

# Appendix P-1

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## Sewer Capacity Study





# SEWER CAPACITY STUDY

ULTIMATE CONDITION

FOR

**Meridian Park LLC**

**RIVERSIDE, CA**

*Prepared for:*

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## SECTION 1.0 NARRATIVE

### 1.1 Introduction

The purpose of this report is to determine the capacity of the proposed and existing sewer mains and lift stations conveying wastewater to the 24"-30" I-215 Trunk Sewer. This report will analyze the capacity of the existing public sewer facilities as well as the projected capacity for the ultimate build out condition for all developments. The study will focus on the following sewer facilities: The Unit 2 Lift Station, Cactus Sewer Extension and the sewer mains conveying flows from the March Business Center to the I-215 Trunk Sewer.

### 1.2 Site Description

The area of this study includes the March Business Center and various existing developments. The March Business Center is divided into 3 major areas called North Campus, South Campus and West Campus. North Campus, South Campus and West Campus developments include various uses/zonings and are summarized as follows (See Ultimate Tributary Area Land Use map in Section 3):

- North Campus
  - Industrial – 21.2 acres
  - Business Park – 46.3 acres
  - Mixed Use – 32.7 acres
  - Commercial (Includes Offices) – 59.4 acres
  - Warehouse – 334.1 acres
- South Campus
  - Industrial – 44.8 acres
  - Business Park (Includes Office) – 149.7 acres
  - Mixed Use – 7.3 acres
  - Commercial – 32.2 acres
  - Warehouse – 219.8 acres
  - Park – 61.4 acres
- West Campus
  - Industrial – 304 acres
  - Business Park – 26.8 acres
  - Mixed Use – 4.6 acres
  - Commercial – 4.5 acres
  - Warehouse – 84.9
  - Park – 60.0 acres
- Riverside National Cemetery
  - Cemetery – 1,015 acres
- Lieutenant General Archie Golf Course
  - Golf Course/Park – 321 acres
- Altavita Village
  - Residential – 157 acres

- Ben Clark Safety Training Center
  - Public Facility - 364 acres

The zoning for the land within the sewer sheds is based upon 3 documents listed below. There has been some slight modification to the acreages/use for specific portions of land used to fit with existing record maps and current South Campus entitlement documents in review with MIPA.

- Meridian West Campus Plateau Final EIR Figure 1-1 Proposed General Land Use Map (2017)  
This document shows the current zoning for the North Campus, South Campus and West Campus Lower Plateau areas.
- September 12, 2012 Settlement Agreement Land Use Study "B2" Exhibit (2012)  
This document shows the future size of the Meridian West Campus Upper Plateau development which is not currently zoned in the MIPA Zoning Map.
- MIPA Zoning Map (2014)  
This document shows the zoning in the specific plan areas shown in the Meridian West Campus Lower Plateau Final EIR Figure 1-1 Proposed General Land Use Map.

### 1.3 Existing Sewer Systems

The existing sewer facilities mainly pertaining to West Campus, North Campus and South Campus are crucial to the proposed developments and must provide sufficient capacity. The existing sewer facilities critical to existing and future developments are as follows:

- Unit 2 Sewer Lift Station

The Unit 2 Sewer Lift Station capacities:

Pump – 470 GPM (1.05 CFS)

Wet Well Design Operating Storage Capacity – 392 CF (10' Diameter manhole with 5' operation range depth)

Wet Well Emergency Storage Capacity – 1,774 CF (Storage from Pump Start elevation to highest elevation that will not cause the overflow of sewage along Meridian Parkway).

- March Business Center Unit1 – Sewer Capacities

The Unit 1 Sewer Lines are made up of 10" VCP and 18" VCP sewer pipes along Innovation Drive, Cactus Avenue, and Meridian Parkway. The network of pipes connects to the existing manhole numbered as MH#45 (Figure 3.2) and flow gets conveyed to the Unit 1 Offsite Trunk Sewer. The slopes of the pipes vary (per the record construction plans). A summary of the slopes, tributary areas, and flows can be found in Section 3. Figure 3.3 and Figure 3.4.

- Unit 1 Offsite Trunk Sewer Capacity

The Unit 1 Offsite Trunk Sewer is comprised of 18" VCP and 24" VCP sewer pipes slopping at a minimum slope of 0.20% and 0.17% respectively (per record construction plans). Based upon the WMWD standards for design (Manning Value of 0.013, maximum 75% full flow capacity) the design capacity of the trunk sewer is (see calculations in Section2):

18" – 4.28 CFS

24" – 8.51 CFS

- WWRF 27" VCP Sewer Connection Capacity

The WWRF was constructed to accept flows from the East Sewer Area flow. The 1269 Lift Station and the Markham Sewer Lift Station, both pump their tributary flows to the WWRF Lift Station. The 1269 Lift Station pumps its 870 GPM (1.9cfs) flow through a 10" force main and the

Markham Lift Station also pumps its 1,950 GPM (4.34cfs) ultimate flow through a 12" force main to WWRF (per 2014 Master Plan). These two force mains discharge upstream of the proposed connection of the proposed 30" Trunk Sewer to the existing 27" VCP Sewer; Therefore, all three flows will be added together to determine whether the existing 27" VCP Sewer can handle all flows, assuming they all discharge into the line simultaneously. The 27" VCP Sewer slopes at a minimum of 0.3% respectively (per record construction plans). Based upon WMWD standards for design (Manning Value of 0.013, maximum 75% full flow capacity) the design capacity of the trunk sewer is (see calculations in Section 2):

27" – 15.49 CFS

#### 1.4 Proposed Sewer Systems

The proposed 15" Cactus Sewer Extension ties into Manhole #22 and extends to the Upper West Campus area. The tributary areas contributing sewage to the Cactus Extension are comprised of 304 acres of Industrial zoning and 60 acres of park and open space zoning. The flow from the Cactus Extension is collected by the March Business Center Unit 1-Sewer Facility and then conveyed to the Unit 1 Offsite Trunk Sewer, which connects to the proposed I-215 Trunk Sewer.

The proposed I-215 Trunk Sewer includes a 24" sewer line connecting to a 30" sewer line. The area tributary to the I-215 Trunk Sewer includes the following: Lieutenant General Archie Golf Course, Altavita Village, Ben Clark Safety Training Center and the Riverside National Cemetery. This trunk sewer will convey the wastewater from Meridian Business Park and existing flows from the 15" sewer to the March Wastewater Reclamation Facility. The proposed I-215 Trunk Sewer has been analyzed for the ultimate build out condition.

- Cactus Sewer Extension

Along Cactus Avenue, a 15" sewer pipe extension will connect to Manhole #22 to convey flows from the West Campus Upper Plateau (See Cactus Extension Plan and Profile). The Cactus Sewer Extension has a minimum slope of 0.8% respectively. Based upon the WMWD standards for design (Manning Value of 0.013, maximum 75% full flow capacity) the design capacity of the trunk sewer is (see calculations in Section2):

15" – 5.27 CFS

- I-215 Trunk Sewer

The proposed trunk sewer along the I-215 is comprised of 24" VCP and 30" VCP sewer pipes slopping at 0.28% and 0.10% respectively. There are 3 existing laterals that connect to the trunk sewer and contribute to the existing flow. These laterals collect flows from the following tributary areas: 1) Lieutenant General Archie Gold Course 2) Atavita Village 3) Ben Clark Safety Training Center and 4) Riverside National Cemetery. Based upon the WMWD standards for design (Manning Value of 0.013, maximum 75% full flow capacity) the design capacity of the trunk sewer is (see calculations in Section2):

24" – 10.92 CFS

30" – 11.83 CFS

#### 1.5 Wastewater Generation

The wastewater generation is estimated by land use and the generation factors from Western Municipal Water District Sewer Master Plan Table 3-1:

**Table 3-1 Wastewater Generation Factors**

WASTEWATER GENERATION FACTORS		
LAND USE	LAND USE CATEGORY	WASTEWATER GENERATION FACTORS
BUSINESS PARK	COMMERCIAL	1,700 GPD/ACRE

COMMERCIAL	COMMERCIAL	1,700 GPD/ACRE
INDUSTRIAL	INDUSTRIAL	2,000 GPD/ACRE
MIXED USE	COMMERCIAL	1,700 GPD/ACRE
PUBLIC USE	PUBLIC USE	1,000 GPD/ACRE
PARK	PARK	600 GPD/ACRE
WAREHOUSE	NOT DEFINED (SEE BELOW)	420 GPD/ACRE
RESIDENTIAL	RESIDENTIAL (SEE BELOW)	200 GPD/EDU

The WMWD Sewer Master Plan does not have a designation of Warehouse. Warehouse use is zoned as Industrial but has a much lower sewer generation rate than typical Industrial uses. To establish a Warehouse Generation Factor the City of Los Angeles Bureau of Sanitation Sewer Generation Spreadsheet was used. To establish a relationship between the City of Los Angeles system to the WMWD system we took the Commercial zoning designation as the base line. Using a building floor to area ratio of 0.48 and 1-acre site the City of LA 80 gallons per day per square foot equates to 1,742 GPD/Acre.:

Site Acreage x Floor to Area Ratio x Cof.LA Generation Factor = Equivalent GPD/Acre Factor

$$(43,560 \text{ SF}) \times (0.48) \times (80 \text{ GPD}/1,000 \text{ SF}) = 1,672 \text{ GPD/Acre}$$

The difference between the manipulated City of LA Generation Factor is within 2% of the WMWD Generation Factor.

Using the same methodology above and applying to the City of LA Warehouse Designation (20 GPD/1,000 SF) we produce a generation factor of 418 GPD/Acre. Comparing the floor to area ratio to the recently constructed Building A and Building B in the south campus each 1,000,000 SF building sits on 48.0 acre lots. This would provide a floor to area ratio of 0.48. For this study we have rounded the factor up to 420 GPD/Acre.

Altavita Village is zoned as Residential and has a sewer generation rate of 200 GPD/EDU per WMWD Master Sewer Plan. To establish a sewer generation factor in GPD/Acre, the number of dwelling units had to be determined. According to the Sewer Master Plan, the Altavita Village has 480 dwelling units. Based on this information, the sewer generation rate in GPD/Acre was calculated as follows:

$$(200 \text{ GPD}/\text{EDU}) \times (480 \text{ DU}) = 96,000 \text{ GPD} \rightarrow (96,000 \text{ GPD}) / (157 \text{ Acres}) = 611 \text{ GPD/Acre.}$$

Therefore, in this study we used a sewer generation rate of 611 GPD/Acre for the Altavita Village Residential Zone.

After the base daily flow is determined, WMWD requires a peaking factor to be applied to determine the peak design flow rate. The peaking factor is based upon the daily flow rate per the Peaking Factor Comparison chart from Appendix D of the Sewer Master Plan. For the design of the Unit 2 Lift Station, Cactus Extension and trunk sewer lines a peaking factor of 1.7 is used (flows greater than 1 MGD).

The flow conditions in existing and proposed sewers were calculated in accordance with WMWD Master Sewer Plan Section 3. Manning's Equation is used to calculate the sewage flow condition in each pipe segment by using a roughness coefficient (n) of 0.013, the minimum pipe slope is per the record drawings and the minimum flow velocity is 2 fps. The flow rate from each tributary area is equal to the area acreage multiplied by the generation rate factor multiplied by the peaking factor:

$$\text{Flow Rate (Q)} = \text{Acreage (A)} \times \text{Generation Rate (Z)} \times \text{Peaking Factor}$$

## 1.6 Sewer Capacity Analysis

Figure 3.1 shows the zoning and corresponding acreages for each existing and proposed development within the sewer shed tributary to the I-215 Trunk Sewer. Figure 3.2 shows the existing and future sewer mains with the corresponding tributary flow relationships of each development to the existing and proposed sewer systems. Using

these maps, the area tributary to each of the critical sewer design facilities was tabularized. See Sewer Generation Tables in Section 3.

Flow Tributary to Unit 2 Lift Station – 0.432 CFS

Flow Tributary to 15" Cactus Extension – 1.893 CFS

Flow Tributary to 18" Offsite Trunk Sewer (MH40) – 2.855 CFS

Flow Tributary to 24" Offsite Trunk Sewer (MH37) – 4.730 CFS

Flow Tributary to 24" I-215 Trunk Sewer (MH58) – 5.721 CFS

Flow Tributary to 30" I-215 Trunk Sewer (MH72) – 8.048 CFS

Flow Tributary to 27" Sewer at WWRF (MH20) – 14.331 CFS

All tributary flows to the Unit 2 Lift Station, from existing and proposed developments, have been considered when calculating the capacity of the existing lift station. With this being said, approximately 41% of the pump capacity is being used. In the event of failure, the wet well would take approximately 1.14 Hours to fill from the Pump Start elevation to the critical depth elevation noted above. In operation, the pump would empty the Design Operating Capacity in approximately 11 minutes (operating storage capacity divided by the pump flow minus design inflow).

The proposed 15" Cactus Extension joins the March Business Center Unit 1 – Sewer at Manhole #22 (See Figure 3.2). The tributary areas to the Cactus Extension include, 304 acres of Industrial zoning and 60.0 acres of park and open space. The extension will flow at 36% of its potential design capacity.

The existing 18" trunk line and 24" trunk lines feeding into the proposed I-215 Trunk Sewer will flow at 67% and 55% of the WMWD design capacity respectively.

The existing 27" VCP sewer line connecting to the WWRF and taking flows from the Markham Lift Station, 1269 Lift Station and the I-215 Trunk Sewer, will flow at 92% of the WMWD design capacity respectively. This assumes that all flows from Markham Lift Station, 1269 Lift Station and the proposed I-215 Trunk Sewer, will discharge into the 27" sewer line simultaneously and at ultimate condition.

Lastly, there are 3 existing sewer laterals feeding into the I-215 Trunk Sewer that contribute to the flows. Including those flows, the 24"-30" I-215 Trunk Sewer will flow at 52% and 68% of its potential design capacity.

The sewer facilities have capacity in the ultimate build out condition. As calculated in Figure 3.3 the proposed Cactus Sewer Extension and the I-215 Trunk Sewer were designed to convey all tributary flows without exceeding the allowable capacity of 75% per the WMWD requirements.

## 1.7 Conclusion

In conclusion, the flows are based on the land uses/zoning and the sewage generation factor per the WMWD Master Plan. The WMWD existing facilities, have shown to have capacity to handle flows from existing and proposed future developments. Also, the proposed I-215 Trunk Sewer and the proposed Cactus Sewer Extension, have capacity to convey the sewage and meet the criteria of the WMWD Master Plan.

## 2.1 Industrial Flows

Industrial zoning flows have been applied to all developments designated as Industrial. A sewer generation factor of 2,000 GPD/Acre has been assigned to all those developments (Section 3 Figure 3.4). This would result in an increase in the design flows above. The increases to the critical facilities are summarized below:

Flow Tributary to Unit 2 Lift Station – 0.665 CFS

Flow Tributary to 15" Cactus Extension – 1.893 CFS

Flow Tributary to 18" Trunk Sewer (MH40) – 4.015 CFS  
Flow Tributary to 24" Trunk Sewer (MH37) – 7.190 CFS  
Flow Tributary to 24" I-215 Trunk Sewer (MH58) – 8.181 CFS  
Flow Tributary to 30" I-215 Trunk Sewer (MH72) – 10.508 CFS  
Flow Tributary to 27" Sewer at WWRF (MH20) – 16.791 CFS

Based on the new analysis, the existing Unit 2 Lift Station is approximately at 63% of the pump capacity. In the event of failure, the wet well would take approximately 45 minutes to fill from the Pump Start elevation to the critical depth elevation noted above. In operation, the pump would empty the Design Operating Capacity in approximately 17 minutes (operating storage capacity divided by the pump flow minus design inflow).

The proposed 15" Cactus Extension joins the March Business Center Unit 1 – Sewer at Manhole #22 (See Figure 3.2). The tributary areas to the Cactus Extension include, 304 acres of Industrial zoning and 60.0 acres of park and open space. The extension will flow at 36% of its potential design capacity.

The existing 18" trunk line and 24" trunk lines feeding into the proposed I-215 Trunk Sewer will flow at 94% and 84% of the WMWD design capacity respectively.

