401 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.1 FOR DETAILS.
8. MINIMUM STORM DRAIN COVER SHALL BE 2 FT. (FINISHED GRADE TO TOP OF PIPE). WHERE THIS CANNOT BE ACHIEVED, PROVIDE CONCRETE ENCASEMENT PER CITY ENGINEER AND APPLICABLE STANDARDS.

WATER CONSTRUCTION NOTES

1. INSTALL 1 INCH RESIDENTIAL WATER SERVICE AND METER ASSEMBLY PER STANDARD DETAIL 501 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.1 FOR DETAILS.
2. INSTALL TYPICAL VALVE AND WATER MAIN PER STANDARD DETAIL 513 AND 514 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.2 FOR DETAILS.
3. INSTALL FIRE HYDRANT LATERAL AND VALVE ASSEMBLY PER STANDARD DETAIL 515, 516 AND 517 OF THE CITY OF WEST SACRAMENTO - STANDARD DETAIL, REFER SHEET C7.2 FOR DETAILS.
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811 know what's below call 811 before you dig

NORTH
GRAPHIC SCALE
-30 0 15 30 60 120
(IN FEET)
1 INCH = 30 ft.

REVISIONS:

	REVISION ISSUE	DATED
A		

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Building Design and Improvements ■ Construction Consulting

TITLE: PRELIMINARY UTILITIES PLAN

PROJECT: BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

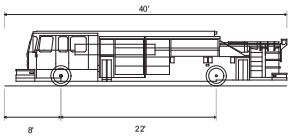
REGISTERED PROFESSIONAL ENGINEER
HARDEV SINGH
No. 89913
Civil
Exp. 06/30/2027
STATE OF CALIFORNIA

DATE: 04/25/2026
JOB : LB-WS-01
DWG BY: AK
CHK BY: KV

C4.5

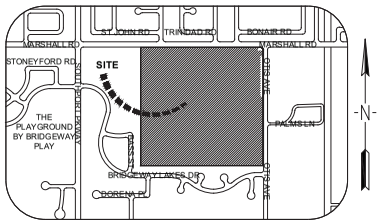
LEGEND

- PROPERTY LINE
- ROAD CENTERLINE
- FIRE TRUCK ACCESS ROUTE
- PROPOSED FIRE HYDRANT

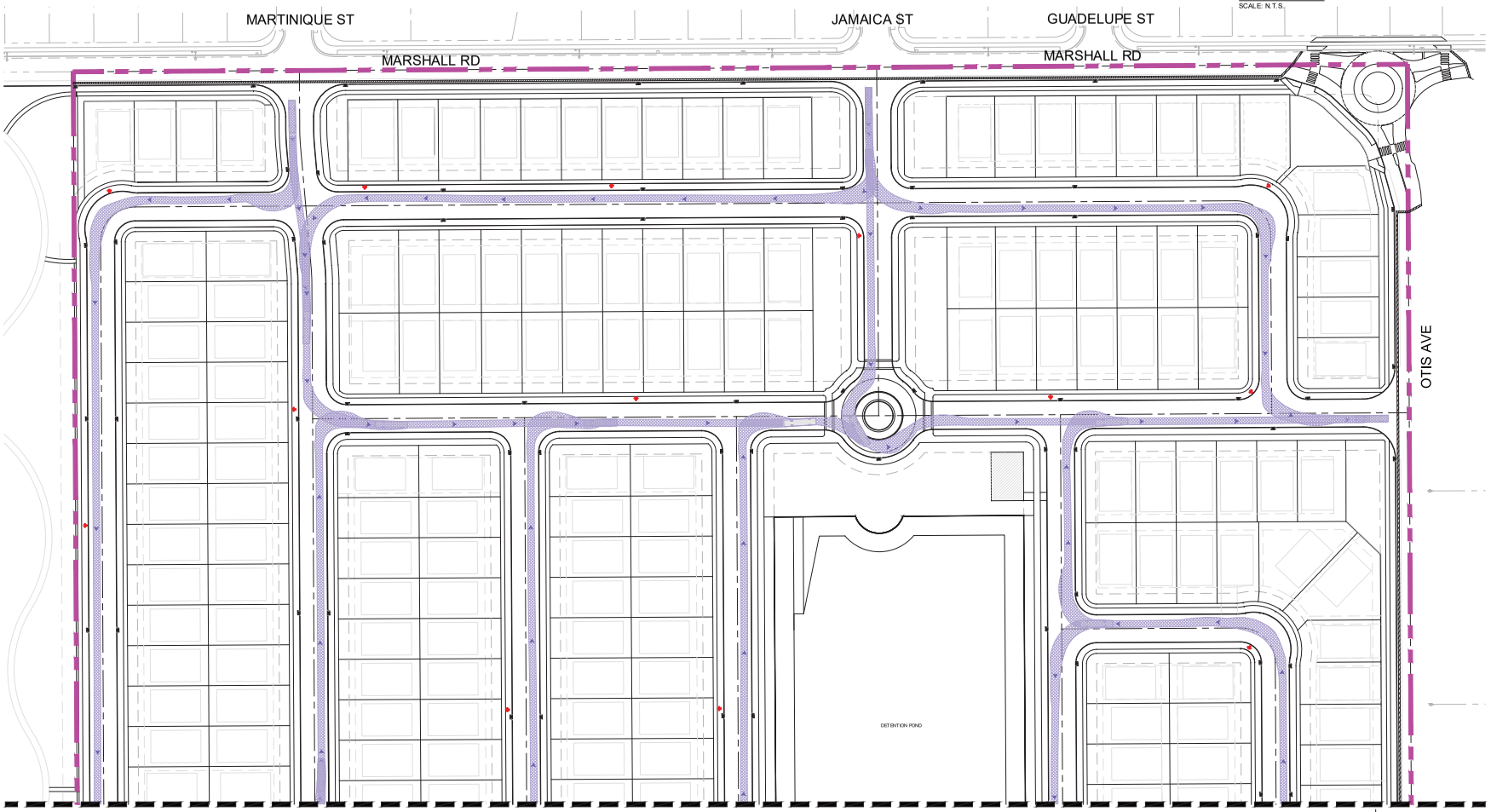


PUMPER FIRE TRUCK

OVERALL LENGTH	40.000FT
OVERALL WIDTH	8.167FT
OVERALL BODY HEIGHT	7.745FT
MIN BODY GROUND CLEARANCE	0.656FT
TRACK WIDTH	8.167FT
LOCK-TO-LOCK TIME	5.00S
MAX WHEEL ANGLE	45.00°



VICINITY MAP
SCALE: N.T.S.



MATCHLINE (SEE SHEET C5.1)

811 know what's below call 811 before you dig

NORTH

GRAPHIC SCALE

-60 0 30 60 120 240

(IN FEET)
1 INCH = 60 ft.

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Building Design and Improvements ■ Construction Consulting

TITLE: PRELIMINARY FIRE TRUCK ACCESS PLAN

PROJECT:
BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

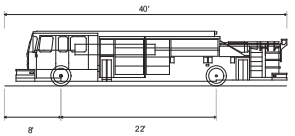
REGISTERED PROFESSIONAL ENGINEER
HARSHY SINGH
No. 89911
Civil
Exp. 06/30/2027
STATE OF CALIFORNIA

DATE: 04/25/2026
JOB : LB-WS-01
DWG BY: AK
CHK BY: KV

C5.0

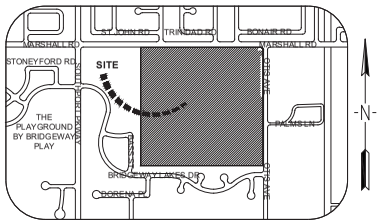
LEGEND

- PROPERTY LINE
- ROAD CENTERLINE
- FIRE TRUCK ACCESS ROUTE
- PROPOSED FIRE HYDRANT



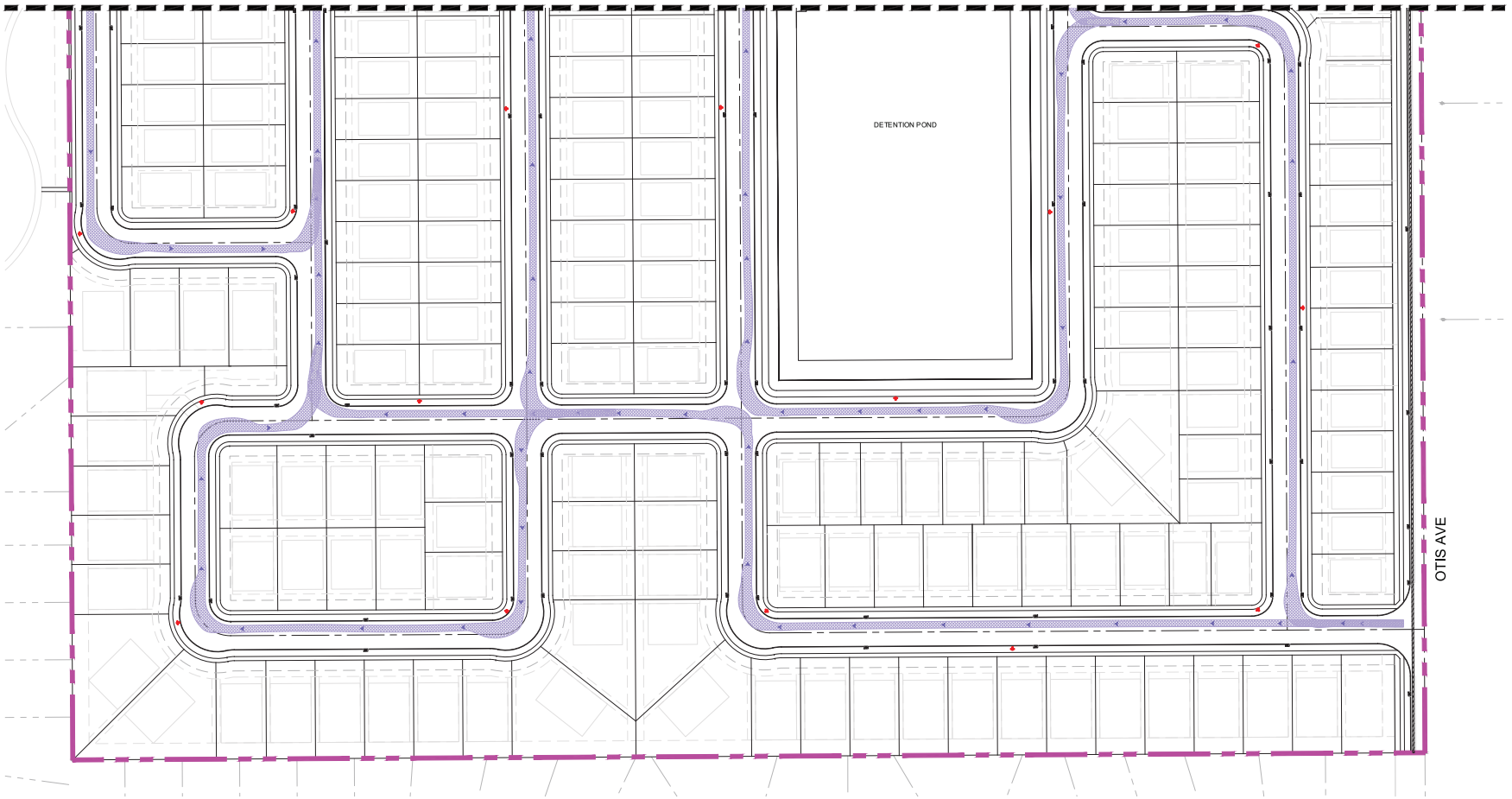
PUMPER FIRE TRUCK

OVERALL LENGTH	40.000FT
OVERALL WIDTH	8.167FT
OVERALL BODY HEIGHT	7.745FT
MIN BODY GROUND CLEARANCE	0.656FT
TRACK WIDTH	8.167FT
LOCK-TO-LOCK TIME	5.00S
MAX WHEEL ANGLE	45.00°



VICINITY MAP
SCALE: N.T.S.

MATCHLINE (SEE SHEET C5.0)



811 know what's below call 811 before you dig

NORTH
GRAPHIC SCALE
-60 0 30 60 120 240
(IN FEET)
1 INCH = 60 ft.

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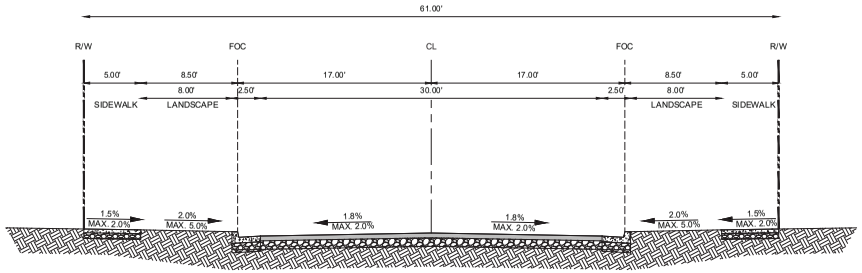
TITLE: PRELIMINARY FIRE TRUCK ACCESS PLAN

PROJECT:
BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

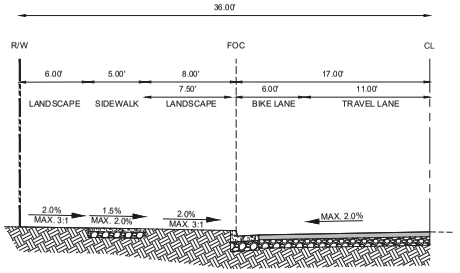
REGISTERED PROFESSIONAL ENGINEER
HARSHEY SINGH
No. 89981
Civil
Exp. 06/30/2027
STATE OF CALIFORNIA

DATE: 04/25/2026
JOB : LB-WS-01
DWG BY: AK
CHK BY: KV

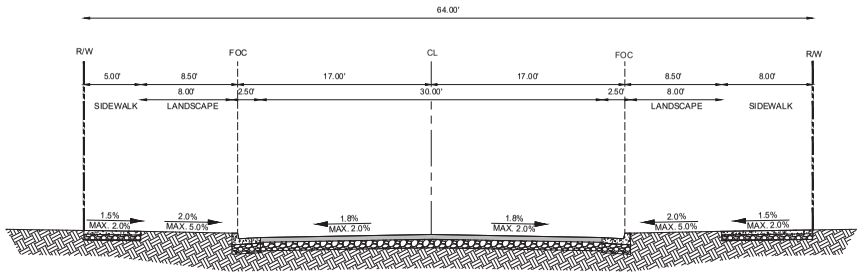
C5.1



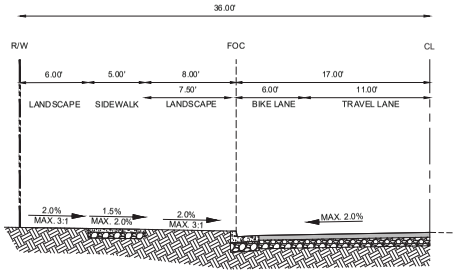
TYPICAL SECTION: 61.0' RIGHT OF WAY
NOT TO SCALE



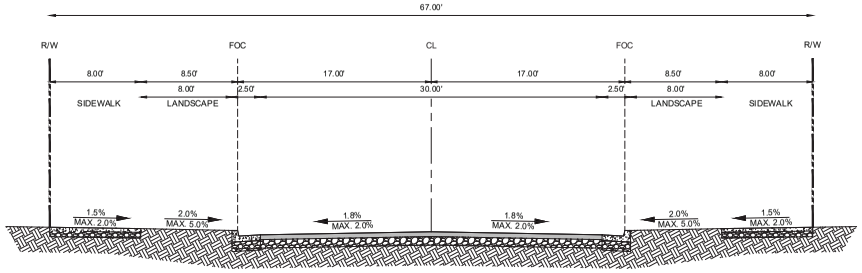
TYPICAL 36.00' HALF ROW SECTION: MARSHALL RD
NOT TO SCALE



TYPICAL SECTION: 64.0' RIGHT OF WAY
NOT TO SCALE



TYPICAL 36.00' HALF ROW SECTION: OTIS AVE
NOT TO SCALE



TYPICAL SECTION: 67.0' RIGHT OF WAY
NOT TO SCALE

ABBREVIATIONS

R/W	RIGHT OF WAY
FOC	FACE OF CURB
CL	CENTERLINE

REVISIONS:

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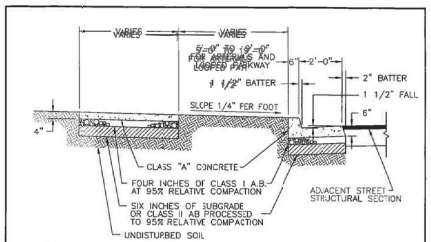
TITLE: TYPICAL STREET SECTIONS

PROJECT:
BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

REGISTERED PROFESSIONAL ENGINEER
HARSHIV SINGH
No. 89981
Civil
Exp. 06/30/2027
STATE OF CALIFORNIA

DATE: 12/25/2025
JOB : LB-WS-01
DWG BY: KV
CHK BY: HS

C6.0



NOTES:

A. PLACE ½ INCH DEEP TOOL JOINTS ON 12 FOOT INTERVALS AND SCORE MARKS ON 4-FOOT INTERVALS.

B. SIDEWALK WIDTH SHALL BE AS SHOWN IN DIVISION I, SECTION 3 OF THESE STANDARDS.

C. FOR CURB & GUTTER INSTALLATION IN EXISTING STREET, SAW CUT AND REMOVE 2 FEET WIDTH ADJACENT TO GUTTER, PLACE 6 INCH THICK ASPHALT CONCRETE PATCH, OR MATCH EXISTING, WHICHEVER IS GREATER.

D. APPLY LIGHT TRANSVERSE BROOM FINISH TO SURFACE OF SIDEWALK. BROOM FINISH CURB & GUTTER PARALLEL TO STREET CENTER LINE.

E. AT THE END OF EACH DAYS POUR, WHEN WORK IS TERMINATED, OR WHEN A DELAY OF MORE THAN 30 MINUTES OCCURS, THE JOINT SHALL BE MADE VERTICAL AND SQUARE ENDED WITH 18 INCH LENGTHS OF #4 REBAR EMBEDDED AT 18 INCHES ON CENTER.

F. WHEN A CONCRETE POUR TERMINATES AT EXISTING CONCRETE, THE REBAR, AS DESCRIBED ABOVE, SHALL BE RETROFITTED BY CORING AND DRILLING EXISTING CONCRETE (4" MIN.), INSTALLING BARS, AND FILLING ANNULAR VOIDS WITH EPOXY.

THE CITY OF WEST SACRAMENTO – STANDARD DETAIL

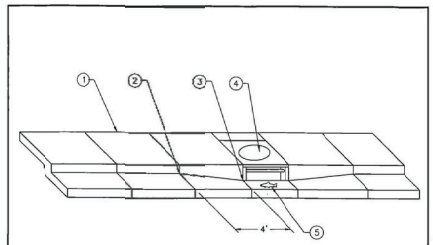
APPROVED BY: _____ C-31133 P.E. NO. 3/31/05 DATE

REVISION:
REVISION:
REVISION:
REVISION:

TITLE: **SOUTHPORT STANDARD FOR SEPARATED CURB GUTTER & SIDEWALK**

STANDARD DETAIL # 202

DWG\STAN\NEW\202.DWG 11/28/01



1. BACK OF SIDEWALK.
2. BEGIN TRANSITION OF FLOW LINE.
3. END TRANSITION OF FLOW LINE (DEPRESS FLOW LINE 2 INCHES).
4. LID MARKED "STORM DRAIN"
5. STORM DRAIN MARKER PER STD. DETAIL #306.