The existing 27" VCP sewer line connecting to the WWRF and taking flows from the Markham Lift Station, 1269 Lift Station and the I-215 Trunk Sewer, will flow at 108% of the WMWD design capacity respectively. This assumes that all flows from Markham Lift Station, 1269 Lift Station and the proposed I-215 Trunk Sewer, will discharge into the 27" sewer line simultaneously and at ultimate condition.

Lastly, the proposed I-215 Trunk Sewer consisting of a 24" trunk line and a 30" trunk line, will flow at 75% and 89% of its potential design capacity.

## 2.2 Conclusion (Industrial Zoning)

Industrial zoning increases the design flow rate to the sewer facilities. Considering all developments, existing and proposed, the I-215 Trunk Sewer uses approximately 45% and 57% of its capacity which is less than the WMWD maximum requirement of 75%. Based on these increases, the I-215 Trunk Sewer is designed to handle flows from the existing and proposed developments without exceeding the maximum allowable requirement. All pipe segments are within allowable capacity, 75% full for pipes 15" in diameter or larger and 50% for pipes less than 15" in diameter. These segments can be found in Figure 3.4 and are called out as follows:

- 1) Meridian Parkway Unit 1-North of Innovation: MH9-MH8 → 53% Full
- 2) Existing 27" VCP Sewer Pipe: – MH72-MH20 → 81% Full

Other pipe segments are flowing below maximum allowable capacity per WMWD requirements.



## Section 2 Sewer Capacity Calculation

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## 75% CAPACITY 18" UNIT1 OFFSITE TRUNK SEWER

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### Project Description

Friction Method	Manning Formula
Solve For	Discharge

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Normal Depth	1.13	ft
Diameter	1.50	ft

### Results

Discharge	4.28	ft <sup>3</sup> /s
Flow Area	1.42	ft <sup>2</sup>
Wetted Perimeter	3.14	ft
Hydraulic Radius	0.45	ft
Top Width	1.30	ft
Critical Depth	0.79	ft
Percent Full	75.0	%
Critical Slope	0.00551	ft/ft
Velocity	3.01	ft/s
Velocity Head	0.14	ft
Specific Energy	1.27	ft
Froude Number	0.51	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00166	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.00	%
Downstream Velocity	Infinity	ft/s

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## 75% CAPACITY 18" UNIT1 OFFSITE TRUNK SEWER

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### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.13	ft
Critical Depth	0.79	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00551	ft/ft

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## 75% CAPACITY 24" UNIT1 OFFSITE TRUNK SEWER

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### Project Description

Friction Method	Manning Formula
Solve For	Discharge

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00170	ft/ft
Normal Depth	1.50	ft
Diameter	2.00	ft

### Results

Discharge	8.51	ft <sup>3</sup> /s
Flow Area	2.53	ft <sup>2</sup>
Wetted Perimeter	4.19	ft
Hydraulic Radius	0.60	ft
Top Width	1.73	ft
Critical Depth	1.04	ft
Percent Full	75.0	%
Critical Slope	0.00496	ft/ft
Velocity	3.37	ft/s
Velocity Head	0.18	ft
Specific Energy	1.68	ft
Froude Number	0.49	
Maximum Discharge	10.03	ft <sup>3</sup> /s
Discharge Full	9.33	ft <sup>3</sup> /s
Slope Full	0.00141	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.00	%
Downstream Velocity	Infinity	ft/s

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## 75% CAPACITY 24" UNIT1 OFFSITE TRUNK SEWER

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### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.50	ft
Critical Depth	1.04	ft
Channel Slope	0.00170	ft/ft
Critical Slope	0.00496	ft/ft

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## 75% CAPACITY 15" CACTUS EXT.

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### Project Description

Friction Method	Manning Formula
Solve For	Discharge

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00800	ft/ft
Normal Depth	0.94	ft
Diameter	1.25	ft

### Results

Discharge	5.27	ft <sup>3</sup> /s
Flow Area	0.99	ft <sup>2</sup>
Wetted Perimeter	2.62	ft
Hydraulic Radius	0.38	ft
Top Width	1.08	ft
Critical Depth	0.93	ft
Percent Full	75.0	%
Critical Slope	0.00814	ft/ft
Velocity	5.34	ft/s
Velocity Head	0.44	ft
Specific Energy	1.38	ft
Froude Number	0.99	
Maximum Discharge	6.21	ft <sup>3</sup> /s
Discharge Full	5.78	ft <sup>3</sup> /s
Slope Full	0.00665	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.00	%
Downstream Velocity	Infinity	ft/s

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## 75% CAPACITY 15" CACTUS EXT.

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### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.94	ft
Critical Depth	0.93	ft
Channel Slope	0.00800	ft/ft
Critical Slope	0.00814	ft/ft

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## 75% CAPACITY 24" I-215TRUNK SEWER

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### Project Description

Friction Method	Manning Formula
Solve For	Discharge

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Normal Depth	1.50	ft
Diameter	2.00	ft

### Results

Discharge	10.92	ft <sup>3</sup> /s
Flow Area	2.53	ft <sup>2</sup>
Wetted Perimeter	4.19	ft
Hydraulic Radius	0.60	ft
Top Width	1.73	ft
Critical Depth	1.18	ft
Percent Full	75.0	%
Critical Slope	0.00537	ft/ft
Velocity	4.32	ft/s
Velocity Head	0.29	ft
Specific Energy	1.79	ft
Froude Number	0.63	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00233	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.00	%
Downstream Velocity	Infinity	ft/s



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## 75% CAPACITY 24" I-215TRUNK SEWER

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### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.50	ft
Critical Depth	1.18	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00537	ft/ft

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## 75% CAPACITY 30" I-215TRUNK SEWER

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### Project Description

Friction Method	Manning Formula
Solve For	Discharge

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Normal Depth	1.88	ft
Diameter	2.50	ft

### Results

Discharge	11.83	ft <sup>3</sup> /s
Flow Area	3.95	ft <sup>2</sup>
Wetted Perimeter	5.24	ft
Hydraulic Radius	0.75	ft
Top Width	2.17	ft
Critical Depth	1.15	ft
Percent Full	75.0	%
Critical Slope	0.00439	ft/ft
Velocity	2.99	ft/s
Velocity Head	0.14	ft
Specific Energy	2.01	ft
Froude Number	0.39	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00083	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.00	%
Downstream Velocity	Infinity	ft/s

---

## 75% CAPACITY 30" I-215TRUNK SEWER

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### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.88	ft
Critical Depth	1.15	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00439	ft/ft

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## 75% CAPACITY EXIST 27" VCP SEWER

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### Project Description

Friction Method	Manning Formula
Solve For	Discharge

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00300	ft/ft
Normal Depth	1.69	ft
Diameter	2.25	ft

### Results

Discharge	15.49	ft <sup>3</sup> /s
Flow Area	3.20	ft <sup>2</sup>
Wetted Perimeter	4.72	ft
Hydraulic Radius	0.68	ft
Top Width	1.95	ft
Critical Depth	1.37	ft
Percent Full	75.1	%
Critical Slope	0.00528	ft/ft
Velocity	4.84	ft/s
Velocity Head	0.36	ft
Specific Energy	2.05	ft
Froude Number	0.66	
Maximum Discharge	18.25	ft <sup>3</sup> /s
Discharge Full	16.96	ft <sup>3</sup> /s
Slope Full	0.00250	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.11	%
Downstream Velocity	Infinity	ft/s

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## 75% CAPACITY EXIST 27" VCP SEWER

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### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.69	ft
Critical Depth	1.37	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00528	ft/ft

---

## Warehouse-Meridian U1 MH10-MH9

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00430	ft/ft
Diameter	0.83	ft
Discharge	0.18	ft <sup>3</sup> /s

### Results

Normal Depth	0.20	ft
Flow Area	0.10	ft <sup>2</sup>
Wetted Perimeter	0.85	ft
Hydraulic Radius	0.12	ft
Top Width	0.71	ft
Critical Depth	0.18	ft
Percent Full	24.2	%
Critical Slope	0.00607	ft/ft
Velocity	1.80	ft/s
Velocity Head	0.05	ft
Specific Energy	0.25	ft
Froude Number	0.84	
Maximum Discharge	1.53	ft <sup>3</sup> /s
Discharge Full	1.42	ft <sup>3</sup> /s
Slope Full	0.00007	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	24.18	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Meridian U1 MH10-MH9

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.20	ft
Critical Depth	0.18	ft
Channel Slope	0.00430	ft/ft
Critical Slope	0.00607	ft/ft

---

## Warehouse-Meridian U1 MH9-MH8

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00250	ft/ft
Diameter	0.83	ft
Discharge	0.27	ft <sup>3</sup> /s

### Results

Normal Depth	0.28	ft
Flow Area	0.16	ft <sup>2</sup>
Wetted Perimeter	1.04	ft
Hydraulic Radius	0.16	ft
Top Width	0.79	ft
Critical Depth	0.23	ft
Percent Full	34.1	%
Critical Slope	0.00596	ft/ft
Velocity	1.66	ft/s
Velocity Head	0.04	ft
Specific Energy	0.33	ft
Froude Number	0.64	
Maximum Discharge	1.17	ft <sup>3</sup> /s
Discharge Full	1.08	ft <sup>3</sup> /s
Slope Full	0.00016	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	34.10	%
Downstream Velocity	Infinity	ft/s



---

## Warehouse-Meridian U1 MH9-MH8

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.28	ft
Critical Depth	0.23	ft
Channel Slope	0.00250	ft/ft
Critical Slope	0.00596	ft/ft

---

## Warehouse-Meridian U1 MH32-MH8

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Diameter	0.83	ft
Discharge	0.02	ft <sup>3</sup> /s

### Results

Normal Depth	0.05	ft
Flow Area	0.01	ft <sup>2</sup>
Wetted Perimeter	0.43	ft
Hydraulic Radius	0.03	ft
Top Width	0.41	ft
Critical Depth	0.06	ft
Percent Full	6.5	%
Critical Slope	0.00772	ft/ft
Velocity	1.21	ft/s
Velocity Head	0.02	ft
Specific Energy	0.08	ft
Froude Number	1.12	
Maximum Discharge	2.33	ft <sup>3</sup> /s
Discharge Full	2.17	ft <sup>3</sup> /s
Slope Full	0.00000	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	6.49	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Meridian U1 MH32-MH8

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.05	ft
Critical Depth	0.06	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00772	ft/ft

---

## Warehouse-Meridian U1 MH30-MH31

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01400	ft/ft
Diameter	0.83	ft
Discharge	0.33	ft <sup>3</sup> /s

### Results

Normal Depth	0.20	ft
Flow Area	0.10	ft <sup>2</sup>
Wetted Perimeter	0.85	ft
Hydraulic Radius	0.12	ft
Top Width	0.71	ft
Critical Depth	0.25	ft
Percent Full	24.2	%
Critical Slope	0.00597	ft/ft
Velocity	3.25	ft/s
Velocity Head	0.16	ft
Specific Energy	0.37	ft
Froude Number	1.52	
Maximum Discharge	2.76	ft <sup>3</sup> /s
Discharge Full	2.56	ft <sup>3</sup> /s
Slope Full	0.00023	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	24.16	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Meridian U1 MH30-MH31

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.20	ft
Critical Depth	0.25	ft
Channel Slope	0.01400	ft/ft
Critical Slope	0.00597	ft/ft

---

## Warehouse-Meridian U1 MH29-MH30

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00660	ft/ft
Diameter	0.83	ft
Discharge	0.31	ft <sup>3</sup> /s

### Results

Normal Depth	0.24	ft
Flow Area	0.13	ft <sup>2</sup>
Wetted Perimeter	0.93	ft
Hydraulic Radius	0.14	ft
Top Width	0.75	ft
Critical Depth	0.24	ft
Percent Full	28.3	%
Critical Slope	0.00596	ft/ft
Velocity	2.45	ft/s
Velocity Head	0.09	ft
Specific Energy	0.33	ft
Froude Number	1.05	
Maximum Discharge	1.89	ft <sup>3</sup> /s
Discharge Full	1.76	ft <sup>3</sup> /s
Slope Full	0.00020	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	28.34	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Meridian U1 MH29-MH30

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.24	ft
Critical Depth	0.24	ft
Channel Slope	0.00660	ft/ft
Critical Slope	0.00596	ft/ft

---

## Warehouse-Meridian U1 MH28-MH29

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00450	ft/ft
Diameter	0.83	ft
Discharge	0.31	ft <sup>3</sup> /s

### Results

Normal Depth	0.26	ft
Flow Area	0.14	ft <sup>2</sup>
Wetted Perimeter	0.99	ft
Hydraulic Radius	0.15	ft
Top Width	0.77	ft
Critical Depth	0.24	ft
Percent Full	31.3	%
Critical Slope	0.00598	ft/ft
Velocity	2.13	ft/s
Velocity Head	0.07	ft
Specific Energy	0.33	ft
Froude Number	0.87	
Maximum Discharge	1.56	ft <sup>3</sup> /s
Discharge Full	1.45	ft <sup>3</sup> /s
Slope Full	0.00020	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	31.30	%
Downstream Velocity	Infinity	ft/s



---

## Warehouse-Meridian U1 MH28-MH29

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.26	ft
Critical Depth	0.24	ft
Channel Slope	0.00450	ft/ft
Critical Slope	0.00598	ft/ft

---

## Warehouse-Meridian U1 MH27-MH28

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00350	ft/ft
Diameter	0.83	ft
Discharge	0.32	ft <sup>3</sup> /s

### Results

Normal Depth	0.28	ft
Flow Area	0.16	ft <sup>2</sup>
Wetted Perimeter	1.03	ft
Hydraulic Radius	0.16	ft
Top Width	0.79	ft
Critical Depth	0.25	ft
Percent Full	34.1	%
Critical Slope	0.00597	ft/ft
Velocity	1.97	ft/s
Velocity Head	0.06	ft
Specific Energy	0.34	ft
Froude Number	0.76	
Maximum Discharge	1.38	ft <sup>3</sup> /s
Discharge Full	1.28	ft <sup>3</sup> /s
Slope Full	0.00022	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	34.06	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Meridian U1 MH27-MH28

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.28	ft
Critical Depth	0.25	ft
Channel Slope	0.00350	ft/ft
Critical Slope	0.00597	ft/ft

---

## Warehouse-Meridian U1 MH26-MH27

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00350	ft/ft
Diameter	0.83	ft
Discharge	0.34	ft <sup>3</sup> /s

### Results

Normal Depth	0.29	ft
Flow Area	0.17	ft <sup>2</sup>
Wetted Perimeter	1.05	ft
Hydraulic Radius	0.16	ft
Top Width	0.79	ft
Critical Depth	0.25	ft
Percent Full	35.2	%
Critical Slope	0.00597	ft/ft
Velocity	2.00	ft/s
Velocity Head	0.06	ft
Specific Energy	0.35	ft
Froude Number	0.76	
Maximum Discharge	1.38	ft <sup>3</sup> /s
Discharge Full	1.28	ft <sup>3</sup> /s
Slope Full	0.00025	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	35.22	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Meridian U1 MH26-MH27

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.29	ft
Critical Depth	0.25	ft
Channel Slope	0.00350	ft/ft
Critical Slope	0.00597	ft/ft

---

## Warehouse-Meridian U1 MH25-MH26

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00350	ft/ft
Diameter	0.83	ft
Discharge	0.35	ft <sup>3</sup> /s

### Results

Normal Depth	0.30	ft
Flow Area	0.17	ft <sup>2</sup>
Wetted Perimeter	1.06	ft
Hydraulic Radius	0.16	ft
Top Width	0.80	ft
Critical Depth	0.26	ft
Percent Full	35.7	%
Critical Slope	0.00596	ft/ft
Velocity	2.02	ft/s
Velocity Head	0.06	ft
Specific Energy	0.36	ft
Froude Number	0.76	
Maximum Discharge	1.38	ft <sup>3</sup> /s
Discharge Full	1.28	ft <sup>3</sup> /s
Slope Full	0.00026	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	35.66	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Meridian U1 MH25-MH26