THE CITY OF WEST SACRAMENTO – STANDARD DETAIL

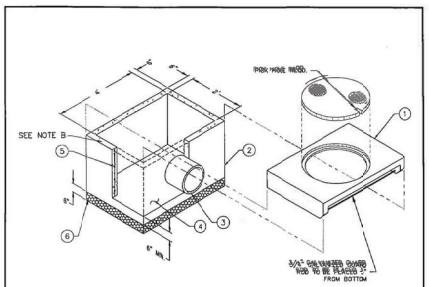
APPROVED BY: _____ C-31133 P.E. NO. 3/31/05 DATE

REVISION:
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REVISION:
REVISION:

TITLE: **CURB AND GUTTER TRANSITIONS FOR DRAIN INLETS**

STANDARD DETAIL # 207

DWG\STAN\NEW\207.DWG 4/10/01



1. SANTA ROSA MODEL 4A OR PHOENIX MODEL D-2448-C WITH SOUTH BAY FOUNDRY FRAME AND COVER No. 1624 MARKED "STORM DRAIN".
2. CAST-IN-PLACE, CLASS "A" CONCRETE BASE, OR PRE-CAST BASE.
3. OUTLET PIPE.
4. SLOPE BOTTOM 2 INCHES AND CHANNELIZE TO PIPE INVERT.
5. REINFORCEMENT #4 @ 12 INCHES O.C. EACH WAY.
6. MINIMUM SIX (6) INCHES OF 3/4 INCH CRUSHED ROCK PER ASTM D448 #57 COMPACTED TO 95R RELATIVE COMPACTION.

NOTES:

A. IF INLET IS NOT INSTALLED IN SIDEWALK, PLACE A 6 INCH X 12 INCH NON-REINFORCED CLASS "A" CONCRETE CURB MONOLITHICALLY BETWEEN BASE AND PRE-CAST TOP SECTION.

B. IF DEPTH FROM FLOW LINE TO TOP OF CURB IS 3 FEET OR MORE, INCREASE WALL THICKNESS TO 8 INCHES.

C. IF INLET/BASIN IS INSTALLED ADJACENT TO CONCRETE CURB AND GUTTER OR SIDEWALK, INSTALL 12" LENGTHS OF #4 REBAR AT 18" O.C. PER DIVISION IV SECTION 11 OF THESE STANDARDS.

THE CITY OF WEST SACRAMENTO - STANDARD DETAIL

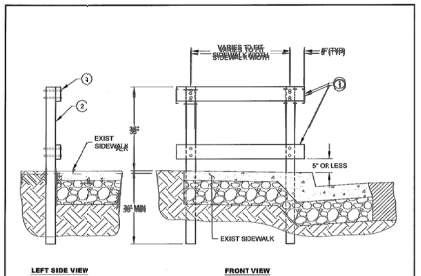
APPROVED BY: _____ C-31133 P.E. NO. 3/31/05 DATE

REVISION:
REVISION:
REVISION:
REVISION:

TITLE: **CURB INLET AND CATCH BASIN**

STANDARD DETAIL # 301

DWG\STAN\NEW\301.DWG 5/23/01



NOTES:

A. SIDEWALK BARRICADES TO BE ERECTED AT EACH LOCATION WHERE NECESSARY EXCAVATION CANNOT BE MADE FOR CONSTRUCTION TO CONTINUE BEYOND THE TERMINUS OF A SIDEWALK.

B. ALL EXPOSED BARRICADE SURFACES TO BE PRIMED AND PAINTED WITH TWO (2) COATS OF WHITE PAINT CONFORMING TO SECTION 91-1.01 AND 91-1.02 OF THE STATE STANDARD SPECIFICATIONS.

C. BOTTOM RAIL TO BE LOCATED NO HIGHER THAN 9" ABOVE ADJACENT PEDESTRIAN ACCESSIBLE ROUTE FINISHED SURFACE.

1	2" x 6" REDWOOD (TYP)
2	4" x 4" x 9'-0" MIN PRESSURE TREATED DOUGLAS FIR OR REDWOOD POSTS (TYP)
3	5/8" CARRIAGE BOLTS WITH WASHERS AND NUTS (TYP)

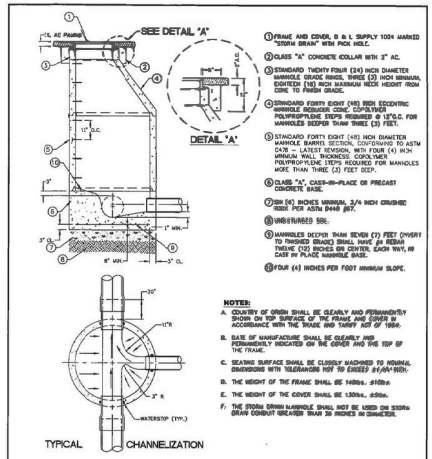
THE CITY OF WEST SACRAMENTO - STANDARD DETAIL

STANDARD DETAIL # 242

TITLE: **SIDEWALK BARRICADE**

DATE APPROVED: 9/1/2010

P:\CD Engineering & Inspection\CAD_STANDARDS\DWG_STANDARD_DETAILS\Revised Nov# 2009\M #242 - sidewalkbarricade.dwg 07/02/09 Rogelio, Donna



1. FRAME AND COVER, D & L SUPPLY 1024 MARKED "STORM DRAIN" WITH PICK HOLE.
2. CLASS "A" CONCRETE COLLAR WITH 2" AC.
3. STANDARD TWENTY FOUR (24) INCH DIAMETER MANHOLE GRADE RINGS, THREE (3) INCH MINIMUM, EIGHTEEN (18) INCH MAXIMUM HEIGHT FROM CONE TO FINISH GRADE.
4. STANDARD FORTY EIGHT (48) INCH ECCENTRIC MANHOLE REDUCER CONE, COPOLYMER POLYPROPYLENE STEPS REQUIRED @ 16"O.C. FOR MANHOLES DEEPER THAN THREE (3) FEET.
5. STANDARD FORTY EIGHT (48) INCH DIAMETER MANHOLE BARREL SECTION, CONFORMING TO ASTM C478 – LATEST REVISION, WITH FOUR (4) INCH MINIMUM WALL THICKNESS COPOLYMER POLYPROPYLENE STEPS REQUIRED FOR MANHOLES MORE THAN THREE (3) FEET DEEP.
6. CLASS "A", CAST-IN-PLACE OR PRECAST CONCRETE BASE.
7. SIX (6) INCHES MINIMUM, 3/4 INCH CRUSHED ROCK PER ASTM D448 #57.
8. UNDISTURBED SOIL.
9. MANHOLES DEEPER THAN SEVEN (7) FEET (MEASURED TO FINISHED GRADE) SHALL HAVE #4 REBAR TWELVE (12) INCHES ON CENTER, EACH WAY, IN CAST IN PLACE MANHOLE BASE.
10. FOUR (4) INCHES PER FOOT MINIMUM SLOPE.

NOTES:

A. COUNTRY OF ORIGIN SHALL BE CLEARLY AND PERMANENTLY SHOWN ON TOP SURFACE OF THE FRAME AND COVER IN ACCORDANCE WITH THE TRADE AND TARIFF ACT OF 1984.

B. DATE OF MANUFACTURE SHALL BE CLEARLY AND PERMANENTLY INDICATED ON THE COVER AND THE TOP OF THE FRAME.

C. BEARING SURFACE SHALL BE CLOSELY MACHINED TO NOMINAL DIMENSIONS WITH TOLERANCES NOT TO EXCEED ±1/64-INCH.

D. THE WEIGHT OF THE FRAME SHALL BE 140lbs. ±10lbs.

E. THE WEIGHT OF THE COVER SHALL BE 130lbs. ±5lbs.

F. THE STORM DRAIN MANHOLE SHALL NOT BE USED ON STORM DRAIN CONDUIT GREATER THAN 36 INCHES IN DIAMETER.

THE CITY OF WEST SACRAMENTO – STANDARD DETAIL

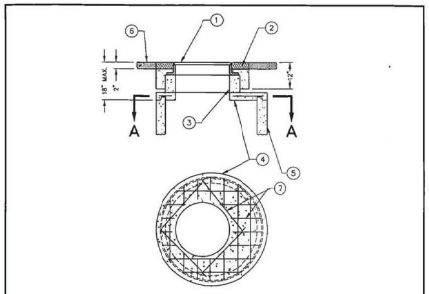
APPROVED BY: _____ C-31133 P.E. NO. 3/31/05 DATE

REVISION:
REVISION:
REVISION:
REVISION:

TITLE: **STORM DRAIN MANHOLE**

STANDARD DETAIL # 302

DWG\STAN\NEW\302.DWG 11/28/01



SECTION A-A

1. FRAME AND COVER, SEE DETAIL #302.
2. CLASS "A" CONCRETE COLLAR WITH 2" A.C. COLLAR, SEE DETAIL #302.
3. GRADE RING(S), 2-FOOT INSIDE DIAMETER; 18" MAXIMUM HEIGHT.
4. USE FLAT SLAB TOP IF DEPTH DOES NOT PERMIT USE OF ECCENTRIC CONE. DESIGN SHALL MEET H-20 LOADING REQUIREMENTS AND BE TESTED IN ACCORDANCE WITH ASTM C-497.
5. STANDARD BARREL.
6. STREET STRUCTURAL SECTION.
7. REINFORCING BARS, TYPICAL.