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.30	ft
Critical Depth	0.26	ft
Channel Slope	0.00350	ft/ft
Critical Slope	0.00596	ft/ft

## Warehouse-Cactus MH22-CACTUS EXT

### Project Description

Friction Method                      Manning Formula  
Solve For                                Normal Depth

### Input Data

Roughness Coefficient                      0.013  
Channel Slope                                0.00800    ft/ft  
Diameter                                        1.25    ft  
Discharge                                      1.89    ft<sup>3</sup>/s

### Results

Normal Depth                                0.49    ft  
Flow Area                                      0.45    ft<sup>2</sup>  
Wetted Perimeter                            1.70    ft  
Hydraulic Radius                            0.26    ft  
Top Width                                      1.22    ft  
Critical Depth                                0.55    ft  
Percent Full                                  39.4    %  
Critical Slope                                0.00545    ft/ft  
Velocity                                        4.22    ft/s  
Velocity Head                                0.28    ft  
Specific Energy                               0.77    ft  
Froude Number                                1.23  
Maximum Discharge                        6.21    ft<sup>3</sup>/s  
Discharge Full                                5.78    ft<sup>3</sup>/s  
Slope Full                                      0.00086    ft/ft  
Flow Type                                      SuperCritical

### GVF Input Data

Downstream Depth                        0.00    ft  
Length                                        0.00    ft  
Number Of Steps                            0

### GVF Output Data

Upstream Depth                            0.00    ft  
Profile Description  
Profile Headloss                            0.00    ft  
Average End Depth Over Rise            0.00    %  
Normal Depth Over Rise                39.39    %  
Downstream Velocity                        Infinity    ft/s



---

## Warehouse-Cactus MH22-CACTUS EXT

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.49	ft
Critical Depth	0.55	ft
Channel Slope	0.00800	ft/ft
Critical Slope	0.00545	ft/ft

---

## Warehouse-Cactus MH25-MH22

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00520	ft/ft
Diameter	1.50	ft
Discharge	1.93	ft <sup>3</sup> /s

### Results

Normal Depth	0.52	ft
Flow Area	0.54	ft <sup>2</sup>
Wetted Perimeter	1.88	ft
Hydraulic Radius	0.29	ft
Top Width	1.43	ft
Critical Depth	0.52	ft
Percent Full	34.3	%
Critical Slope	0.00493	ft/ft
Velocity	3.58	ft/s
Velocity Head	0.20	ft
Specific Energy	0.71	ft
Froude Number	1.03	
Maximum Discharge	8.21	ft <sup>3</sup> /s
Discharge Full	7.63	ft <sup>3</sup> /s
Slope Full	0.00033	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	34.26	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Cactus MH25-MH22

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.52	ft
Critical Depth	0.52	ft
Channel Slope	0.00520	ft/ft
Critical Slope	0.00493	ft/ft

---

## Warehouse-Cactus MH21-MH25

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00520	ft/ft
Diameter	1.50	ft
Discharge	2.18	ft <sup>3</sup> /s

### Results

Normal Depth	0.55	ft
Flow Area	0.59	ft <sup>2</sup>
Wetted Perimeter	1.95	ft
Hydraulic Radius	0.30	ft
Top Width	1.45	ft
Critical Depth	0.56	ft
Percent Full	36.6	%
Critical Slope	0.00496	ft/ft
Velocity	3.70	ft/s
Velocity Head	0.21	ft
Specific Energy	0.76	ft
Froude Number	1.02	
Maximum Discharge	8.21	ft <sup>3</sup> /s
Discharge Full	7.63	ft <sup>3</sup> /s
Slope Full	0.00043	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	36.60	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Cactus MH21-MH25

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.55	ft
Critical Depth	0.56	ft
Channel Slope	0.00520	ft/ft
Critical Slope	0.00496	ft/ft

---

## Warehouse-Cactus MH20-MH21

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	1.50	ft
Discharge	2.44	ft <sup>3</sup> /s

### Results

Normal Depth	0.70	ft
Flow Area	0.80	ft <sup>2</sup>
Wetted Perimeter	2.25	ft
Hydraulic Radius	0.36	ft
Top Width	1.50	ft
Critical Depth	0.59	ft
Percent Full	46.4	%
Critical Slope	0.00501	ft/ft
Velocity	3.05	ft/s
Velocity Head	0.14	ft
Specific Energy	0.84	ft
Froude Number	0.73	
Maximum Discharge	5.98	ft <sup>3</sup> /s
Discharge Full	5.56	ft <sup>3</sup> /s
Slope Full	0.00054	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	46.40	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Cactus MH20-MH21

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.70	ft
Critical Depth	0.59	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00501	ft/ft

---

## Warehouse-Cactus MH19-MH20

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.50	ft <sup>3</sup> /s

### Results

Normal Depth	0.78	ft
Flow Area	0.92	ft <sup>2</sup>
Wetted Perimeter	2.41	ft
Hydraulic Radius	0.38	ft
Top Width	1.50	ft
Critical Depth	0.60	ft
Percent Full	51.8	%
Critical Slope	0.00502	ft/ft
Velocity	2.70	ft/s
Velocity Head	0.11	ft
Specific Energy	0.89	ft
Froude Number	0.61	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00056	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	51.83	%
Downstream Velocity	Infinity	ft/s



---

## Warehouse-Cactus MH19-MH20

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.78	ft
Critical Depth	0.60	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00502	ft/ft

---

## Warehouse-Cactus MH18-MH19

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.49	ft <sup>3</sup> /s

### Results

Normal Depth	0.78	ft
Flow Area	0.92	ft <sup>2</sup>
Wetted Perimeter	2.41	ft
Hydraulic Radius	0.38	ft
Top Width	1.50	ft
Critical Depth	0.60	ft
Percent Full	51.7	%
Critical Slope	0.00502	ft/ft
Velocity	2.70	ft/s
Velocity Head	0.11	ft
Specific Energy	0.89	ft
Froude Number	0.61	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00056	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	51.73	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Cactus MH18-MH19

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.78	ft
Critical Depth	0.60	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00502	ft/ft

---

## Warehouse-Innovation MH17-MH18

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.49	ft <sup>3</sup> /s

### Results

Normal Depth	0.78	ft
Flow Area	0.92	ft <sup>2</sup>
Wetted Perimeter	2.41	ft
Hydraulic Radius	0.38	ft
Top Width	1.50	ft
Critical Depth	0.60	ft
Percent Full	51.8	%
Critical Slope	0.00502	ft/ft
Velocity	2.70	ft/s
Velocity Head	0.11	ft
Specific Energy	0.89	ft
Froude Number	0.61	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00056	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	51.76	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Innovation MH17-MH18

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.78	ft
Critical Depth	0.60	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00502	ft/ft

---

## Warehouse-Innovation MH16-MH17

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.03170	ft/ft
Diameter	1.50	ft
Discharge	2.51	ft <sup>3</sup> /s

### Results

Normal Depth	0.37	ft
Flow Area	0.34	ft <sup>2</sup>
Wetted Perimeter	1.56	ft
Hydraulic Radius	0.22	ft
Top Width	1.29	ft
Critical Depth	0.60	ft
Percent Full	24.7	%
Critical Slope	0.00502	ft/ft
Velocity	7.37	ft/s
Velocity Head	0.84	ft
Specific Energy	1.21	ft
Froude Number	2.53	
Maximum Discharge	20.12	ft <sup>3</sup> /s
Discharge Full	18.70	ft <sup>3</sup> /s
Slope Full	0.00057	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	24.72	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Innovation MH16-MH17

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.37	ft
Critical Depth	0.60	ft
Channel Slope	0.03170	ft/ft
Critical Slope	0.00502	ft/ft

---

## Warehouse-Innovation MH15-MH16

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.54	ft <sup>3</sup> /s

### Results

Normal Depth	0.78	ft
Flow Area	0.94	ft <sup>2</sup>
Wetted Perimeter	2.43	ft
Hydraulic Radius	0.39	ft
Top Width	1.50	ft
Critical Depth	0.60	ft
Percent Full	52.3	%
Critical Slope	0.00503	ft/ft
Velocity	2.71	ft/s
Velocity Head	0.11	ft
Specific Energy	0.90	ft
Froude Number	0.60	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00058	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	52.32	%
Downstream Velocity	Infinity	ft/s



---

## Warehouse-Innovation MH15-MH16

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.78	ft
Critical Depth	0.60	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00503	ft/ft

---

## Warehouse-Innovation MH14-MH15

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.54	ft <sup>3</sup> /s

### Results

Normal Depth	0.78	ft
Flow Area	0.94	ft <sup>2</sup>
Wetted Perimeter	2.43	ft
Hydraulic Radius	0.39	ft
Top Width	1.50	ft
Critical Depth	0.60	ft
Percent Full	52.3	%
Critical Slope	0.00503	ft/ft
Velocity	2.71	ft/s
Velocity Head	0.11	ft
Specific Energy	0.90	ft
Froude Number	0.60	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00058	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	52.32	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Innovation MH14-MH15

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.78	ft
Critical Depth	0.60	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00503	ft/ft

---

## Warehouse-Innovation MH13-MH14

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.54	ft <sup>3</sup> /s

### Results

Normal Depth	0.79	ft
Flow Area	0.94	ft <sup>2</sup>
Wetted Perimeter	2.43	ft
Hydraulic Radius	0.39	ft
Top Width	1.50	ft
Critical Depth	0.60	ft
Percent Full	52.4	%
Critical Slope	0.00503	ft/ft
Velocity	2.71	ft/s
Velocity Head	0.11	ft
Specific Energy	0.90	ft
Froude Number	0.60	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00059	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	52.39	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Innovation MH13-MH14

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.79	ft
Critical Depth	0.60	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00503	ft/ft

---

## Warehouse-Innovation MH12-MH13

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.54	ft <sup>3</sup> /s

### Results

Normal Depth	0.79	ft
Flow Area	0.94	ft <sup>2</sup>
Wetted Perimeter	2.43	ft
Hydraulic Radius	0.39	ft
Top Width	1.50	ft
Critical Depth	0.60	ft
Percent Full	52.4	%
Critical Slope	0.00503	ft/ft
Velocity	2.71	ft/s
Velocity Head	0.11	ft
Specific Energy	0.90	ft
Froude Number	0.60	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00059	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	52.39	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Innovation MH12-MH13

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.79	ft
Critical Depth	0.60	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00503	ft/ft

---

## Warehouse-Innovation MH11-MH12

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.71	ft <sup>3</sup> /s

### Results

Normal Depth	0.82	ft
Flow Area	0.98	ft <sup>2</sup>
Wetted Perimeter	2.49	ft
Hydraulic Radius	0.39	ft
Top Width	1.49	ft
Critical Depth	0.62	ft
Percent Full	54.4	%
Critical Slope	0.00507	ft/ft
Velocity	2.75	ft/s
Velocity Head	0.12	ft
Specific Energy	0.93	ft
Froude Number	0.60	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00066	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	54.42	%
Downstream Velocity	Infinity	ft/s



---

## Warehouse-Innovation MH11-MH12

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.82	ft
Critical Depth	0.62	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00507	ft/ft

---

## Warehouse-Innovation MH4-MH11

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.71	ft <sup>3</sup> /s

### Results

Normal Depth	0.82	ft
Flow Area	0.98	ft <sup>2</sup>
Wetted Perimeter	2.49	ft
Hydraulic Radius	0.39	ft
Top Width	1.49	ft
Critical Depth	0.62	ft
Percent Full	54.4	%
Critical Slope	0.00507	ft/ft
Velocity	2.75	ft/s
Velocity Head	0.12	ft
Specific Energy	0.93	ft
Froude Number	0.60	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00066	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	54.42	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Innovation MH4-MH11

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.82	ft
Critical Depth	0.62	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00507	ft/ft

---

## Warehouse-Innovation MH7-MH8

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	0.84	ft
Discharge	0.29	ft <sup>3</sup> /s

### Results

Normal Depth	0.31	ft
Flow Area	0.18	ft <sup>2</sup>
Wetted Perimeter	1.09	ft
Hydraulic Radius	0.17	ft
Top Width	0.81	ft
Critical Depth	0.23	ft
Percent Full	36.9	%
Critical Slope	0.00593	ft/ft
Velocity	1.56	ft/s
Velocity Head	0.04	ft
Specific Energy	0.35	ft
Froude Number	0.58	
Maximum Discharge	1.07	ft <sup>3</sup> /s
Discharge Full	0.99	ft <sup>3</sup> /s
Slope Full	0.00017	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	36.89	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Innovation MH7-MH8

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.31	ft
Critical Depth	0.23	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00593	ft/ft

---

## Warehouse-Innovation MH6-MH7

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	0.83	ft
Discharge	0.26	ft <sup>3</sup> /s

### Results

Normal Depth	0.30	ft
Flow Area	0.17	ft <sup>2</sup>
Wetted Perimeter	1.06	ft
Hydraulic Radius	0.16	ft
Top Width	0.80	ft
Critical Depth	0.22	ft
Percent Full	35.7	%
Critical Slope	0.00599	ft/ft
Velocity	1.52	ft/s
Velocity Head	0.04	ft
Specific Energy	0.33	ft
Froude Number	0.58	
Maximum Discharge	1.04	ft <sup>3</sup> /s
Discharge Full	0.97	ft <sup>3</sup> /s
Slope Full	0.00015	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	35.67	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Innovation MH6-MH7

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.30	ft
Critical Depth	0.22	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00599	ft/ft

---

## Warehouse-Innovation MH5-MH6

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01640	ft/ft
Diameter	0.83	ft
Discharge	0.26	ft <sup>3</sup> /s

### Results

Normal Depth	0.17	ft
Flow Area	0.08	ft <sup>2</sup>
Wetted Perimeter	0.79	ft
Hydraulic Radius	0.10	ft
Top Width	0.67	ft
Critical Depth	0.22	ft
Percent Full	20.8	%
Critical Slope	0.00598	ft/ft
Velocity	3.23	ft/s
Velocity Head	0.16	ft
Specific Energy	0.34	ft
Froude Number	1.64	
Maximum Discharge	2.99	ft <sup>3</sup> /s
Discharge Full	2.78	ft <sup>3</sup> /s
Slope Full	0.00015	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	20.83	%
Downstream Velocity	Infinity	ft/s



---

## Warehouse-Innovation MH5-MH6

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.17	ft
Critical Depth	0.22	ft
Channel Slope	0.01640	ft/ft
Critical Slope	0.00598	ft/ft

---

## Warehouse-Innovation MH4-MH5

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.02020	ft/ft
Diameter	0.83	ft
Discharge	0.26	ft <sup>3</sup> /s

### Results

Normal Depth	0.16	ft
Flow Area	0.08	ft <sup>2</sup>
Wetted Perimeter	0.77	ft
Hydraulic Radius	0.10	ft
Top Width	0.66	ft
Critical Depth	0.22	ft
Percent Full	19.8	%
Critical Slope	0.00599	ft/ft
Velocity	3.48	ft/s
Velocity Head	0.19	ft
Specific Energy	0.35	ft
Froude Number	1.81	
Maximum Discharge	3.31	ft <sup>3</sup> /s
Discharge Full	3.08	ft <sup>3</sup> /s
Slope Full	0.00015	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	19.79	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Innovation MH4-MH5

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.16	ft
Critical Depth	0.22	ft
Channel Slope	0.02020	ft/ft
Critical Slope	0.00599	ft/ft

---

## Warehouse-Innovation MH3-MH4

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00270	ft/ft
Diameter	1.50	ft
Discharge	2.65	ft <sup>3</sup> /s

### Results

Normal Depth	0.74	ft
Flow Area	0.86	ft <sup>2</sup>
Wetted Perimeter	2.33	ft
Hydraulic Radius	0.37	ft
Top Width	1.50	ft
Critical Depth	0.62	ft
Percent Full	49.2	%
Critical Slope	0.00506	ft/ft
Velocity	3.07	ft/s
Velocity Head	0.15	ft
Specific Energy	0.88	ft
Froude Number	0.71	
Maximum Discharge	5.87	ft <sup>3</sup> /s
Discharge Full	5.46	ft <sup>3</sup> /s
Slope Full	0.00064	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	49.16	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Innovation MH3-MH4