THE CITY OF WEST SACRAMENTO – STANDARD DETAIL

APPROVED BY: _____ 10/10 P.E. NO. 10/10 DATE

REVISION:
REVISION:
REVISION:
REVISION:

TITLE: **FLAT SLAB MANHOLE TOP**

STANDARD DETAIL # 303

DWG\STAN\NEW\303.DWG 5/10/01

REVISIONS:

NO.	REVISION/ISSUE	DATED
1		

Continental Development Consultants, Inc.
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Email: Contact@continentaldc.com
Civil Engineering■Land Planning and Zoning Entitlements■■
Building Design and Improvements■Construction Consulting

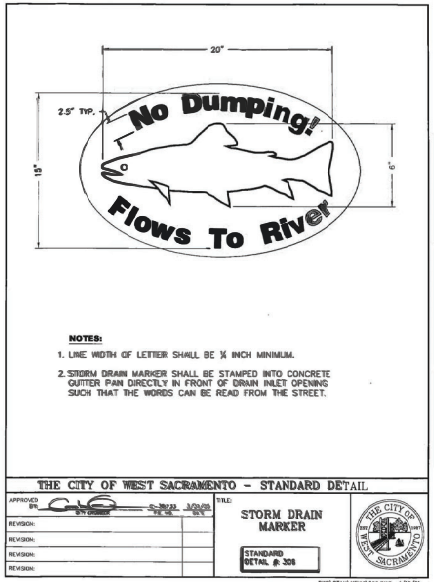
TITLE: AGENCY DETAILS

PROJECT: BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

REGISTERED PROFESSIONAL ENGINEER
HARRY SHORT
No. 18977
Civil
STATE OF CALIFORNIA

DATE: 12/25/2025
JOB : LB-WS-01
DWG BY: KV
CHK BY: HS

C7.0



NOTES:

1. LINE WIDTH OF LETTER SHALL BE ¼ INCH MINIMUM.
2. STORM DRAIN MARKER SHALL BE STAMPED INTO CONCRETE GUTTER PAN DIRECTLY IN FRONT OF DRAIN INLET OPENING SUCH THAT THE WORDS CAN BE READ FROM THE STREET.

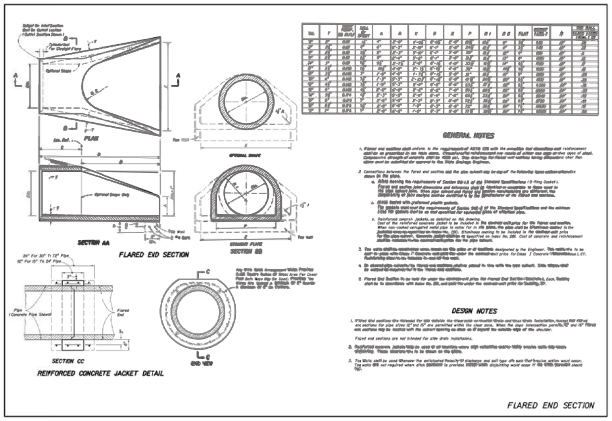
THE CITY OF WEST SACRAMENTO - STANDARD DETAIL

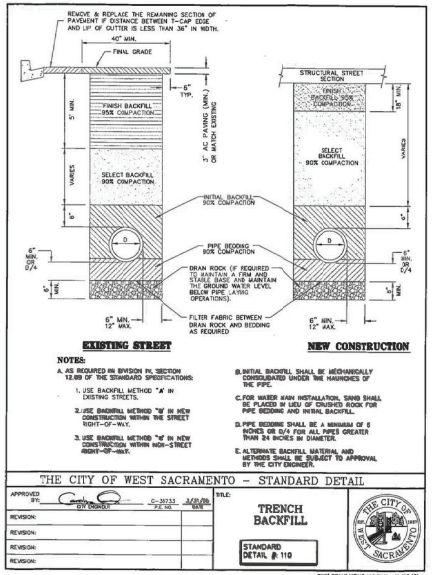
APPROVED BY:	C-38733 P.E. NO.	3/31/05 DATE
CITY ENGINEER		
REVISION:		
REVISION:		
REVISION:		
REVISION:		

TITLE: STORM DRAIN MARKER

STANDARD DETAIL #: 308

DWG\STAN\NEW\308.DWG 4/13/01





NOTES:

A. AS REQUIRED IN DIVISION IV, SECTION 12.00 OF THE STANDARD SPECIFICATIONS:

1. USE BACKFILL METHOD "A" IN EXISTING STREETS.
2. USE BACKFILL METHOD "B" IN NEW CONSTRUCTION WITHIN THE STREET RIGHT-OF-WAY.
3. USE BACKFILL METHOD "A" IN NEW CONSTRUCTION WITHIN NON-STREET RIGHT-OF-WAY.

B. INITIAL BACKFILL SHALL BE MECHANICALLY CONSOLIDATED UNDER THE HAUNCHES OF THE PIPE.

C. FOR WATER MAIN INSTALLATION, SAND SHALL BE PLACED IN LIEU OF CRUSHED ROCK FOR PIPE BEDDING AND INITIAL BACKFILL.

D. PIPE BEDDING SHALL BE A MINIMUM OF 6 INCHES OR D/4 FOR ALL PIPES GREATER THAN 24 INCHES IN DIAMETER.

E. ALTERNATE BACKFILL MATERIAL AND METHODS SHALL BE SUBJECT TO APPROVAL BY THE CITY ENGINEER.

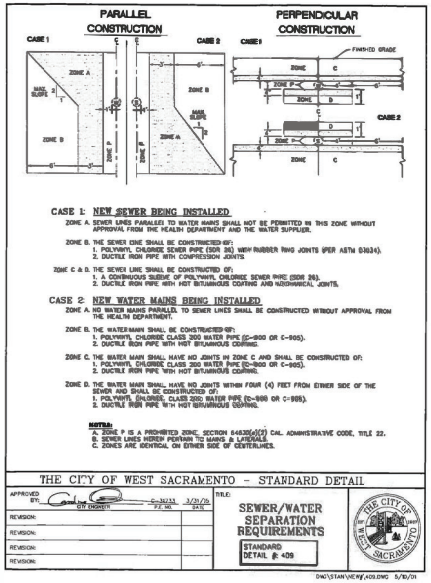
THE CITY OF WEST SACRAMENTO - STANDARD DETAIL

APPROVED BY:	C-38733 P.E. NO.	3/31/05 DATE
CITY ENGINEER		
REVISION:		
REVISION:		
REVISION:		
REVISION:		

TITLE: TRENCH BACKFILL

STANDARD DETAIL #: 110

DWG\STAN\NEW\110.DWG 11/28/01



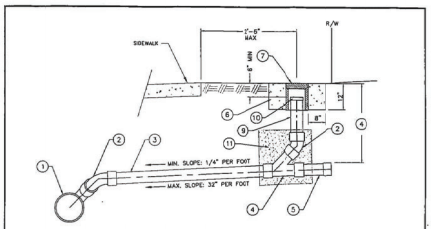
THE CITY OF WEST SACRAMENTO - STANDARD DETAIL

APPROVED BY:	C-38733 P.E. NO.	3/31/05 DATE
CITY ENGINEER		
REVISION:		
REVISION:		
REVISION:		
REVISION:		

TITLE: SEWER/WATER SEPARATION REQUIREMENTS

STANDARD DETAIL #: 409

DWG\STAN\NEW\409.DWG 5/31/01



1. SEWER MAIN WITH SEWER SERVICE WYE AT 30-45 DEGREES.
2. WYE BRANCH WITH 1/8 BENDS OR 4" ABS LONGSWEEP COMBO.
3. SEWER SERVICE SHALL BE CONSTRUCTED WITH A STRAIGHT GRADE AND ALIGNMENT FROM THE MAIN TO THE RIGHT-OF-WAY UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER. SEWER SERVICES SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE (CLASS 52) OR POLYVINYL CHLORIDE SEWER PIPE (SDR 26) OR ABS.
4. SEWER SERVICE SHALL HAVE A MINIMUM OF THIRTY SIX (36) INCHES OF COVER FROM FINISHED GRADE AT RIGHT-OF-WAY. SEWER SERVICES THAT HAVE LESS THAN THIRTY SIX (36) INCHES OF COVER SHALL REQUIRE SPECIAL APPROVAL BY THE CITY ENGINEER.
5. SERVICE TO BUILDING. 6" HD BUILDING. PLACE TWELVE (12) INCH STUB (TO RIGHT-OF-WAY) WITH WATER TIGHT CAP.
6. CLASS "A" CONCRETE (EXCEPT IN RESIDENTIAL RUNNER OR LAWN AREAS.
7. CLEANOUT BOX SHALL BE A CHRISTY G5 BOX WITH CAST IRON LID WHEN SUBJECT TO TRAFFIC LOADS. USE CARSON-BROOKS 1412-B BOX IN RESIDENTIAL LAWN AND PLANTER AREAS. ALL LIDS SHALL READ "SEWER CO.".
8. CURB, GUTTER, AND SIDEWALK WITH A TWO (2) INCH x TWO (2) INCH LETTER "S" STAMPED, CHISELED, ETC. ON TOP OF CURB LOCATED DIRECTLY ABOVE WHERE SEWER SERVICE CROSSES THE GUTTER FLOWLINE. METHOD TO BE APPROVED BY THE CITY ENGINEER.
9. RISER. SAME MATERIAL AS SEWER SERVICE.
10. RUBBER END CAP W/STAINLESS STEEL SHEAR BAND.
11. BEDDING MATERIAL.