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.74	ft
Critical Depth	0.62	ft
Channel Slope	0.00270	ft/ft
Critical Slope	0.00506	ft/ft

---

## Warehouse-Innovation MH2-MH3

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.65	ft <sup>3</sup> /s

### Results

Normal Depth	0.81	ft
Flow Area	0.97	ft <sup>2</sup>
Wetted Perimeter	2.47	ft
Hydraulic Radius	0.39	ft
Top Width	1.50	ft
Critical Depth	0.62	ft
Percent Full	53.8	%
Critical Slope	0.00506	ft/ft
Velocity	2.74	ft/s
Velocity Head	0.12	ft
Specific Energy	0.92	ft
Froude Number	0.60	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00064	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	53.78	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Innovation MH2-MH3

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.81	ft
Critical Depth	0.62	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00506	ft/ft

---

## Warehouse-Innovation MH1-MH2

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.65	ft <sup>3</sup> /s

### Results

Normal Depth	0.81	ft
Flow Area	0.97	ft <sup>2</sup>
Wetted Perimeter	2.47	ft
Hydraulic Radius	0.39	ft
Top Width	1.50	ft
Critical Depth	0.62	ft
Percent Full	53.8	%
Critical Slope	0.00506	ft/ft
Velocity	2.74	ft/s
Velocity Head	0.12	ft
Specific Energy	0.92	ft
Froude Number	0.60	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00064	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	53.78	%
Downstream Velocity	Infinity	ft/s



---

## Warehouse-Innovation MH1-MH2

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.81	ft
Critical Depth	0.62	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00506	ft/ft

---

## Warehouse-Innovation MH45-MH1

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.65	ft <sup>3</sup> /s

### Results

Normal Depth	0.81	ft
Flow Area	0.97	ft <sup>2</sup>
Wetted Perimeter	2.47	ft
Hydraulic Radius	0.39	ft
Top Width	1.50	ft
Critical Depth	0.62	ft
Percent Full	53.8	%
Critical Slope	0.00506	ft/ft
Velocity	2.74	ft/s
Velocity Head	0.12	ft
Specific Energy	0.92	ft
Froude Number	0.60	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00064	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	53.78	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Innovation MH45-MH1

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.81	ft
Critical Depth	0.62	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00506	ft/ft

---

## Warehouse-Meridian Unit2 MH1-MH2

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00600	ft/ft
Diameter	0.83	ft
Discharge	0.16	ft <sup>3</sup> /s

### Results

Normal Depth	0.17	ft
Flow Area	0.08	ft <sup>2</sup>
Wetted Perimeter	0.78	ft
Hydraulic Radius	0.10	ft
Top Width	0.67	ft
Critical Depth	0.17	ft
Percent Full	20.5	%
Critical Slope	0.00612	ft/ft
Velocity	1.94	ft/s
Velocity Head	0.06	ft
Specific Energy	0.23	ft
Froude Number	0.99	
Maximum Discharge	1.81	ft <sup>3</sup> /s
Discharge Full	1.68	ft <sup>3</sup> /s
Slope Full	0.00005	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	20.53	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Meridian Unit2 MH1-MH2

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.17	ft
Critical Depth	0.17	ft
Channel Slope	0.00600	ft/ft
Critical Slope	0.00612	ft/ft

---

## Warehouse-Meridian Unit2 MH2-MH3

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00370	ft/ft
Diameter	0.83	ft
Discharge	0.30	ft <sup>3</sup> /s

### Results

Normal Depth	0.27	ft
Flow Area	0.15	ft <sup>2</sup>
Wetted Perimeter	1.00	ft
Hydraulic Radius	0.15	ft
Top Width	0.78	ft
Critical Depth	0.24	ft
Percent Full	32.4	%
Critical Slope	0.00599	ft/ft
Velocity	1.97	ft/s
Velocity Head	0.06	ft
Specific Energy	0.33	ft
Froude Number	0.79	
Maximum Discharge	1.42	ft <sup>3</sup> /s
Discharge Full	1.32	ft <sup>3</sup> /s
Slope Full	0.00019	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	32.35	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Meridian Unit2 MH2-MH3

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.27	ft
Critical Depth	0.24	ft
Channel Slope	0.00370	ft/ft
Critical Slope	0.00599	ft/ft

---

## Warehouse-Meridian Unit2 MH3-MH4

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01660	ft/ft
Diameter	0.83	ft
Discharge	0.30	ft <sup>3</sup> /s

### Results

Normal Depth	0.18	ft
Flow Area	0.09	ft <sup>2</sup>
Wetted Perimeter	0.81	ft
Hydraulic Radius	0.11	ft
Top Width	0.69	ft
Critical Depth	0.24	ft
Percent Full	22.1	%
Critical Slope	0.00600	ft/ft
Velocity	3.37	ft/s
Velocity Head	0.18	ft
Specific Energy	0.36	ft
Froude Number	1.65	
Maximum Discharge	3.00	ft <sup>3</sup> /s
Discharge Full	2.79	ft <sup>3</sup> /s
Slope Full	0.00019	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	22.09	%
Downstream Velocity	Infinity	ft/s



---

## Warehouse-Meridian Unit2 MH3-MH4

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.18	ft
Critical Depth	0.24	ft
Channel Slope	0.01660	ft/ft
Critical Slope	0.00600	ft/ft

---

## Warehouse-Meridian Unit2 MH4-MH5

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01810	ft/ft
Diameter	0.83	ft
Discharge	0.29	ft <sup>3</sup> /s

### Results

Normal Depth	0.18	ft
Flow Area	0.08	ft <sup>2</sup>
Wetted Perimeter	0.79	ft
Hydraulic Radius	0.11	ft
Top Width	0.68	ft
Critical Depth	0.23	ft
Percent Full	21.2	%
Critical Slope	0.00597	ft/ft
Velocity	3.44	ft/s
Velocity Head	0.18	ft
Specific Energy	0.36	ft
Froude Number	1.72	
Maximum Discharge	3.14	ft <sup>3</sup> /s
Discharge Full	2.92	ft <sup>3</sup> /s
Slope Full	0.00018	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	21.22	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Meridian Unit2 MH4-MH5

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.18	ft
Critical Depth	0.23	ft
Channel Slope	0.01810	ft/ft
Critical Slope	0.00597	ft/ft

---

## Warehouse-Meridian Unit2 MH5-MH6

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01060	ft/ft
Diameter	0.83	ft
Discharge	0.29	ft <sup>3</sup> /s

### Results

Normal Depth	0.20	ft
Flow Area	0.10	ft <sup>2</sup>
Wetted Perimeter	0.86	ft
Hydraulic Radius	0.12	ft
Top Width	0.71	ft
Critical Depth	0.23	ft
Percent Full	24.3	%
Critical Slope	0.00597	ft/ft
Velocity	2.84	ft/s
Velocity Head	0.13	ft
Specific Energy	0.33	ft
Froude Number	1.33	
Maximum Discharge	2.40	ft <sup>3</sup> /s
Discharge Full	2.23	ft <sup>3</sup> /s
Slope Full	0.00018	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	24.27	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Meridian Unit2 MH5-MH6

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.20	ft
Critical Depth	0.23	ft
Channel Slope	0.01060	ft/ft
Critical Slope	0.00597	ft/ft

---

## Warehouse-Meridian Unit2 MH6-MH7

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	0.83	ft
Discharge	0.29	ft <sup>3</sup> /s

### Results

Normal Depth	0.29	ft
Flow Area	0.16	ft <sup>2</sup>
Wetted Perimeter	1.04	ft
Hydraulic Radius	0.16	ft
Top Width	0.79	ft
Critical Depth	0.23	ft
Percent Full	34.4	%
Critical Slope	0.00599	ft/ft
Velocity	1.77	ft/s
Velocity Head	0.05	ft
Specific Energy	0.33	ft
Froude Number	0.68	
Maximum Discharge	1.23	ft <sup>3</sup> /s
Discharge Full	1.15	ft <sup>3</sup> /s
Slope Full	0.00018	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	34.42	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Meridian Unit2 MH6-MH7

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.29	ft
Critical Depth	0.23	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00599	ft/ft

---

## Warehouse-Meridian Unit2 MH7-MH8

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01320	ft/ft
Diameter	0.83	ft
Discharge	0.38	ft <sup>3</sup> /s

### Results

Normal Depth	0.22	ft
Flow Area	0.11	ft <sup>2</sup>
Wetted Perimeter	0.89	ft
Hydraulic Radius	0.13	ft
Top Width	0.73	ft
Critical Depth	0.27	ft
Percent Full	26.3	%
Critical Slope	0.00598	ft/ft
Velocity	3.32	ft/s
Velocity Head	0.17	ft
Specific Energy	0.39	ft
Froude Number	1.48	
Maximum Discharge	2.68	ft <sup>3</sup> /s
Discharge Full	2.49	ft <sup>3</sup> /s
Slope Full	0.00030	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	26.26	%
Downstream Velocity	Infinity	ft/s



---

## Warehouse-Meridian Unit2 MH7-MH8

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.22	ft
Critical Depth	0.27	ft
Channel Slope	0.01320	ft/ft
Critical Slope	0.00598	ft/ft

---

## Warehouse-Meridian Unit2 MH8-MH9

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00640	ft/ft
Diameter	0.83	ft
Discharge	0.41	ft <sup>3</sup> /s

### Results

Normal Depth	0.27	ft
Flow Area	0.16	ft <sup>2</sup>
Wetted Perimeter	1.02	ft
Hydraulic Radius	0.15	ft
Top Width	0.78	ft
Critical Depth	0.28	ft
Percent Full	33.0	%
Critical Slope	0.00599	ft/ft
Velocity	2.62	ft/s
Velocity Head	0.11	ft
Specific Energy	0.38	ft
Froude Number	1.03	
Maximum Discharge	1.87	ft <sup>3</sup> /s
Discharge Full	1.73	ft <sup>3</sup> /s
Slope Full	0.00035	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	32.96	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Meridian Unit2 MH8-MH9

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.27	ft
Critical Depth	0.28	ft
Channel Slope	0.00640	ft/ft
Critical Slope	0.00599	ft/ft

---

## Warehouse-Meridian Unit2 MH9-MH10

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01200	ft/ft
Diameter	0.83	ft
Discharge	0.43	ft <sup>3</sup> /s

### Results

Normal Depth	0.24	ft
Flow Area	0.13	ft <sup>2</sup>
Wetted Perimeter	0.94	ft
Hydraulic Radius	0.14	ft
Top Width	0.75	ft
Critical Depth	0.29	ft
Percent Full	28.9	%
Critical Slope	0.00601	ft/ft
Velocity	3.33	ft/s
Velocity Head	0.17	ft
Specific Energy	0.41	ft
Froude Number	1.42	
Maximum Discharge	2.55	ft <sup>3</sup> /s
Discharge Full	2.37	ft <sup>3</sup> /s
Slope Full	0.00040	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	28.91	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Meridian Unit2 MH9-MH10

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.24	ft
Critical Depth	0.29	ft
Channel Slope	0.01200	ft/ft
Critical Slope	0.00601	ft/ft

## Warehouse-Offsite Trunk SW U1 MH1-MH45

### Project Description

Friction Method                      Manning Formula  
Solve For                                Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00390	ft/ft
Diameter	1.50	ft
Discharge	2.65	ft <sup>3</sup> /s

### Results

Normal Depth	0.66	ft
Flow Area	0.75	ft <sup>2</sup>
Wetted Perimeter	2.18	ft
Hydraulic Radius	0.35	ft
Top Width	1.49	ft
Critical Depth	0.62	ft
Percent Full	44.3	%
Critical Slope	0.00506	ft/ft
Velocity	3.51	ft/s
Velocity Head	0.19	ft
Specific Energy	0.86	ft
Froude Number	0.87	
Maximum Discharge	7.06	ft <sup>3</sup> /s
Discharge Full	6.56	ft <sup>3</sup> /s
Slope Full	0.00064	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	44.26	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Offsite Trunk SW U1 MH1-MH45

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.66	ft
Critical Depth	0.62	ft
Channel Slope	0.00390	ft/ft
Critical Slope	0.00506	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH33-MH50

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	2.00	ft
Discharge	4.73	ft <sup>3</sup> /s

### Results

Normal Depth	0.87	ft
Flow Area	1.32	ft <sup>2</sup>
Wetted Perimeter	2.89	ft
Hydraulic Radius	0.46	ft
Top Width	1.98	ft
Critical Depth	0.77	ft
Percent Full	43.7	%
Critical Slope	0.00454	ft/ft
Velocity	3.59	ft/s
Velocity Head	0.20	ft
Specific Energy	1.07	ft
Froude Number	0.78	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00044	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	43.69	%
Downstream Velocity	Infinity	ft/s



---

## Warehouse-I-215 Trunk Sewer MH33-MH50

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.87	ft
Critical Depth	0.77	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00454	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH50-MH51

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	2.00	ft
Discharge	4.73	ft <sup>3</sup> /s

### Results

Normal Depth	0.87	ft
Flow Area	1.32	ft <sup>2</sup>
Wetted Perimeter	2.89	ft
Hydraulic Radius	0.46	ft
Top Width	1.98	ft
Critical Depth	0.77	ft
Percent Full	43.7	%
Critical Slope	0.00454	ft/ft
Velocity	3.59	ft/s
Velocity Head	0.20	ft
Specific Energy	1.07	ft
Froude Number	0.78	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00044	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	43.69	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH50-MH51

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.87	ft
Critical Depth	0.77	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00454	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH51-MH52

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	2.00	ft
Discharge	4.99	ft <sup>3</sup> /s

### Results

Normal Depth	0.90	ft
Flow Area	1.37	ft <sup>2</sup>
Wetted Perimeter	2.94	ft
Hydraulic Radius	0.47	ft
Top Width	1.99	ft
Critical Depth	0.79	ft
Percent Full	45.0	%
Critical Slope	0.00455	ft/ft
Velocity	3.64	ft/s
Velocity Head	0.21	ft
Specific Energy	1.11	ft
Froude Number	0.77	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00049	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	45.00	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH51-MH52

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.90	ft
Critical Depth	0.79	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00455	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH52-MH53

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	2.00	ft
Discharge	4.99	ft <sup>3</sup> /s

### Results

Normal Depth	0.90	ft
Flow Area	1.37	ft <sup>2</sup>
Wetted Perimeter	2.94	ft
Hydraulic Radius	0.47	ft
Top Width	1.99	ft
Critical Depth	0.79	ft
Percent Full	45.0	%
Critical Slope	0.00455	ft/ft
Velocity	3.64	ft/s
Velocity Head	0.21	ft
Specific Energy	1.11	ft
Froude Number	0.77	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00049	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	45.00	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH52-MH53

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.90	ft
Critical Depth	0.79	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00455	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH53-MH54

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	2.00	ft
Discharge	4.99	ft <sup>3</sup> /s

### Results

Normal Depth	0.90	ft
Flow Area	1.37	ft <sup>2</sup>
Wetted Perimeter	2.94	ft
Hydraulic Radius	0.47	ft
Top Width	1.99	ft
Critical Depth	0.79	ft
Percent Full	45.0	%
Critical Slope	0.00455	ft/ft
Velocity	3.64	ft/s
Velocity Head	0.21	ft
Specific Energy	1.11	ft
Froude Number	0.77	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00049	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	45.00	%
Downstream Velocity	Infinity	ft/s



---

## Warehouse-I-215 Trunk Sewer MH53-MH54

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.90	ft
Critical Depth	0.79	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00455	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH54-MH55

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	2.00	ft
Discharge	4.99	ft <sup>3</sup> /s

### Results

Normal Depth	0.90	ft
Flow Area	1.37	ft <sup>2</sup>
Wetted Perimeter	2.94	ft
Hydraulic Radius	0.47	ft
Top Width	1.99	ft
Critical Depth	0.79	ft
Percent Full	45.0	%
Critical Slope	0.00455	ft/ft
Velocity	3.64	ft/s
Velocity Head	0.21	ft
Specific Energy	1.11	ft
Froude Number	0.77	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00049	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	45.00	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH54-MH55