NOTES:

A. SEWER SERVICES SHALL BE RUN TO MANHOLES WHENEVER POSSIBLE.

B. SEWER CLEANOUTS SHALL LIE WITHIN CITY R/W OR A DEDICATED PUBLIC EASEMENT IN ALL CASES.

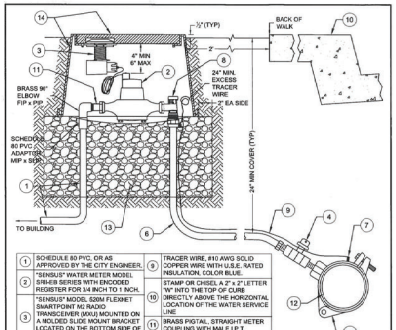
THE CITY OF WEST SACRAMENTO - STANDARD DETAIL

APPROVED BY:	C-38733 P.E. NO.	3/31/05 DATE
CITY ENGINEER		
REVISION:		
REVISION:		
REVISION:		
REVISION:		

TITLE: RESIDENTIAL SEWER SERVICE WITH CLEANOUT

STANDARD DETAIL #: 401

DWG\STAN\NEW\401.DWG 3/11/01



1	SCHEDULE 80 PVC, OR AS APPROVED BY THE CITY ENGINEER.	9	TRACER WIRE, #10 AWG SOLID COPPER WIRE WITH U.S.E. RATED INSULATION, COLOR BLUE.
2	"SENSUS" METER METER MODEL SR4-II-B SERIES WITH ENCODED REGISTER FOR 1/4 INCH TO 1 INCH.	10	STAMP OR CHISEL A 2" x 2" LETTER "W" INTO THE TOP OF CURB DIRECTLY ABOVE THE HORIZONTAL LOCATION OF THE WATER SERVICE LINE.
3	"SENSUS" MODEL 520M FLEXNET SMARTPOINT W/ RADIO TRANSCEIVER (XMIT) MOUNTED ON A MOLDED SLIDE MOUNT BRACKET LOCATED ON THE BOTTOM SIDE OF THE LID.	11	BRASS PIGTAIL, STRAIGHT METER COUPLING WITH MALE I.P.T.
4	BALL CORPORATION STOP.	12	WATERMAIN.
5	DOUBLE STRAP SERVICE SADDLE.	13	1/2 INCH CRUSHED ROCK, 12 INCHES DEEP.
6	IRON PIPE SIZE, 200 PSI POLYETHYLENE SERVICE TUBING.	14	IN LANDSCAPED AREAS INSTALL CARSON 1220 WATER METER BOX AND DFW LID PART NUMBER DFW1220B-3-N-LID AS SUPPLIED BY DFW PLASTICS, INC. OR APPROVED EQUAL. BOXES AND LIDS IN GRASS OR LANDSCAPED AREAS SHALL BE GREEN IN CO.OR. ALL LIDS SHALL READ "WATER". BOXES & LIDS IN DRIVEWAYS AND SIDEWALKS SHALL BE TRAFFIC RATED AND BE GRAY IN COLOR (CHRISTY S-16 WITH DFW B16C4-4A GRAY LID)
7	CONNECT SERVICE TRACER WIRE TO WATER MAIN TRACER WIRE. SPLICES SHALL BE "KURNEY" (SPLIT BOLT) OR "YUP-L-TAP" INSTALLATION TYPE SHALL BE VINYL, ELECTRICAL WITH TWO COATS OF "SCOTCH KOTE".		
8	BALL ANGLE METER STOP WITH LOCK BARB.		

NOTES:

1. SEE MANUFACTURER'S INSTRUCTIONS FOR CONNECTION FROM REGISTER TO MXU. VERIFICATION THAT THE MXU HAS BEEN PROPERLY CONNECTED AND PROGRAMMED SHALL BE MADE BY THE CITY ENGINEER.
2. COIL EXCESS TRACER WIRE IN BOTTOM OF METER BOX.

THE CITY OF WEST SACRAMENTO - STANDARD DETAIL

STANDARD DETAIL #: 501

TITLE: RESIDENTIAL WATER SERVICE AND METER ASSEMBLY ¾" to 1"

CITY OF WEST SACRAMENTO

DATE APPROVED: 10/12/21

P:\cd engineering & inspections\cad_standards\CITY_STANDARD_DETAILS\Revised Nov# 2020\std #501 rev wo serv & meter assem.dwg 10/13/2021 Rappler, Dennis

Continental Development Consultants, Inc.
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Civil Engineering●Land Planning and Zoning Entitlements●
Building Design and Improvements●Construction Consulting

REVISIONS:

	REVISION ISSUE	DATED
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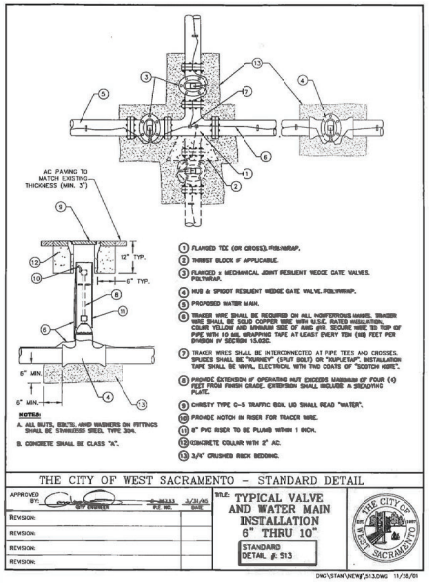
TITLE: AGENCY DETAILS

PROJECT: BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

REGISTERED PROFESSIONAL ENGINEER HARSHEY SINGH No. 89913 Civil Exp. 06/30/2023 STATE OF CALIFORNIA

DATE: 12/25/2025
JOB : LB-WS-01
DWG BY: KV
CHK BY: HS

C7.1

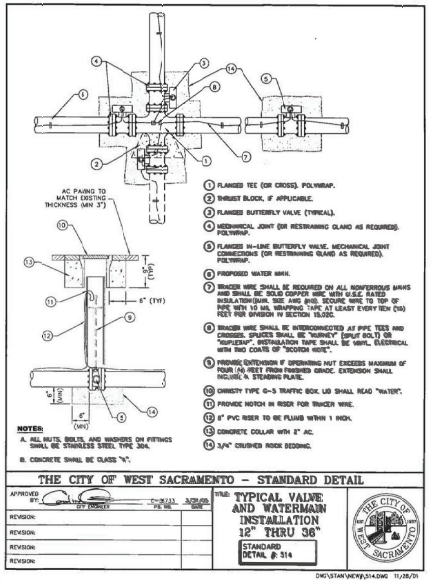


THE CITY OF WEST SACRAMENTO - STANDARD DETAIL

TITLE: TYPICAL VALVE AND WATER MAIN INSTALLATION 8" THRU 10"

STANDARD DETAIL #: 513

DWG\STAN\NEW\513.DWG 11/28/01

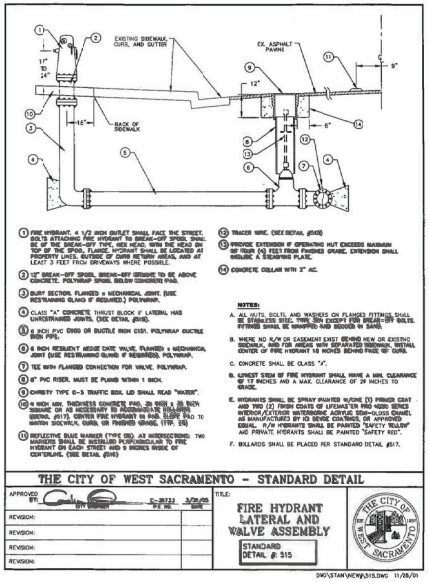


THE CITY OF WEST SACRAMENTO - STANDARD DETAIL

TITLE: TYPICAL VALVE AND WATERMAIN INSTALLATION 12" THRU 36"

STANDARD DETAIL #: 514

DWG\STAN\NEW\514.DWG 11/28/01

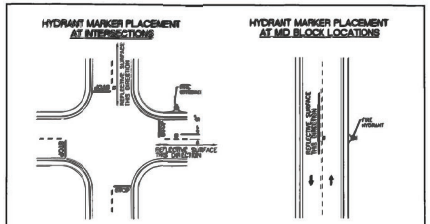


THE CITY OF WEST SACRAMENTO - STANDARD DETAIL

TITLE: FIRE HYDRANT LATERAL AND VALVE ASSEMBLY

STANDARD DETAIL #: 515

DWG\STAN\NEW\515.DWG 11/28/01

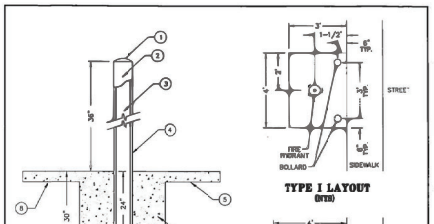


THE CITY OF WEST SACRAMENTO - STANDARD DETAIL

TITLE: HYDRANT MARKER (BLUE DOT) LOCATIONS

STANDARD DETAIL #: 516

DWG\STAN\NEW\516.DWG 4/5/01

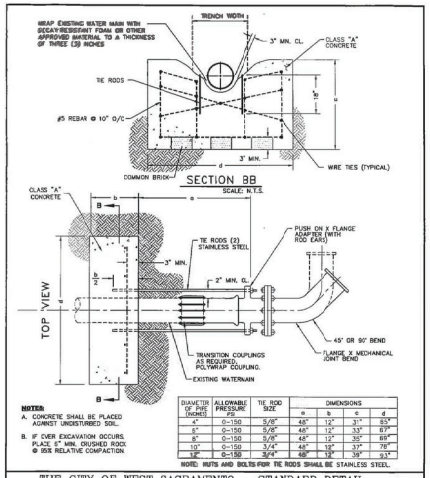


THE CITY OF WEST SACRAMENTO - STANDARD DETAIL

TITLE: FIRE HYDRANT BOLLARD DETAIL

STANDARD DETAIL #: 517

DWG\STAN\NEW\517.DWG 5/23/01



DIAMETER OF PIPE (INCHES)	ALLOWABLE PRESSURE PSI	TIE ROD SIZE	DIMENSIONS			
			a	b	c	d
4"	0-150	5/8"	48"	12"	31"	63"
6"	0-150	5/8"	48"	12"	33"	67"
8"	0-150	5/8"	48"	12"	35"	69"
10"	0-150	3/4"	48"	12"	37"	78"
12"	0-150	3/4"	48"	12"	39"	83"