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.90	ft
Critical Depth	0.79	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00455	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH55-MH56

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	2.00	ft
Discharge	4.99	ft <sup>3</sup> /s

### Results

Normal Depth	0.90	ft
Flow Area	1.37	ft <sup>2</sup>
Wetted Perimeter	2.94	ft
Hydraulic Radius	0.47	ft
Top Width	1.99	ft
Critical Depth	0.79	ft
Percent Full	45.0	%
Critical Slope	0.00455	ft/ft
Velocity	3.64	ft/s
Velocity Head	0.21	ft
Specific Energy	1.11	ft
Froude Number	0.77	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00049	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	45.00	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH55-MH56

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.90	ft
Critical Depth	0.79	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00455	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH56-MH57

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	2.00	ft
Discharge	4.99	ft <sup>3</sup> /s

### Results

Normal Depth	0.90	ft
Flow Area	1.37	ft <sup>2</sup>
Wetted Perimeter	2.94	ft
Hydraulic Radius	0.47	ft
Top Width	1.99	ft
Critical Depth	0.79	ft
Percent Full	45.0	%
Critical Slope	0.00455	ft/ft
Velocity	3.64	ft/s
Velocity Head	0.21	ft
Specific Energy	1.11	ft
Froude Number	0.77	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00049	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	45.00	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH56-MH57

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.90	ft
Critical Depth	0.79	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00455	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH57-MH58

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	4.99	ft <sup>3</sup> /s

### Results

Normal Depth	1.08	ft
Flow Area	2.02	ft <sup>2</sup>
Wetted Perimeter	3.58	ft
Hydraulic Radius	0.56	ft
Top Width	2.48	ft
Critical Depth	0.74	ft
Percent Full	43.0	%
Critical Slope	0.00414	ft/ft
Velocity	2.47	ft/s
Velocity Head	0.09	ft
Specific Energy	1.17	ft
Froude Number	0.48	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00015	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	43.02	%
Downstream Velocity	Infinity	ft/s



---

## Warehouse-I-215 Trunk Sewer MH57-MH58

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.08	ft
Critical Depth	0.74	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00414	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH58-MH59

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	5.72	ft <sup>3</sup> /s

### Results

Normal Depth	1.16	ft
Flow Area	2.23	ft <sup>2</sup>
Wetted Perimeter	3.75	ft
Hydraulic Radius	0.60	ft
Top Width	2.49	ft
Critical Depth	0.79	ft
Percent Full	46.5	%
Critical Slope	0.00414	ft/ft
Velocity	2.56	ft/s
Velocity Head	0.10	ft
Specific Energy	1.26	ft
Froude Number	0.48	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00019	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	46.48	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH58-MH59

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.16	ft
Critical Depth	0.79	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00414	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH59-MH60

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	5.72	ft <sup>3</sup> /s

### Results

Normal Depth	1.16	ft
Flow Area	2.23	ft <sup>2</sup>
Wetted Perimeter	3.75	ft
Hydraulic Radius	0.60	ft
Top Width	2.49	ft
Critical Depth	0.79	ft
Percent Full	46.5	%
Critical Slope	0.00414	ft/ft
Velocity	2.56	ft/s
Velocity Head	0.10	ft
Specific Energy	1.26	ft
Froude Number	0.48	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00019	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	46.48	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH59-MH60

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.16	ft
Critical Depth	0.79	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00414	ft/ft

## Warehouse-I-215 Trunk Sewer MH60-MH61

### Project Description

Friction Method                      Manning Formula  
Solve For                                Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	5.72	ft <sup>3</sup> /s

### Results

Normal Depth	1.16	ft
Flow Area	2.23	ft <sup>2</sup>
Wetted Perimeter	3.75	ft
Hydraulic Radius	0.60	ft
Top Width	2.49	ft
Critical Depth	0.79	ft
Percent Full	46.5	%
Critical Slope	0.00414	ft/ft
Velocity	2.56	ft/s
Velocity Head	0.10	ft
Specific Energy	1.26	ft
Froude Number	0.48	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00019	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	46.48	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH60-MH61

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.16	ft
Critical Depth	0.79	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00414	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH61-MH62

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	5.72	ft <sup>3</sup> /s

### Results

Normal Depth	1.16	ft
Flow Area	2.23	ft <sup>2</sup>
Wetted Perimeter	3.75	ft
Hydraulic Radius	0.60	ft
Top Width	2.49	ft
Critical Depth	0.79	ft
Percent Full	46.5	%
Critical Slope	0.00414	ft/ft
Velocity	2.56	ft/s
Velocity Head	0.10	ft
Specific Energy	1.26	ft
Froude Number	0.48	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00019	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	46.48	%
Downstream Velocity	Infinity	ft/s



---

## Warehouse-I-215 Trunk Sewer MH61-MH62

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.16	ft
Critical Depth	0.79	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00414	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH62-MH63

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	6.84	ft <sup>3</sup> /s

### Results

Normal Depth	1.29	ft
Flow Area	2.55	ft <sup>2</sup>
Wetted Perimeter	4.01	ft
Hydraulic Radius	0.64	ft
Top Width	2.50	ft
Critical Depth	0.87	ft
Percent Full	51.6	%
Critical Slope	0.00416	ft/ft
Velocity	2.68	ft/s
Velocity Head	0.11	ft
Specific Energy	1.40	ft
Froude Number	0.47	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00028	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	51.59	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH62-MH63

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.29	ft
Critical Depth	0.87	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00416	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH63-MH64

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	6.84	ft <sup>3</sup> /s

### Results

Normal Depth	1.29	ft
Flow Area	2.55	ft <sup>2</sup>
Wetted Perimeter	4.01	ft
Hydraulic Radius	0.64	ft
Top Width	2.50	ft
Critical Depth	0.87	ft
Percent Full	51.6	%
Critical Slope	0.00416	ft/ft
Velocity	2.68	ft/s
Velocity Head	0.11	ft
Specific Energy	1.40	ft
Froude Number	0.47	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00028	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	51.59	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH63-MH64

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.29	ft
Critical Depth	0.87	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00416	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH64-MH65

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	6.84	ft <sup>3</sup> /s

### Results

Normal Depth	1.29	ft
Flow Area	2.55	ft <sup>2</sup>
Wetted Perimeter	4.01	ft
Hydraulic Radius	0.64	ft
Top Width	2.50	ft
Critical Depth	0.87	ft
Percent Full	51.6	%
Critical Slope	0.00416	ft/ft
Velocity	2.68	ft/s
Velocity Head	0.11	ft
Specific Energy	1.40	ft
Froude Number	0.47	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00028	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	51.59	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH64-MH65

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.29	ft
Critical Depth	0.87	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00416	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH65-MH66

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	6.84	ft <sup>3</sup> /s

### Results

Normal Depth	1.29	ft
Flow Area	2.55	ft <sup>2</sup>
Wetted Perimeter	4.01	ft
Hydraulic Radius	0.64	ft
Top Width	2.50	ft
Critical Depth	0.87	ft
Percent Full	51.6	%
Critical Slope	0.00416	ft/ft
Velocity	2.68	ft/s
Velocity Head	0.11	ft
Specific Energy	1.40	ft
Froude Number	0.47	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00028	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	51.59	%
Downstream Velocity	Infinity	ft/s



---

## Warehouse-I-215 Trunk Sewer MH65-MH66

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.29	ft
Critical Depth	0.87	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00416	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH66-MH67

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	6.84	ft <sup>3</sup> /s

### Results

Normal Depth	1.29	ft
Flow Area	2.55	ft <sup>2</sup>
Wetted Perimeter	4.01	ft
Hydraulic Radius	0.64	ft
Top Width	2.50	ft
Critical Depth	0.87	ft
Percent Full	51.6	%
Critical Slope	0.00416	ft/ft
Velocity	2.68	ft/s
Velocity Head	0.11	ft
Specific Energy	1.40	ft
Froude Number	0.47	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00028	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	51.59	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH66-MH67

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.29	ft
Critical Depth	0.87	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00416	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH67-MH68

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	6.84	ft <sup>3</sup> /s

### Results

Normal Depth	1.29	ft
Flow Area	2.55	ft <sup>2</sup>
Wetted Perimeter	4.01	ft
Hydraulic Radius	0.64	ft
Top Width	2.50	ft
Critical Depth	0.87	ft
Percent Full	51.6	%
Critical Slope	0.00416	ft/ft
Velocity	2.68	ft/s
Velocity Head	0.11	ft
Specific Energy	1.40	ft
Froude Number	0.47	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00028	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	51.59	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH67-MH68

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.29	ft
Critical Depth	0.87	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00416	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH68-MH69

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	6.84	ft <sup>3</sup> /s

### Results

Normal Depth	1.29	ft
Flow Area	2.55	ft <sup>2</sup>
Wetted Perimeter	4.01	ft
Hydraulic Radius	0.64	ft
Top Width	2.50	ft
Critical Depth	0.87	ft
Percent Full	51.6	%
Critical Slope	0.00416	ft/ft
Velocity	2.68	ft/s
Velocity Head	0.11	ft
Specific Energy	1.40	ft
Froude Number	0.47	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00028	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	51.59	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH68-MH69

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.29	ft
Critical Depth	0.87	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00416	ft/ft

## Warehouse-I-215 Trunk Sewer MH69-MH70

### Project Description

Friction Method                      Manning Formula  
Solve For                                Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	6.84	ft <sup>3</sup> /s

### Results

Normal Depth	1.29	ft
Flow Area	2.55	ft <sup>2</sup>
Wetted Perimeter	4.01	ft
Hydraulic Radius	0.64	ft
Top Width	2.50	ft
Critical Depth	0.87	ft
Percent Full	51.6	%
Critical Slope	0.00416	ft/ft
Velocity	2.68	ft/s
Velocity Head	0.11	ft
Specific Energy	1.40	ft
Froude Number	0.47	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00028	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	51.59	%
Downstream Velocity	Infinity	ft/s



---

## Warehouse-I-215 Trunk Sewer MH69-MH70

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.29	ft
Critical Depth	0.87	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00416	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH70-MH71

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	6.84	ft <sup>3</sup> /s

### Results

Normal Depth	1.29	ft
Flow Area	2.55	ft <sup>2</sup>
Wetted Perimeter	4.01	ft
Hydraulic Radius	0.64	ft
Top Width	2.50	ft
Critical Depth	0.87	ft
Percent Full	51.6	%
Critical Slope	0.00416	ft/ft
Velocity	2.68	ft/s
Velocity Head	0.11	ft
Specific Energy	1.40	ft
Froude Number	0.47	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00028	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	51.59	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH70-MH71

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.29	ft
Critical Depth	0.87	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00416	ft/ft

---

## Warehouse-I-215 Trunk Sewer MH71-MH72

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	8.05	ft <sup>3</sup> /s

### Results

Normal Depth	1.43	ft
Flow Area	2.89	ft <sup>2</sup>
Wetted Perimeter	4.28	ft
Hydraulic Radius	0.68	ft
Top Width	2.48	ft
Critical Depth	0.94	ft
Percent Full	57.0	%
Critical Slope	0.00420	ft/ft
Velocity	2.78	ft/s
Velocity Head	0.12	ft
Specific Energy	1.55	ft
Froude Number	0.45	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00039	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	57.02	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-I-215 Trunk Sewer MH71-MH72

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.43	ft
Critical Depth	0.94	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00420	ft/ft

---

## Warehouse-Exist 27" MH72-MH20

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00300	ft/ft
Diameter	2.25	ft
Discharge	14.33	ft <sup>3</sup> /s

### Results

Normal Depth	1.59	ft
Flow Area	3.00	ft <sup>2</sup>
Wetted Perimeter	4.48	ft
Hydraulic Radius	0.67	ft
Top Width	2.05	ft
Critical Depth	1.32	ft
Percent Full	70.5	%
Critical Slope	0.00512	ft/ft
Velocity	4.78	ft/s
Velocity Head	0.36	ft
Specific Energy	1.94	ft
Froude Number	0.70	
Maximum Discharge	18.25	ft <sup>3</sup> /s
Discharge Full	16.96	ft <sup>3</sup> /s
Slope Full	0.00214	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	70.50	%
Downstream Velocity	Infinity	ft/s

---

## Warehouse-Exist 27" MH72-MH20

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.59	ft
Critical Depth	1.32	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00512	ft/ft

---

## Industrial - Meridian Unit1 MH10-MH9

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00430	ft/ft
Diameter	0.83	ft
Discharge	0.43	ft <sup>3</sup> /s

### Results

Normal Depth	0.31	ft
Flow Area	0.19	ft <sup>2</sup>
Wetted Perimeter	1.09	ft
Hydraulic Radius	0.17	ft
Top Width	0.80	ft
Critical Depth	0.28	ft
Percent Full	37.5	%
Critical Slope	0.00601	ft/ft
Velocity	2.30	ft/s
Velocity Head	0.08	ft
Specific Energy	0.39	ft
Froude Number	0.84	
Maximum Discharge	1.53	ft <sup>3</sup> /s
Discharge Full	1.42	ft <sup>3</sup> /s
Slope Full	0.00038	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	37.46	%
Downstream Velocity	Infinity	ft/s



---

## Industrial - Meridian Unit1 MH10-MH9

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.31	ft
Critical Depth	0.28	ft
Channel Slope	0.00430	ft/ft
Critical Slope	0.00601	ft/ft

---

## Industrial-Meridian Unit1 MH9-MH8

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00250	ft/ft
Diameter	0.83	ft
Discharge	0.59	ft <sup>3</sup> /s

### Results

Normal Depth	0.44	ft
Flow Area	0.29	ft <sup>2</sup>
Wetted Perimeter	1.35	ft
Hydraulic Radius	0.21	ft
Top Width	0.83	ft
Critical Depth	0.34	ft
Percent Full	52.8	%
Critical Slope	0.00614	ft/ft
Velocity	2.05	ft/s
Velocity Head	0.07	ft
Specific Energy	0.50	ft
Froude Number	0.61	
Maximum Discharge	1.17	ft <sup>3</sup> /s
Discharge Full	1.08	ft <sup>3</sup> /s
Slope Full	0.00075	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	52.76	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Meridian Unit1 MH9-MH8

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.44	ft
Critical Depth	0.34	ft
Channel Slope	0.00250	ft/ft
Critical Slope	0.00614	ft/ft

---

## Industrial-Meridian Unit1 MH32-MH8

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Diameter	0.83	ft
Discharge	0.09	ft <sup>3</sup> /s

### Results

Normal Depth	0.11	ft
Flow Area	0.04	ft <sup>2</sup>
Wetted Perimeter	0.63	ft
Hydraulic Radius	0.07	ft
Top Width	0.57	ft
Critical Depth	0.13	ft
Percent Full	13.7	%
Critical Slope	0.00640	ft/ft
Velocity	1.96	ft/s
Velocity Head	0.06	ft
Specific Energy	0.17	ft
Froude Number	1.23	
Maximum Discharge	2.33	ft <sup>3</sup> /s
Discharge Full	2.17	ft <sup>3</sup> /s
Slope Full	0.00002	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	13.67	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Meridian Unit1 MH32-MH8

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.11	ft
Critical Depth	0.13	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00640	ft/ft

---

## Industrial-Meridian Unit1 MH30-MH31

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01400	ft/ft
Diameter	0.83	ft
Discharge	0.35	ft <sup>3</sup> /s

### Results

Normal Depth	0.21	ft
Flow Area	0.11	ft <sup>2</sup>
Wetted Perimeter	0.87	ft
Hydraulic Radius	0.12	ft
Top Width	0.72	ft
Critical Depth	0.26	ft
Percent Full	25.0	%
Critical Slope	0.00597	ft/ft
Velocity	3.32	ft/s
Velocity Head	0.17	ft
Specific Energy	0.38	ft
Froude Number	1.53	
Maximum Discharge	2.76	ft <sup>3</sup> /s
Discharge Full	2.56	ft <sup>3</sup> /s
Slope Full	0.00026	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	24.95	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Meridian Unit1 MH30-MH31

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.21	ft
Critical Depth	0.26	ft
Channel Slope	0.01400	ft/ft
Critical Slope	0.00597	ft/ft