THE CITY OF WEST SACRAMENTO - STANDARD DETAIL

TITLE: THRUST RESTRAINT ASSEMBLY

STANDARD DETAIL #: 518

DWG\STAN\NEW\518.DWG 4/11/01

REVISIONS:

	REVISION ISSUE	DATED
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Building Design and Improvements Construction Consulting

TITLE: AGENCY DETAILS

PROJECT: BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

REGISTERED PROFESSIONAL ENGINEER
HARSHEY SINGH
No. 89918
Civil
Exp. 06/30/2027
STATE OF CALIFORNIA

DATE: 12/25/2025
JOB : LB-WS-01
DWG BY: KV
CHK BY: HS

C7.2

FITTING TYPE	90° BEND	45° BEND	11 1/4° OR 22 1/2° BEND	TEE OR DEAD END	TEE W/ PLUG	CROSS W/ PLUG	CROSS W/ PLUGS
TYPICAL INSTALLATION							
PIPE SIZE 4"	2	1	1	2	2	2 EA.	2
6"	4	2	1	3	4	4 EA.	4
8"	7	4	2	5	7	7 EA.	7
10"	12	6	3	8	12	12 EA.	12
12"	16	10	5	12	16	16 EA.	16
14"	23	13	7	16	23	23 EA.	23
16"	29	16	8	20	29	29 EA.	29

1. NUMBERS IN TABLE ABOVE ARE REQUIRED MINIMUM BEARING AREAS IN SQUARE FEET.
2. THRUST BLOCKS SHALL BE CONSTRUCTED OF CLASS "A" CONCRETE.
3. AREAS GIVEN ARE FOR CLASS 200 PIPE AT 200 PSI TEST PRESSURE IN SOILS WITH 2,000 PSF BEARING CAPACITY.
4. THRUST BLOCKS SHALL BE PLACED AGAINST UNDISTURBED SOIL.
5. STRAPS USED FOR ANCHORING PIPE TO THRUST SHALL BE STAINLESS STEEL ONLY.
6. PIPE FITTINGS SHALL BE PROTECTED WITH MINIMUM 6 MIL VISQUINE IN ORDER THAT NO CONCRETE WILL TOUCH THE FITTING OR JOINT UPON THRUST BLOCK PLACEMENT.
7. A SOILS REPORT SHALL BE PROVIDED UPON REQUEST BY THE CITY ENGINEER.
8. THIS TABLE IS NOT APPLICABLE TO THE DESIGN OF ON-SITE FIRE SUPPRESSION WATER MAINS.

THE CITY OF WEST SACRAMENTO - STANDARD DETAIL

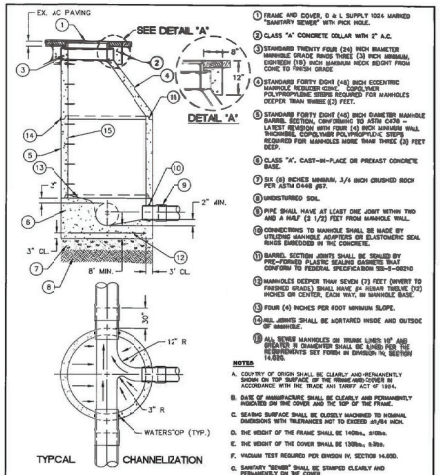
APPROVED BY: C-38723 P.E. NO. 3/31/95 DATE

REVISION:
REVISION:
REVISION:
REVISION:

TITLE: THRUST BLOCK BEARING AREA TABLE

STANDARD DETAIL # 519

DWG\STAN\NEW\519.DWG 4/13/01



1. FRAME AND COVER, O & L SUPPLY 1024 MARKED "SANITARY SEWER" WITH PICK HOLE.
2. CLASS "A" CONCRETE COLLAR WITH 2" A.C.
3. STANDARD TWENTY FOUR (24) INCH DIAMETER MANHOLE GRADE RINGS THREE (3) INCH MINIMUM, EIGHTEEN (18) INCH MAXIMUM HEIGHT FROM CONE TO FINISH GRADE
4. STANDARD FORTY EIGHT (48) INCH ECCENTRIC MANHOLE REDUCER CONE, COPOLYMER POLYPROPYLENE RESINS REQUIRED FOR MANHOLES DEEPER THAN THIRTEE (13) FEET.
5. STANDARD FORTY EIGHT (48) INCH DIAMETER MANHOLE BARREL SECTION, CONFORMING TO ASTM C478 – LATEST REVISION WITH FOUR (4) INCH MINIMUM WALL THICKNESS. COPOLYMER POLYPROPYLENE STEPS REQUIRED FOR MANHOLES MORE THAN THREE (3) FEET DEEP.
6. CLASS "A", CAST-IN-PLACE OR PRECAST CONCRETE BASE.
7. SIX (6) INCHES MINIMUM, 3/4 INCH CRUSHED ROCK PER ASTM D448 #57.
8. UNDISTURBED SOIL.
9. PIPE SHALL HAVE AT LEAST ONE JOINT WITHIN TWO AND A HALF (2 1/2) FEET FROM MANHOLE WALL.
10. CONNECTIONS TO MANHOLE SHALL BE MADE BY UTILIZING MANHOLE ADAPTERS OR ELASTOMERIC SEAL RINGS EMBEDDED IN THE CONCRETE.
11. BARREL SECTION JOINTS SHALL BE SEALED BY PRE-FORMED PLASTIC SEALING GASKETS THAT CONFORM TO FEDERAL SPECIFICATION SS-S-00210
12. MANHOLES DEEPER THAN SEVEN (7) FEET (INVERT TO FINISHED GRADE) SHALL HAVE AN INSIDE TURTLE (12) INCHES OR CENTER, EACH WAY, IN MANHOLE BASE.
13. FOUR (4) INCHES PER FOOT MINIMUM SLOPE.
14. ALL JOINTS SHALL BE MORTARED INSIDE AND OUTSIDE OF MANHOLE.
15. ALL SEWER MANHOLES ON TRUNK LINES 10" AND GREATER IN DIAMETER SHALL BE LINED PER THE REQUIREMENTS SET FORTH IN DIVISION VI, SECTION 14.010.

NOTES:
A. COUNTRY OF ORIGIN SHALL BE CLEARLY AND PERMANENTLY SHOWN ON TOP SURFACE OF THE FRAME AND/COVER IN ACCORDANCE WITH THE TRADE AND TARIFF ACT OF 1934.
B. DATE OF MANUFACTURE SHALL BE CLEARLY AND PERMANENTLY INDICATED ON THE COVER AND THE TOP OF THE FRAME.
C. SEATING SURFACE SHALL BE CLOSELY MACHINED TO NOMINAL DIMENSIONS WITH TOLERANCES NOT TO EXCEED ±1/64 INCH.
D. THE WEIGHT OF THE FRAME SHALL BE 140lbs. ±10lbs.
E. THE WEIGHT OF THE COVER SHALL BE 130lbs. ±3lbs.
F. VACUUM TEST REQUIRED PER DIVISION IV, SECTION 14.050.
G. SANITARY "SEWER" SHALL BE STAMPED CLEARLY AND PERMANENTLY ON THE COVER.

THE CITY OF WEST SACRAMENTO - STANDARD DETAIL

APPROVED BY: C-38723 P.E. NO. 3/31/95 DATE

REVISION:
REVISION:
REVISION:
REVISION:

TITLE: SEWER MANHOLE

STANDARD DETAIL # 404

DWG\STAN\NEW\404.DWG 11/28/01

REVISIONS:

	REVISION ISSUE	DATED
A		

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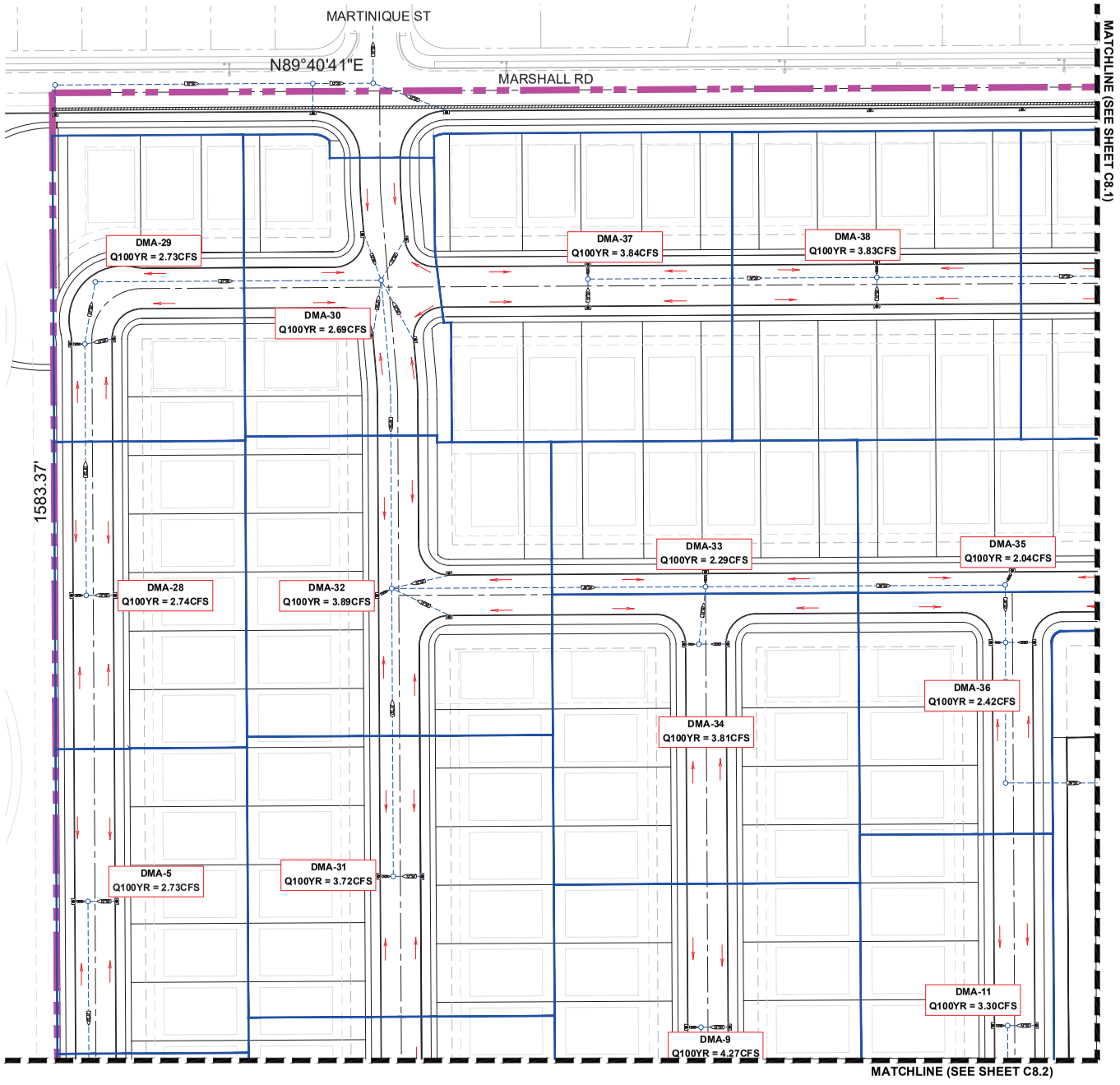
TITLE: AGENCY DETAILS

PROJECT:
BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

REGISTERED PROFESSIONAL ENGINEER
HARSHEY SINGH
No. 89913
Civil
Exp. 06/30/2027
STATE OF CALIFORNIA

DATE: 12/25/2025
JOB : LB-WS-01
DWG BY: KV
CHK BY: HS

C7.3



LEGEND

- PROPERTY LINE
- ROAD CENTERLINE
- DMA BOUNDARY
- STORM DRAIN INLET
- RUNOFF FLOW DIRECTION

TOPOGRAPHIC SURVEY NOTE

INFORMATION SHOWN ON THIS PLAN IS BASED ON TOPOGRAPHIC SURVEY DATED 11/05/2024, PREPARED BY JTS ENGINEERING CONSULTANTS, INC. AND SHOWN ON SHEET C2.1.

BENCHMARK ELEVATION

NAVD88 = 11.06' (CURRENT DATUM FOR ELEVATIONS SHOWN)

811 know what's below call 811 before you dig

NORTH

GRAPHIC SCALE

-40 0 20 40 80 160

(IN FEET)
1 INCH = 40 ft.

REVISIONS:

	REVISION	ISSUE	DATED
A			

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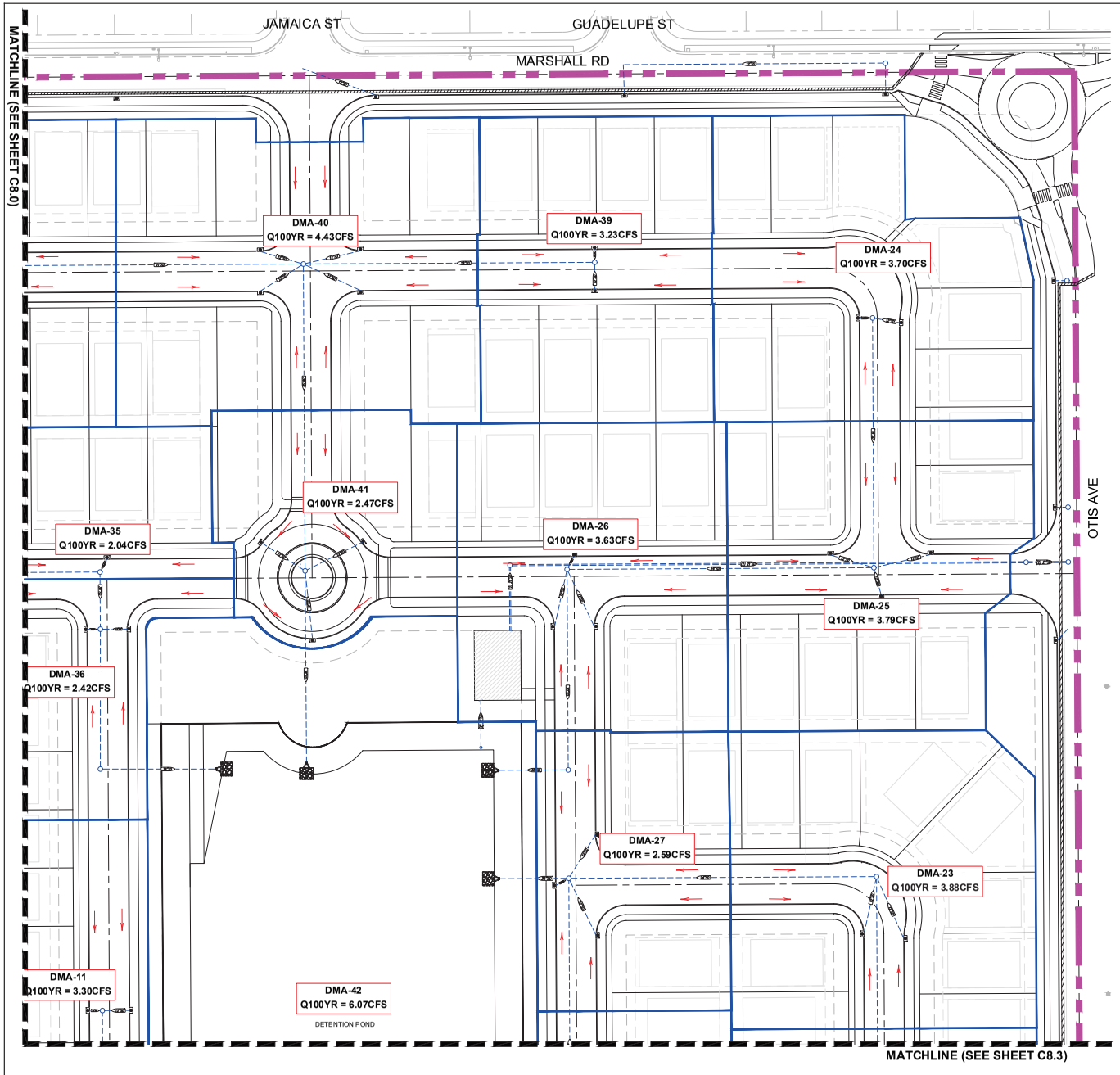
TITLE: OVERLAND RELEASE PATH EXHIBIT

PROJECT: BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

REGISTERED PROFESSIONAL ENGINEER
HARSHIV SINGH
No. 89981
Civil
Exp. 06/30/2027
STATE OF CALIFORNIA

DATE: 04/25/2026
JOB : LB-WS-01
DWG BY: AK
CHK BY: KV

C8.0



LEGEND

- PROPERTY LINE
- ROAD CENTERLINE
- DMA BOUNDARY
- STORM DRAIN INLET
- RUNOFF FLOW DIRECTION

TOPOGRAPHIC SURVEY NOTE

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NAVD88 = 11.06' (CURRENT DATUM FOR ELEVATIONS SHOWN)

811 know what's below call 811 before you dig

NORTH

GRAPHIC SCALE

-40 0 20 40 80 160

(IN FEET)
1 INCH = 40 ft.