---

## Industrial-Meridian Unit1 MH29-MH30

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00660	ft/ft
Diameter	0.83	ft
Discharge	0.52	ft <sup>3</sup> /s

### Results

Normal Depth	0.31	ft
Flow Area	0.18	ft <sup>2</sup>
Wetted Perimeter	1.09	ft
Hydraulic Radius	0.17	ft
Top Width	0.80	ft
Critical Depth	0.32	ft
Percent Full	37.2	%
Critical Slope	0.00607	ft/ft
Velocity	2.83	ft/s
Velocity Head	0.12	ft
Specific Energy	0.43	ft
Froude Number	1.04	
Maximum Discharge	1.89	ft <sup>3</sup> /s
Discharge Full	1.76	ft <sup>3</sup> /s
Slope Full	0.00057	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	37.19	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-Meridian Unit1 MH29-MH30

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.31	ft
Critical Depth	0.32	ft
Channel Slope	0.00660	ft/ft
Critical Slope	0.00607	ft/ft

---

## Industrial-Meridian Unit1 MH28-MH29

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00450	ft/ft
Diameter	0.83	ft
Discharge	0.52	ft <sup>3</sup> /s

### Results

Normal Depth	0.34	ft
Flow Area	0.21	ft <sup>2</sup>
Wetted Perimeter	1.16	ft
Hydraulic Radius	0.18	ft
Top Width	0.82	ft
Critical Depth	0.32	ft
Percent Full	41.3	%
Critical Slope	0.00608	ft/ft
Velocity	2.46	ft/s
Velocity Head	0.09	ft
Specific Energy	0.44	ft
Froude Number	0.86	
Maximum Discharge	1.56	ft <sup>3</sup> /s
Discharge Full	1.45	ft <sup>3</sup> /s
Slope Full	0.00057	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	41.26	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Meridian Unit1 MH28-MH29

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.34	ft
Critical Depth	0.32	ft
Channel Slope	0.00450	ft/ft
Critical Slope	0.00608	ft/ft

---

## Industrial-Meridian Unit1 MH27-MH28

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00350	ft/ft
Diameter	0.83	ft
Discharge	0.55	ft <sup>3</sup> /s

### Results

Normal Depth	0.38	ft
Flow Area	0.24	ft <sup>2</sup>
Wetted Perimeter	1.23	ft
Hydraulic Radius	0.19	ft
Top Width	0.83	ft
Critical Depth	0.32	ft
Percent Full	45.5	%
Critical Slope	0.00610	ft/ft
Velocity	2.28	ft/s
Velocity Head	0.08	ft
Specific Energy	0.46	ft
Froude Number	0.75	
Maximum Discharge	1.38	ft <sup>3</sup> /s
Discharge Full	1.28	ft <sup>3</sup> /s
Slope Full	0.00063	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	45.49	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Meridian Unit1 MH27-MH28

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.38	ft
Critical Depth	0.32	ft
Channel Slope	0.00350	ft/ft
Critical Slope	0.00610	ft/ft

---

## Industrial-Meridian Unit1 MH26-MH27

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00350	ft/ft
Diameter	0.83	ft
Discharge	0.57	ft <sup>3</sup> /s

### Results

Normal Depth	0.39	ft
Flow Area	0.25	ft <sup>2</sup>
Wetted Perimeter	1.25	ft
Hydraulic Radius	0.20	ft
Top Width	0.83	ft
Critical Depth	0.33	ft
Percent Full	46.8	%
Critical Slope	0.00613	ft/ft
Velocity	2.30	ft/s
Velocity Head	0.08	ft
Specific Energy	0.47	ft
Froude Number	0.74	
Maximum Discharge	1.38	ft <sup>3</sup> /s
Discharge Full	1.28	ft <sup>3</sup> /s
Slope Full	0.00070	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	46.79	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Meridian Unit1 MH26-MH27

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.39	ft
Critical Depth	0.33	ft
Channel Slope	0.00350	ft/ft
Critical Slope	0.00613	ft/ft

---

## Industrial-Meridian Unit1 MH25-MH26

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00350	ft/ft
Diameter	0.83	ft
Discharge	0.59	ft <sup>3</sup> /s

### Results

Normal Depth	0.39	ft
Flow Area	0.25	ft <sup>2</sup>
Wetted Perimeter	1.26	ft
Hydraulic Radius	0.20	ft
Top Width	0.83	ft
Critical Depth	0.34	ft
Percent Full	47.5	%
Critical Slope	0.00614	ft/ft
Velocity	2.32	ft/s
Velocity Head	0.08	ft
Specific Energy	0.48	ft
Froude Number	0.74	
Maximum Discharge	1.38	ft <sup>3</sup> /s
Discharge Full	1.28	ft <sup>3</sup> /s
Slope Full	0.00074	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	47.53	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-Meridian Unit1 MH25-MH26

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.39	ft
Critical Depth	0.34	ft
Channel Slope	0.00350	ft/ft
Critical Slope	0.00614	ft/ft

---

## Industrial-Cactus MH22-CACTUS EXT

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00800	ft/ft
Diameter	1.25	ft
Discharge	1.89	ft <sup>3</sup> /s

### Results

Normal Depth	0.49	ft
Flow Area	0.45	ft <sup>2</sup>
Wetted Perimeter	1.70	ft
Hydraulic Radius	0.26	ft
Top Width	1.22	ft
Critical Depth	0.55	ft
Percent Full	39.4	%
Critical Slope	0.00545	ft/ft
Velocity	4.22	ft/s
Velocity Head	0.28	ft
Specific Energy	0.77	ft
Froude Number	1.23	
Maximum Discharge	6.21	ft <sup>3</sup> /s
Discharge Full	5.78	ft <sup>3</sup> /s
Slope Full	0.00086	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	39.39	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Cactus MH22-CACTUS EXT

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.49	ft
Critical Depth	0.55	ft
Channel Slope	0.00800	ft/ft
Critical Slope	0.00545	ft/ft

---

## Industrial-Cactus MH25-MH22

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00520	ft/ft
Diameter	1.50	ft
Discharge	1.93	ft <sup>3</sup> /s

### Results

Normal Depth	0.52	ft
Flow Area	0.54	ft <sup>2</sup>
Wetted Perimeter	1.88	ft
Hydraulic Radius	0.29	ft
Top Width	1.43	ft
Critical Depth	0.52	ft
Percent Full	34.3	%
Critical Slope	0.00493	ft/ft
Velocity	3.58	ft/s
Velocity Head	0.20	ft
Specific Energy	0.71	ft
Froude Number	1.03	
Maximum Discharge	8.21	ft <sup>3</sup> /s
Discharge Full	7.63	ft <sup>3</sup> /s
Slope Full	0.00033	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	34.26	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Cactus MH25-MH22

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.52	ft
Critical Depth	0.52	ft
Channel Slope	0.00520	ft/ft
Critical Slope	0.00493	ft/ft

---

## Industrial-Cactus MH21-MH25

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00520	ft/ft
Diameter	1.50	ft
Discharge	2.29	ft <sup>3</sup> /s

### Results

Normal Depth	0.56	ft
Flow Area	0.61	ft <sup>2</sup>
Wetted Perimeter	1.98	ft
Hydraulic Radius	0.31	ft
Top Width	1.46	ft
Critical Depth	0.57	ft
Percent Full	37.6	%
Critical Slope	0.00498	ft/ft
Velocity	3.75	ft/s
Velocity Head	0.22	ft
Specific Energy	0.78	ft
Froude Number	1.02	
Maximum Discharge	8.21	ft <sup>3</sup> /s
Discharge Full	7.63	ft <sup>3</sup> /s
Slope Full	0.00047	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	37.55	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Cactus MH21-MH25

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.56	ft
Critical Depth	0.57	ft
Channel Slope	0.00520	ft/ft
Critical Slope	0.00498	ft/ft

---

## Industrial-Cactus MH20-MH21

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	1.50	ft
Discharge	2.67	ft <sup>3</sup> /s

### Results

Normal Depth	0.73	ft
Flow Area	0.86	ft <sup>2</sup>
Wetted Perimeter	2.32	ft
Hydraulic Radius	0.37	ft
Top Width	1.50	ft
Critical Depth	0.62	ft
Percent Full	48.8	%
Critical Slope	0.00506	ft/ft
Velocity	3.12	ft/s
Velocity Head	0.15	ft
Specific Energy	0.88	ft
Froude Number	0.73	
Maximum Discharge	5.98	ft <sup>3</sup> /s
Discharge Full	5.56	ft <sup>3</sup> /s
Slope Full	0.00065	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	48.85	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-Cactus MH20-MH21

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.73	ft
Critical Depth	0.62	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00506	ft/ft

---

## Industrial-Cactus MH19-MH20

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.72	ft <sup>3</sup> /s

### Results

Normal Depth	0.82	ft
Flow Area	0.99	ft <sup>2</sup>
Wetted Perimeter	2.49	ft
Hydraulic Radius	0.40	ft
Top Width	1.49	ft
Critical Depth	0.63	ft
Percent Full	54.6	%
Critical Slope	0.00507	ft/ft
Velocity	2.76	ft/s
Velocity Head	0.12	ft
Specific Energy	0.94	ft
Froude Number	0.60	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00067	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	54.58	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Cactus MH19-MH20

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.82	ft
Critical Depth	0.63	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00507	ft/ft

---

## Industrial-Cactus MH18-MH19

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.72	ft <sup>3</sup> /s

### Results

Normal Depth	0.82	ft
Flow Area	0.99	ft <sup>2</sup>
Wetted Perimeter	2.50	ft
Hydraulic Radius	0.40	ft
Top Width	1.49	ft
Critical Depth	0.63	ft
Percent Full	54.7	%
Critical Slope	0.00507	ft/ft
Velocity	2.76	ft/s
Velocity Head	0.12	ft
Specific Energy	0.94	ft
Froude Number	0.60	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00067	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	54.66	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Cactus MH18-MH19

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.82	ft
Critical Depth	0.63	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00507	ft/ft

---

## Industrial-Innovation MH17-MH18

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.72	ft <sup>3</sup> /s

### Results

Normal Depth	0.82	ft
Flow Area	0.99	ft <sup>2</sup>
Wetted Perimeter	2.50	ft
Hydraulic Radius	0.40	ft
Top Width	1.49	ft
Critical Depth	0.63	ft
Percent Full	54.7	%
Critical Slope	0.00507	ft/ft
Velocity	2.76	ft/s
Velocity Head	0.12	ft
Specific Energy	0.94	ft
Froude Number	0.60	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00067	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	54.66	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Innovation MH17-MH18

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.82	ft
Critical Depth	0.63	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00507	ft/ft

---

## Industrial-Innovation MH16-MH17

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.74	ft <sup>3</sup> /s

### Results

Normal Depth	0.82	ft
Flow Area	0.99	ft <sup>2</sup>
Wetted Perimeter	2.50	ft
Hydraulic Radius	0.40	ft
Top Width	1.49	ft
Critical Depth	0.63	ft
Percent Full	54.9	%
Critical Slope	0.00507	ft/ft
Velocity	2.76	ft/s
Velocity Head	0.12	ft
Specific Energy	0.94	ft
Froude Number	0.60	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00068	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	54.87	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-Innovation MH16-MH17

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.82	ft
Critical Depth	0.63	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00507	ft/ft

---

## Industrial-Innovation MH15-MH16

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.03170	ft/ft
Diameter	1.50	ft
Discharge	2.81	ft <sup>3</sup> /s

### Results

Normal Depth	0.39	ft
Flow Area	0.37	ft <sup>2</sup>
Wetted Perimeter	1.61	ft
Hydraulic Radius	0.23	ft
Top Width	1.32	ft
Critical Depth	0.64	ft
Percent Full	26.2	%
Critical Slope	0.00508	ft/ft
Velocity	7.61	ft/s
Velocity Head	0.90	ft
Specific Energy	1.29	ft
Froude Number	2.54	
Maximum Discharge	20.12	ft <sup>3</sup> /s
Discharge Full	18.70	ft <sup>3</sup> /s
Slope Full	0.00071	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	26.18	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Innovation MH15-MH16

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.39	ft
Critical Depth	0.64	ft
Channel Slope	0.03170	ft/ft
Critical Slope	0.00508	ft/ft

---

## Industrial-Innovation MH14-MH15

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.81	ft <sup>3</sup> /s

### Results

Normal Depth	0.84	ft
Flow Area	1.01	ft <sup>2</sup>
Wetted Perimeter	2.53	ft
Hydraulic Radius	0.40	ft
Top Width	1.49	ft
Critical Depth	0.64	ft
Percent Full	55.7	%
Critical Slope	0.00509	ft/ft
Velocity	2.78	ft/s
Velocity Head	0.12	ft
Specific Energy	0.95	ft
Froude Number	0.59	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00071	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	55.67	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Innovation MH14-MH15

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.84	ft
Critical Depth	0.64	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00509	ft/ft

---

## Industrial-Innovation MH13-MH14

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.83	ft <sup>3</sup> /s

### Results

Normal Depth	0.84	ft
Flow Area	1.02	ft <sup>2</sup>
Wetted Perimeter	2.54	ft
Hydraulic Radius	0.40	ft
Top Width	1.49	ft
Critical Depth	0.64	ft
Percent Full	56.0	%
Critical Slope	0.00510	ft/ft
Velocity	2.78	ft/s
Velocity Head	0.12	ft
Specific Energy	0.96	ft
Froude Number	0.59	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00073	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	55.99	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Innovation MH13-MH14

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.84	ft
Critical Depth	0.64	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00510	ft/ft

---

## Industrial-Innovation MH12-MH13

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	2.83	ft <sup>3</sup> /s

### Results

Normal Depth	0.84	ft
Flow Area	1.02	ft <sup>2</sup>
Wetted Perimeter	2.54	ft
Hydraulic Radius	0.40	ft
Top Width	1.49	ft
Critical Depth	0.64	ft
Percent Full	56.0	%
Critical Slope	0.00510	ft/ft
Velocity	2.78	ft/s
Velocity Head	0.12	ft
Specific Energy	0.96	ft
Froude Number	0.59	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00073	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	55.99	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-Innovation MH12-MH13

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.84	ft
Critical Depth	0.64	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00510	ft/ft

---

## Industrial-Innovation MH11-MH12

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	3.05	ft <sup>3</sup> /s

### Results

Normal Depth	0.88	ft
Flow Area	1.08	ft <sup>2</sup>
Wetted Perimeter	2.62	ft
Hydraulic Radius	0.41	ft
Top Width	1.48	ft
Critical Depth	0.66	ft
Percent Full	58.7	%
Critical Slope	0.00514	ft/ft
Velocity	2.83	ft/s
Velocity Head	0.12	ft
Specific Energy	1.00	ft
Froude Number	0.58	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00084	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	58.67	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Innovation MH11-MH12

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.88	ft
Critical Depth	0.66	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00514	ft/ft

---

## Industrial-Innovation MH4-MH11

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	3.05	ft <sup>3</sup> /s

### Results

Normal Depth	0.88	ft
Flow Area	1.08	ft <sup>2</sup>
Wetted Perimeter	2.62	ft
Hydraulic Radius	0.41	ft
Top Width	1.48	ft
Critical Depth	0.66	ft
Percent Full	58.7	%
Critical Slope	0.00514	ft/ft
Velocity	2.83	ft/s
Velocity Head	0.12	ft
Specific Energy	1.00	ft
Froude Number	0.58	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00084	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	58.67	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Innovation MH4-MH11

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.88	ft
Critical Depth	0.66	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00514	ft/ft

---

## Industrial-Innovation MH7-MH8

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	0.84	ft
Discharge	0.62	ft <sup>3</sup> /s

### Results

Normal Depth	0.48	ft
Flow Area	0.33	ft <sup>2</sup>
Wetted Perimeter	1.44	ft
Hydraulic Radius	0.23	ft
Top Width	0.83	ft
Critical Depth	0.35	ft
Percent Full	57.4	%
Critical Slope	0.00613	ft/ft
Velocity	1.90	ft/s
Velocity Head	0.06	ft
Specific Energy	0.54	ft
Froude Number	0.53	
Maximum Discharge	1.07	ft <sup>3</sup> /s
Discharge Full	0.99	ft <sup>3</sup> /s
Slope Full	0.00079	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	57.42	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Innovation MH7-MH8