REVISIONS:

	REVISION ISSUE	DATED
A		

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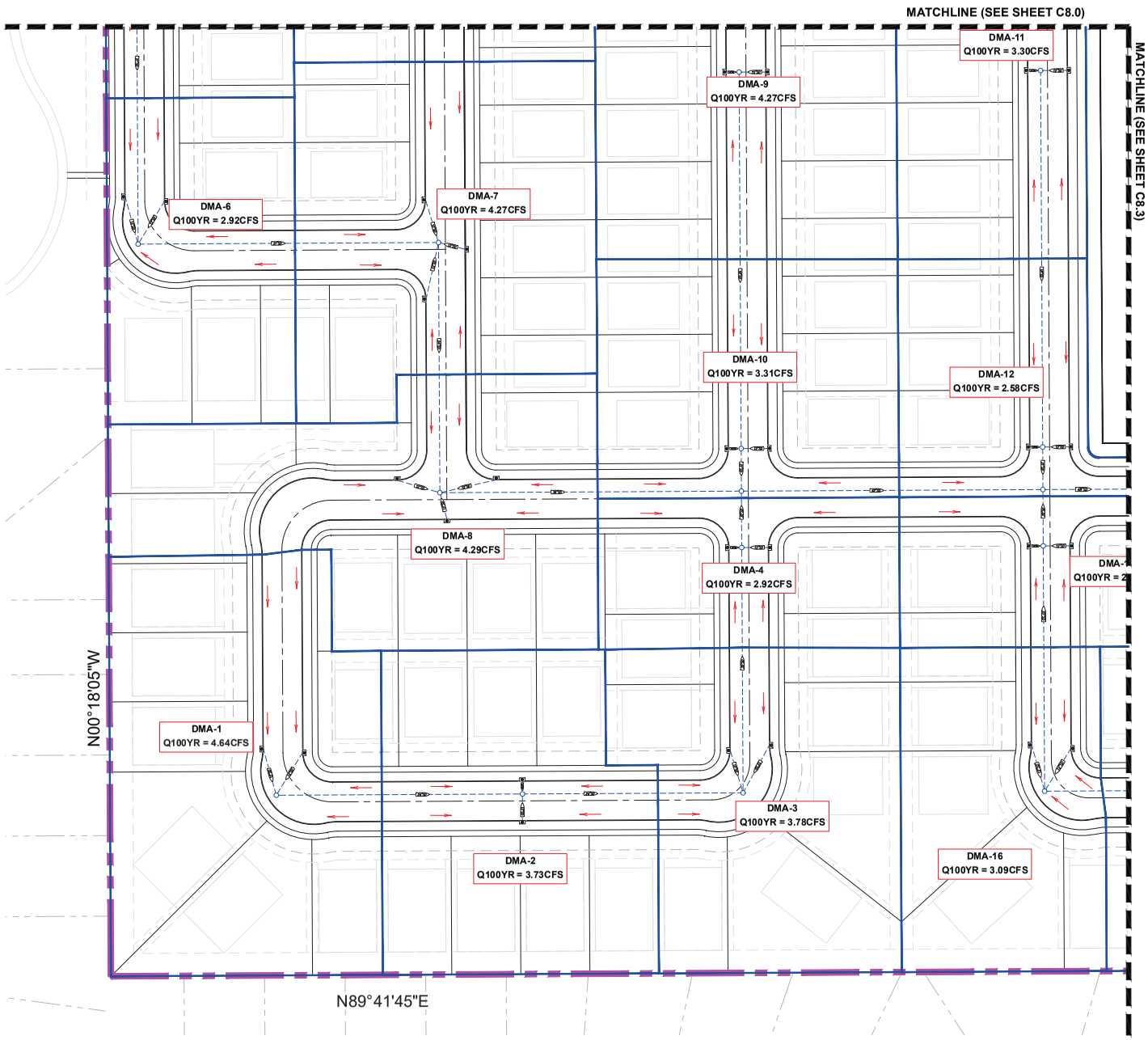
TITLE: OVERLAND RELEASE PATH EXHIBIT

PROJECT:
BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

REGISTERED PROFESSIONAL ENGINEER
HARSHY SINGH
No. 89981
Civil
Exp. 06/30/2027
STATE OF CALIFORNIA

DATE: 04/25/2026
JOB : LB-WS-01
DWG BY: AK
CHK BY: KV

C8.1



LEGEND

- PROPERTY LINE
- ROAD CENTERLINE
- DMA BOUNDARY
- STORM DRAIN INLET
- RUNOFF FLOW DIRECTION

TOPOGRAPHIC SURVEY NOTE

INFORMATION SHOWN ON THIS PLAN IS BASED ON TOPOGRAPHIC SURVEY DATED 11/05/2024, PREPARED BY JTS ENGINEERING CONSULTANTS, INC. AND SHOWN ON SHEET C2.1.

BENCHMARK ELEVATION

NAVD88 = 11.06' (CURRENT DATUM FOR ELEVATIONS SHOWN)

811 know what's below call 811 before you dig

NORTH

GRAPHIC SCALE

-40 0 20 40 80 160

(IN FEET)
1 INCH = 40 ft.

REVISIONS:

	REVISION ISSUE	DATED
A		

Continental Development Consultants, Inc.
Las Vegas, NV Woodland, CA
Phone (702)347-6137; (530)405-3780 ● FAX (702)664-6237
Email: Contact @ continentaldc.com
Civil Engineering ● Land Planning and Zoning Entitlements ●
Building Design and Improvements ● Construction Consulting

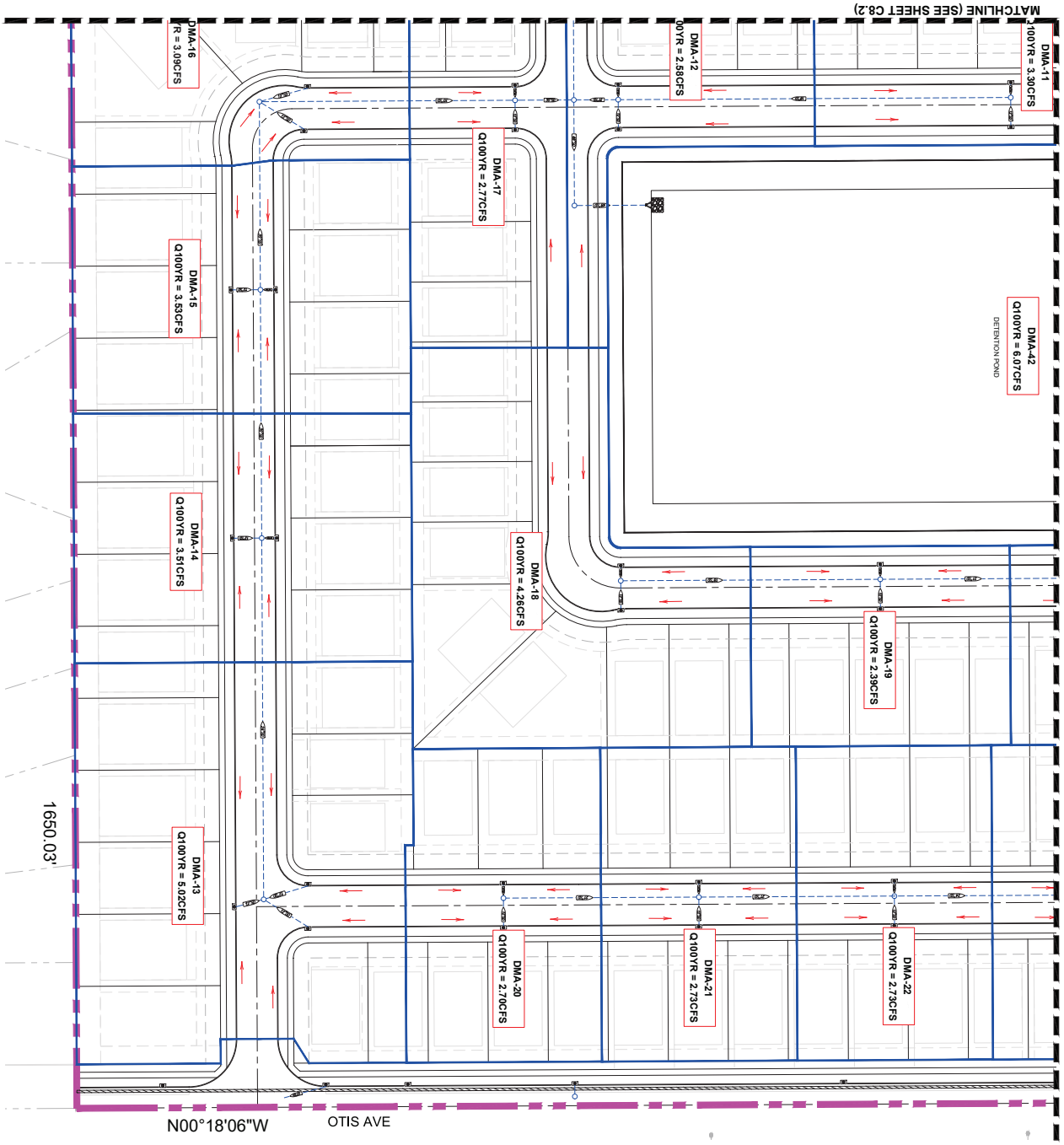
TITLE: OVERLAND RELEASE PATH EXHIBIT

PROJECT:
BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

REGISTERED PROFESSIONAL ENGINEER
HARDEV SINGH
No. 80911
Civil
Exp. 06/30/2027
STATE OF CALIFORNIA

DATE: 04/25/2026
JOB : LB-WS-01
DWG BY: AK
CHK BY: KV

C8.2



LEGEND

PROPERTY LINE
ROAD CENTER LINE
DMA BOUNDARY
STORM DRAIN INLET
RUNOFF FLOW DIRECTION

TOPOGRAPHIC SURVEY NOTE

INFORMATION SHOWN ON THIS PLAN IS BASED ON TOPOGRAPHIC SURVEY DATED 11/05/2024, PREPARED BY: JTS ENGINEERING CONSULTANTS, INC. AND SHOWN ON SHEET C2.1.

BENCHMARK ELEVATION

NAVD88 = 11.0ft' (CURRENT DATUM FOR ELEVATIONS SHOWN)

811 know what's below call 811 before you dig

GRAPHIC SCALE
1 INCH = 40 ft.

NORTH

DATE: 04/25/2025
JOB: LEWIS-01
DWG BY: AK
CHK BY: KV

C8.3

TITLE: OVERLAND RELEASE PATH EXHIBIT

PROJECT:
BRAR FARMS
3425 MARSHALL ROAD
WEST SACRAMENTO, CA 95691

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REVISIONS:		
	REVISION ISSUE	DATED