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.48	ft
Critical Depth	0.35	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00613	ft/ft

---

## Industrial-Innovation MH6-MH7

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	0.83	ft
Discharge	0.69	ft <sup>3</sup> /s

### Results

Normal Depth	0.52	ft
Flow Area	0.36	ft <sup>2</sup>
Wetted Perimeter	1.51	ft
Hydraulic Radius	0.24	ft
Top Width	0.80	ft
Critical Depth	0.37	ft
Percent Full	62.5	%
Critical Slope	0.00626	ft/ft
Velocity	1.95	ft/s
Velocity Head	0.06	ft
Specific Energy	0.58	ft
Froude Number	0.52	
Maximum Discharge	1.04	ft <sup>3</sup> /s
Discharge Full	0.97	ft <sup>3</sup> /s
Slope Full	0.00102	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	62.48	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-Innovation MH6-MH7

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.52	ft
Critical Depth	0.37	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00626	ft/ft

---

## Industrial-Innovation MH5-MH6

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01640	ft/ft
Diameter	0.83	ft
Discharge	0.69	ft <sup>3</sup> /s

### Results

Normal Depth	0.28	ft
Flow Area	0.16	ft <sup>2</sup>
Wetted Perimeter	1.03	ft
Hydraulic Radius	0.16	ft
Top Width	0.79	ft
Critical Depth	0.37	ft
Percent Full	34.0	%
Critical Slope	0.00626	ft/ft
Velocity	4.26	ft/s
Velocity Head	0.28	ft
Specific Energy	0.56	ft
Froude Number	1.65	
Maximum Discharge	2.99	ft <sup>3</sup> /s
Discharge Full	2.78	ft <sup>3</sup> /s
Slope Full	0.00102	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	34.05	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Innovation MH5-MH6

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.28	ft
Critical Depth	0.37	ft
Channel Slope	0.01640	ft/ft
Critical Slope	0.00626	ft/ft

---

## Industrial-Innovation MH4-MH5

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.02020	ft/ft
Diameter	0.83	ft
Discharge	0.69	ft <sup>3</sup> /s

### Results

Normal Depth	0.27	ft
Flow Area	0.15	ft <sup>2</sup>
Wetted Perimeter	1.00	ft
Hydraulic Radius	0.15	ft
Top Width	0.78	ft
Critical Depth	0.37	ft
Percent Full	32.2	%
Critical Slope	0.00626	ft/ft
Velocity	4.59	ft/s
Velocity Head	0.33	ft
Specific Energy	0.59	ft
Froude Number	1.83	
Maximum Discharge	3.31	ft <sup>3</sup> /s
Discharge Full	3.08	ft <sup>3</sup> /s
Slope Full	0.00102	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	32.24	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Innovation MH4-MH5

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.27	ft
Critical Depth	0.37	ft
Channel Slope	0.02020	ft/ft
Critical Slope	0.00626	ft/ft

---

## Industrial-Innovation MH3-MH4

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00270	ft/ft
Diameter	1.50	ft
Discharge	3.58	ft <sup>3</sup> /s

### Results

Normal Depth	0.89	ft
Flow Area	1.09	ft <sup>2</sup>
Wetted Perimeter	2.63	ft
Hydraulic Radius	0.41	ft
Top Width	1.47	ft
Critical Depth	0.72	ft
Percent Full	59.1	%
Critical Slope	0.00529	ft/ft
Velocity	3.29	ft/s
Velocity Head	0.17	ft
Specific Energy	1.06	ft
Froude Number	0.68	
Maximum Discharge	5.87	ft <sup>3</sup> /s
Discharge Full	5.46	ft <sup>3</sup> /s
Slope Full	0.00116	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	59.11	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Innovation MH3-MH4

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.89	ft
Critical Depth	0.72	ft
Channel Slope	0.00270	ft/ft
Critical Slope	0.00529	ft/ft

---

## Industrial-Innovation MH2-MH3

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	3.58	ft <sup>3</sup> /s

### Results

Normal Depth	0.98	ft
Flow Area	1.22	ft <sup>2</sup>
Wetted Perimeter	2.83	ft
Hydraulic Radius	0.43	ft
Top Width	1.43	ft
Critical Depth	0.72	ft
Percent Full	65.4	%
Critical Slope	0.00529	ft/ft
Velocity	2.93	ft/s
Velocity Head	0.13	ft
Specific Energy	1.11	ft
Froude Number	0.56	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00116	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	65.39	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-Innovation MH2-MH3

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.98	ft
Critical Depth	0.72	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00529	ft/ft

---

## Industrial-Innovation MH1-MH2

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	3.58	ft <sup>3</sup> /s

### Results

Normal Depth	0.98	ft
Flow Area	1.22	ft <sup>2</sup>
Wetted Perimeter	2.83	ft
Hydraulic Radius	0.43	ft
Top Width	1.43	ft
Critical Depth	0.72	ft
Percent Full	65.4	%
Critical Slope	0.00529	ft/ft
Velocity	2.93	ft/s
Velocity Head	0.13	ft
Specific Energy	1.11	ft
Froude Number	0.56	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00116	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	65.39	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Innovation MH1-MH2

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.98	ft
Critical Depth	0.72	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00529	ft/ft

---

## Industrial-Innovation MH45-MH1

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	3.58	ft <sup>3</sup> /s

### Results

Normal Depth	0.98	ft
Flow Area	1.22	ft <sup>2</sup>
Wetted Perimeter	2.83	ft
Hydraulic Radius	0.43	ft
Top Width	1.43	ft
Critical Depth	0.72	ft
Percent Full	65.4	%
Critical Slope	0.00529	ft/ft
Velocity	2.93	ft/s
Velocity Head	0.13	ft
Specific Energy	1.11	ft
Froude Number	0.56	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00116	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	65.39	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Innovation MH45-MH1

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.98	ft
Critical Depth	0.72	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00529	ft/ft

---

## Industrial-Meridian U2 MH1-MH2

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00600	ft/ft
Diameter	0.83	ft
Discharge	0.16	ft <sup>3</sup> /s

### Results

Normal Depth	0.17	ft
Flow Area	0.08	ft <sup>2</sup>
Wetted Perimeter	0.78	ft
Hydraulic Radius	0.10	ft
Top Width	0.67	ft
Critical Depth	0.17	ft
Percent Full	20.5	%
Critical Slope	0.00612	ft/ft
Velocity	1.94	ft/s
Velocity Head	0.06	ft
Specific Energy	0.23	ft
Froude Number	0.99	
Maximum Discharge	1.81	ft <sup>3</sup> /s
Discharge Full	1.68	ft <sup>3</sup> /s
Slope Full	0.00005	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	20.53	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Meridian U2 MH1-MH2

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.17	ft
Critical Depth	0.17	ft
Channel Slope	0.00600	ft/ft
Critical Slope	0.00612	ft/ft

---

## Industrial-Meridian U2 MH2-MH3

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00370	ft/ft
Diameter	0.83	ft
Discharge	0.30	ft <sup>3</sup> /s

### Results

Normal Depth	0.27	ft
Flow Area	0.15	ft <sup>2</sup>
Wetted Perimeter	1.00	ft
Hydraulic Radius	0.15	ft
Top Width	0.78	ft
Critical Depth	0.24	ft
Percent Full	32.4	%
Critical Slope	0.00599	ft/ft
Velocity	1.97	ft/s
Velocity Head	0.06	ft
Specific Energy	0.33	ft
Froude Number	0.79	
Maximum Discharge	1.42	ft <sup>3</sup> /s
Discharge Full	1.32	ft <sup>3</sup> /s
Slope Full	0.00019	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	32.35	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-Meridian U2 MH2-MH3

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.27	ft
Critical Depth	0.24	ft
Channel Slope	0.00370	ft/ft
Critical Slope	0.00599	ft/ft

---

## Industrial-Meridian U2 MH3-MH4

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01660	ft/ft
Diameter	0.83	ft
Discharge	0.30	ft <sup>3</sup> /s

### Results

Normal Depth	0.18	ft
Flow Area	0.09	ft <sup>2</sup>
Wetted Perimeter	0.81	ft
Hydraulic Radius	0.11	ft
Top Width	0.69	ft
Critical Depth	0.24	ft
Percent Full	22.1	%
Critical Slope	0.00600	ft/ft
Velocity	3.37	ft/s
Velocity Head	0.18	ft
Specific Energy	0.36	ft
Froude Number	1.65	
Maximum Discharge	3.00	ft <sup>3</sup> /s
Discharge Full	2.79	ft <sup>3</sup> /s
Slope Full	0.00019	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	22.09	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Meridian U2 MH3-MH4

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.18	ft
Critical Depth	0.24	ft
Channel Slope	0.01660	ft/ft
Critical Slope	0.00600	ft/ft

---

## Industrial-Meridian U2 MH4-MH5

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01810	ft/ft
Diameter	0.83	ft
Discharge	0.29	ft <sup>3</sup> /s

### Results

Normal Depth	0.18	ft
Flow Area	0.08	ft <sup>2</sup>
Wetted Perimeter	0.79	ft
Hydraulic Radius	0.11	ft
Top Width	0.68	ft
Critical Depth	0.23	ft
Percent Full	21.2	%
Critical Slope	0.00597	ft/ft
Velocity	3.44	ft/s
Velocity Head	0.18	ft
Specific Energy	0.36	ft
Froude Number	1.72	
Maximum Discharge	3.14	ft <sup>3</sup> /s
Discharge Full	2.92	ft <sup>3</sup> /s
Slope Full	0.00018	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	21.22	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Meridian U2 MH4-MH5

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.18	ft
Critical Depth	0.23	ft
Channel Slope	0.01810	ft/ft
Critical Slope	0.00597	ft/ft

---

## Industrial-Meridian U2 MH5-MH6

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01060	ft/ft
Diameter	0.83	ft
Discharge	0.29	ft <sup>3</sup> /s

### Results

Normal Depth	0.20	ft
Flow Area	0.10	ft <sup>2</sup>
Wetted Perimeter	0.86	ft
Hydraulic Radius	0.12	ft
Top Width	0.71	ft
Critical Depth	0.23	ft
Percent Full	24.3	%
Critical Slope	0.00597	ft/ft
Velocity	2.84	ft/s
Velocity Head	0.13	ft
Specific Energy	0.33	ft
Froude Number	1.33	
Maximum Discharge	2.40	ft <sup>3</sup> /s
Discharge Full	2.23	ft <sup>3</sup> /s
Slope Full	0.00018	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	24.27	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Meridian U2 MH5-MH6

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.20	ft
Critical Depth	0.23	ft
Channel Slope	0.01060	ft/ft
Critical Slope	0.00597	ft/ft

---

## Industrial-Meridian U2 MH6-MH7

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	0.83	ft
Discharge	0.30	ft <sup>3</sup> /s

### Results

Normal Depth	0.29	ft
Flow Area	0.17	ft <sup>2</sup>
Wetted Perimeter	1.05	ft
Hydraulic Radius	0.16	ft
Top Width	0.79	ft
Critical Depth	0.24	ft
Percent Full	35.0	%
Critical Slope	0.00599	ft/ft
Velocity	1.79	ft/s
Velocity Head	0.05	ft
Specific Energy	0.34	ft
Froude Number	0.68	
Maximum Discharge	1.23	ft <sup>3</sup> /s
Discharge Full	1.15	ft <sup>3</sup> /s
Slope Full	0.00019	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	35.03	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-Meridian U2 MH6-MH7

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.29	ft
Critical Depth	0.24	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00599	ft/ft

---

## Industrial-Meridian U2 MH7-MH8

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01320	ft/ft
Diameter	0.83	ft
Discharge	0.62	ft <sup>3</sup> /s

### Results

Normal Depth	0.28	ft
Flow Area	0.16	ft <sup>2</sup>
Wetted Perimeter	1.03	ft
Hydraulic Radius	0.16	ft
Top Width	0.79	ft
Critical Depth	0.34	ft
Percent Full	33.9	%
Critical Slope	0.00617	ft/ft
Velocity	3.81	ft/s
Velocity Head	0.23	ft
Specific Energy	0.51	ft
Froude Number	1.48	
Maximum Discharge	2.68	ft <sup>3</sup> /s
Discharge Full	2.49	ft <sup>3</sup> /s
Slope Full	0.00081	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	33.88	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Meridian U2 MH7-MH8

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.28	ft
Critical Depth	0.34	ft
Channel Slope	0.01320	ft/ft
Critical Slope	0.00617	ft/ft

---

## Industrial-Meridian U2 MH8-MH9

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00640	ft/ft
Diameter	0.83	ft
Discharge	0.64	ft <sup>3</sup> /s

### Results

Normal Depth	0.35	ft
Flow Area	0.22	ft <sup>2</sup>
Wetted Perimeter	1.17	ft
Hydraulic Radius	0.18	ft
Top Width	0.82	ft
Critical Depth	0.35	ft
Percent Full	42.1	%
Critical Slope	0.00621	ft/ft
Velocity	2.97	ft/s
Velocity Head	0.14	ft
Specific Energy	0.49	ft
Froude Number	1.02	
Maximum Discharge	1.87	ft <sup>3</sup> /s
Discharge Full	1.73	ft <sup>3</sup> /s
Slope Full	0.00088	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	42.15	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Meridian U2 MH8-MH9

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.35	ft
Critical Depth	0.35	ft
Channel Slope	0.00640	ft/ft
Critical Slope	0.00621	ft/ft

---

## Industrial-Meridian U2 MH9-MH10

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01200	ft/ft
Diameter	0.83	ft
Discharge	0.67	ft <sup>3</sup> /s

### Results

Normal Depth	0.30	ft
Flow Area	0.18	ft <sup>2</sup>
Wetted Perimeter	1.07	ft
Hydraulic Radius	0.16	ft
Top Width	0.80	ft
Critical Depth	0.36	ft
Percent Full	36.2	%
Critical Slope	0.00622	ft/ft
Velocity	3.76	ft/s
Velocity Head	0.22	ft
Specific Energy	0.52	ft
Froude Number	1.41	
Maximum Discharge	2.55	ft <sup>3</sup> /s
Discharge Full	2.37	ft <sup>3</sup> /s
Slope Full	0.00094	ft/ft
Flow Type	SuperCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	36.21	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Meridian U2 MH9-MH10

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.30	ft
Critical Depth	0.36	ft
Channel Slope	0.01200	ft/ft
Critical Slope	0.00622	ft/ft

---

## Industrial-Offsite Trunk SW U1 MH1-MH45

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00390	ft/ft
Diameter	1.50	ft
Discharge	3.58	ft <sup>3</sup> /s

### Results

Normal Depth	0.79	ft
Flow Area	0.94	ft <sup>2</sup>
Wetted Perimeter	2.44	ft
Hydraulic Radius	0.39	ft
Top Width	1.50	ft
Critical Depth	0.72	ft
Percent Full	52.7	%
Critical Slope	0.00529	ft/ft
Velocity	3.79	ft/s
Velocity Head	0.22	ft
Specific Energy	1.01	ft
Froude Number	0.84	
Maximum Discharge	7.06	ft <sup>3</sup> /s
Discharge Full	6.56	ft <sup>3</sup> /s
Slope Full	0.00116	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	52.70	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-Offsite Trunk SW U1 MH1-MH45

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.79	ft
Critical Depth	0.72	ft
Channel Slope	0.00390	ft/ft
Critical Slope	0.00529	ft/ft

---

## Industrial-Offsite Trunk SW U1 MH45-MH44

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	3.58	ft <sup>3</sup> /s

### Results

Normal Depth	0.98	ft
Flow Area	1.22	ft <sup>2</sup>
Wetted Perimeter	2.83	ft
Hydraulic Radius	0.43	ft
Top Width	1.43	ft
Critical Depth	0.72	ft
Percent Full	65.4	%
Critical Slope	0.00529	ft/ft
Velocity	2.93	ft/s
Velocity Head	0.13	ft
Specific Energy	1.11	ft
Froude Number	0.56	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00116	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	65.39	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Offsite Trunk SW U1 MH45-MH44

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.98	ft
Critical Depth	0.72	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00529	ft/ft

---

## Industrial-Offsite Trunk SW U1 MH44-MH43

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	3.58	ft <sup>3</sup> /s

### Results

Normal Depth	0.98	ft
Flow Area	1.22	ft <sup>2</sup>
Wetted Perimeter	2.83	ft
Hydraulic Radius	0.43	ft
Top Width	1.43	ft
Critical Depth	0.72	ft
Percent Full	65.4	%
Critical Slope	0.00529	ft/ft
Velocity	2.93	ft/s
Velocity Head	0.13	ft
Specific Energy	1.11	ft
Froude Number	0.56	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00116	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	65.39	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Offsite Trunk SW U1 MH44-MH43

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.98	ft
Critical Depth	0.72	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00529	ft/ft

---

## Industrial-Offsite Trunk SW U1 MH43-MH42

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	3.58	ft <sup>3</sup> /s

### Results

Normal Depth	0.98	ft
Flow Area	1.22	ft <sup>2</sup>
Wetted Perimeter	2.83	ft
Hydraulic Radius	0.43	ft
Top Width	1.43	ft
Critical Depth	0.72	ft
Percent Full	65.4	%
Critical Slope	0.00529	ft/ft
Velocity	2.93	ft/s
Velocity Head	0.13	ft
Specific Energy	1.11	ft
Froude Number	0.56	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00116	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	65.39	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Offsite Trunk SW U1 MH43-MH42

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.98	ft
Critical Depth	0.72	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00529	ft/ft

---

## Industrial-Offsite Trunk SW U1 MH42-MH41

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	3.58	ft <sup>3</sup> /s

### Results

Normal Depth	0.98	ft
Flow Area	1.22	ft <sup>2</sup>
Wetted Perimeter	2.83	ft
Hydraulic Radius	0.43	ft
Top Width	1.43	ft
Critical Depth	0.72	ft
Percent Full	65.4	%
Critical Slope	0.00529	ft/ft
Velocity	2.93	ft/s
Velocity Head	0.13	ft
Specific Energy	1.11	ft
Froude Number	0.56	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00116	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	65.39	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-Offsite Trunk SW U1 MH42-MH41

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.98	ft
Critical Depth	0.72	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00529	ft/ft

---

## Industrial-Offsite Trunk SW U1 MH41-MH40

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	1.50	ft
Discharge	4.02	ft <sup>3</sup> /s

### Results

Normal Depth	1.07	ft
Flow Area	1.34	ft <sup>2</sup>
Wetted Perimeter	3.01	ft
Hydraulic Radius	0.45	ft
Top Width	1.36	ft
Critical Depth	0.77	ft
Percent Full	71.1	%
Critical Slope	0.00541	ft/ft
Velocity	2.99	ft/s
Velocity Head	0.14	ft
Specific Energy	1.21	ft
Froude Number	0.53	
Maximum Discharge	5.05	ft <sup>3</sup> /s
Discharge Full	4.70	ft <sup>3</sup> /s
Slope Full	0.00146	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	71.13	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Offsite Trunk SW U1 MH41-MH40

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.07	ft
Critical Depth	0.77	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00541	ft/ft

---

## Industrial-Offsite Trunk SW U1 MH40-MH39

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00170	ft/ft
Diameter	2.00	ft
Discharge	4.02	ft <sup>3</sup> /s

### Results

Normal Depth	0.92	ft
Flow Area	1.41	ft <sup>2</sup>
Wetted Perimeter	2.98	ft
Hydraulic Radius	0.47	ft
Top Width	1.99	ft
Critical Depth	0.70	ft
Percent Full	45.9	%
Critical Slope	0.00449	ft/ft
Velocity	2.86	ft/s
Velocity Head	0.13	ft
Specific Energy	1.04	ft
Froude Number	0.60	
Maximum Discharge	10.03	ft <sup>3</sup> /s
Discharge Full	9.33	ft <sup>3</sup> /s
Slope Full	0.00032	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	45.86	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Offsite Trunk SW U1 MH40-MH39

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.92	ft
Critical Depth	0.70	ft
Channel Slope	0.00170	ft/ft
Critical Slope	0.00449	ft/ft

---

## Industrial-Offsite Trunk SW U1 MH39-MH38

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00170	ft/ft
Diameter	2.00	ft
Discharge	4.02	ft <sup>3</sup> /s

### Results

Normal Depth	0.92	ft
Flow Area	1.41	ft <sup>2</sup>
Wetted Perimeter	2.98	ft
Hydraulic Radius	0.47	ft
Top Width	1.99	ft
Critical Depth	0.70	ft
Percent Full	45.9	%
Critical Slope	0.00449	ft/ft
Velocity	2.86	ft/s
Velocity Head	0.13	ft
Specific Energy	1.04	ft
Froude Number	0.60	
Maximum Discharge	10.03	ft <sup>3</sup> /s
Discharge Full	9.33	ft <sup>3</sup> /s
Slope Full	0.00032	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	45.86	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Offsite Trunk SW U1 MH39-MH38

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.92	ft
Critical Depth	0.70	ft
Channel Slope	0.00170	ft/ft
Critical Slope	0.00449	ft/ft

---

## Industrial-Offsite Trunk SW U1 MH38-MH37

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	2.00	ft
Discharge	4.02	ft <sup>3</sup> /s

### Results

Normal Depth	0.88	ft
Flow Area	1.32	ft <sup>2</sup>
Wetted Perimeter	2.89	ft
Hydraulic Radius	0.46	ft
Top Width	1.98	ft
Critical Depth	0.70	ft
Percent Full	43.8	%
Critical Slope	0.00449	ft/ft
Velocity	3.03	ft/s
Velocity Head	0.14	ft
Specific Energy	1.02	ft
Froude Number	0.66	
Maximum Discharge	10.88	ft <sup>3</sup> /s
Discharge Full	10.12	ft <sup>3</sup> /s
Slope Full	0.00032	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	43.79	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-Offsite Trunk SW U1 MH38-MH37

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.88	ft
Critical Depth	0.70	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00449	ft/ft

---

## Industrial-Offsite Trunk SW U1 MH37-MH36

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	2.00	ft
Discharge	7.19	ft <sup>3</sup> /s

### Results

Normal Depth	1.25	ft
Flow Area	2.06	ft <sup>2</sup>
Wetted Perimeter	3.64	ft
Hydraulic Radius	0.57	ft
Top Width	1.94	ft
Critical Depth	0.95	ft
Percent Full	62.3	%
Critical Slope	0.00478	ft/ft
Velocity	3.50	ft/s
Velocity Head	0.19	ft
Specific Energy	1.44	ft
Froude Number	0.60	
Maximum Discharge	10.88	ft <sup>3</sup> /s
Discharge Full	10.12	ft <sup>3</sup> /s
Slope Full	0.00101	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	62.27	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Offsite Trunk SW U1 MH37-MH36

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.25	ft
Critical Depth	0.95	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00478	ft/ft

---

## Industrial-Offsite Trunk SW U1 MH36-MH35

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	2.00	ft
Discharge	7.19	ft <sup>3</sup> /s

### Results

Normal Depth	1.25	ft
Flow Area	2.06	ft <sup>2</sup>
Wetted Perimeter	3.64	ft
Hydraulic Radius	0.57	ft
Top Width	1.94	ft
Critical Depth	0.95	ft
Percent Full	62.3	%
Critical Slope	0.00478	ft/ft
Velocity	3.50	ft/s
Velocity Head	0.19	ft
Specific Energy	1.44	ft
Froude Number	0.60	
Maximum Discharge	10.88	ft <sup>3</sup> /s
Discharge Full	10.12	ft <sup>3</sup> /s
Slope Full	0.00101	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	62.27	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Offsite Trunk SW U1 MH36-MH35

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.25	ft
Critical Depth	0.95	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00478	ft/ft

---

## Industrial-Offsite Trunk SW U1 MH35-MH34

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	2.00	ft
Discharge	7.19	ft <sup>3</sup> /s

### Results

Normal Depth	1.25	ft
Flow Area	2.06	ft <sup>2</sup>
Wetted Perimeter	3.64	ft
Hydraulic Radius	0.57	ft
Top Width	1.94	ft
Critical Depth	0.95	ft
Percent Full	62.3	%
Critical Slope	0.00478	ft/ft
Velocity	3.50	ft/s
Velocity Head	0.19	ft
Specific Energy	1.44	ft
Froude Number	0.60	
Maximum Discharge	10.88	ft <sup>3</sup> /s
Discharge Full	10.12	ft <sup>3</sup> /s
Slope Full	0.00101	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	62.27	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-Offsite Trunk SW U1 MH35-MH34

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.25	ft
Critical Depth	0.95	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00478	ft/ft

---

## Industrial-Offsite Trunk SW U1 MH34-MH33

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	2.00	ft
Discharge	7.19	ft <sup>3</sup> /s

### Results

Normal Depth	1.25	ft
Flow Area	2.06	ft <sup>2</sup>
Wetted Perimeter	3.64	ft
Hydraulic Radius	0.57	ft
Top Width	1.94	ft
Critical Depth	0.95	ft
Percent Full	62.3	%
Critical Slope	0.00478	ft/ft
Velocity	3.50	ft/s
Velocity Head	0.19	ft
Specific Energy	1.44	ft
Froude Number	0.60	
Maximum Discharge	10.88	ft <sup>3</sup> /s
Discharge Full	10.12	ft <sup>3</sup> /s
Slope Full	0.00101	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	62.27	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-Offsite Trunk SW U1 MH34-MH33

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.25	ft
Critical Depth	0.95	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00478	ft/ft

---

## Industrial-I-215 Trunk Sewer MH33-MH50

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	2.00	ft
Discharge	7.19	ft <sup>3</sup> /s

### Results

Normal Depth	1.12	ft
Flow Area	1.80	ft <sup>2</sup>
Wetted Perimeter	3.38	ft
Hydraulic Radius	0.53	ft
Top Width	1.99	ft
Critical Depth	0.95	ft
Percent Full	55.9	%
Critical Slope	0.00478	ft/ft
Velocity	3.98	ft/s
Velocity Head	0.25	ft
Specific Energy	1.36	ft
Froude Number	0.74	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00101	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	55.87	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH33-MH50

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.12	ft
Critical Depth	0.95	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00478	ft/ft

---

## Industrial-I-215 Trunk Sewer MH50-MH51

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	2.00	ft
Discharge	7.19	ft <sup>3</sup> /s

### Results

Normal Depth	1.12	ft
Flow Area	1.80	ft <sup>2</sup>
Wetted Perimeter	3.38	ft
Hydraulic Radius	0.53	ft
Top Width	1.99	ft
Critical Depth	0.95	ft
Percent Full	55.9	%
Critical Slope	0.00478	ft/ft
Velocity	3.98	ft/s
Velocity Head	0.25	ft
Specific Energy	1.36	ft
Froude Number	0.74	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00101	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	55.87	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH50-MH51

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.12	ft
Critical Depth	0.95	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00478	ft/ft

---

## Industrial-I-215 Trunk Sewer MH51-MH52

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	2.00	ft
Discharge	7.45	ft <sup>3</sup> /s

### Results

Normal Depth	1.14	ft
Flow Area	1.85	ft <sup>2</sup>
Wetted Perimeter	3.43	ft
Hydraulic Radius	0.54	ft
Top Width	1.98	ft
Critical Depth	0.97	ft
Percent Full	57.1	%
Critical Slope	0.00482	ft/ft
Velocity	4.02	ft/s
Velocity Head	0.25	ft
Specific Energy	1.39	ft
Froude Number	0.73	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00108	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	57.11	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH51-MH52

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.14	ft
Critical Depth	0.97	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00482	ft/ft

---

## Industrial-I-215 Trunk Sewer MH52-MH53

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	2.00	ft
Discharge	7.45	ft <sup>3</sup> /s

### Results

Normal Depth	1.14	ft
Flow Area	1.85	ft <sup>2</sup>
Wetted Perimeter	3.43	ft
Hydraulic Radius	0.54	ft
Top Width	1.98	ft
Critical Depth	0.97	ft
Percent Full	57.1	%
Critical Slope	0.00482	ft/ft
Velocity	4.02	ft/s
Velocity Head	0.25	ft
Specific Energy	1.39	ft
Froude Number	0.73	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00108	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	57.11	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-I-215 Trunk Sewer MH52-MH53

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.14	ft
Critical Depth	0.97	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00482	ft/ft

---

## Industrial-I-215 Trunk Sewer MH53-MH54

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	2.00	ft
Discharge	7.45	ft <sup>3</sup> /s

### Results

Normal Depth	1.14	ft
Flow Area	1.85	ft <sup>2</sup>
Wetted Perimeter	3.43	ft
Hydraulic Radius	0.54	ft
Top Width	1.98	ft
Critical Depth	0.97	ft
Percent Full	57.1	%
Critical Slope	0.00482	ft/ft
Velocity	4.02	ft/s
Velocity Head	0.25	ft
Specific Energy	1.39	ft
Froude Number	0.73	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00108	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	57.11	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH53-MH54

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.14	ft
Critical Depth	0.97	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00482	ft/ft

---

## Industrial-I-215 Trunk Sewer MH54-MH55

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	2.00	ft
Discharge	7.45	ft <sup>3</sup> /s

### Results

Normal Depth	1.14	ft
Flow Area	1.85	ft <sup>2</sup>
Wetted Perimeter	3.43	ft
Hydraulic Radius	0.54	ft
Top Width	1.98	ft
Critical Depth	0.97	ft
Percent Full	57.1	%
Critical Slope	0.00482	ft/ft
Velocity	4.02	ft/s
Velocity Head	0.25	ft
Specific Energy	1.39	ft
Froude Number	0.73	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00108	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	57.11	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH54-MH55

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.14	ft
Critical Depth	0.97	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00482	ft/ft

---

## Industrial-I-215 Trunk Sewer MH55-MH56

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	2.00	ft
Discharge	7.45	ft <sup>3</sup> /s

### Results

Normal Depth	1.14	ft
Flow Area	1.85	ft <sup>2</sup>
Wetted Perimeter	3.43	ft
Hydraulic Radius	0.54	ft
Top Width	1.98	ft
Critical Depth	0.97	ft
Percent Full	57.1	%
Critical Slope	0.00482	ft/ft
Velocity	4.02	ft/s
Velocity Head	0.25	ft
Specific Energy	1.39	ft
Froude Number	0.73	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00108	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	57.11	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH55-MH56

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.14	ft
Critical Depth	0.97	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00482	ft/ft

---

## Industrial-I-215 Trunk Sewer MH56-MH57

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00280	ft/ft
Diameter	2.00	ft
Discharge	7.45	ft <sup>3</sup> /s

### Results

Normal Depth	1.14	ft
Flow Area	1.85	ft <sup>2</sup>
Wetted Perimeter	3.43	ft
Hydraulic Radius	0.54	ft
Top Width	1.98	ft
Critical Depth	0.97	ft
Percent Full	57.1	%
Critical Slope	0.00482	ft/ft
Velocity	4.02	ft/s
Velocity Head	0.25	ft
Specific Energy	1.39	ft
Froude Number	0.73	
Maximum Discharge	12.88	ft <sup>3</sup> /s
Discharge Full	11.97	ft <sup>3</sup> /s
Slope Full	0.00108	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	57.11	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-I-215 Trunk Sewer MH56-MH57

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.14	ft
Critical Depth	0.97	ft
Channel Slope	0.00280	ft/ft
Critical Slope	0.00482	ft/ft

---

## Industrial-I-215 Trunk Sewer MH57-MH58

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	7.45	ft <sup>3</sup> /s

### Results

Normal Depth	1.36	ft
Flow Area	2.72	ft <sup>2</sup>
Wetted Perimeter	4.14	ft
Hydraulic Radius	0.66	ft
Top Width	2.49	ft
Critical Depth	0.91	ft
Percent Full	54.3	%
Critical Slope	0.00418	ft/ft
Velocity	2.73	ft/s
Velocity Head	0.12	ft
Specific Energy	1.47	ft
Froude Number	0.46	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00033	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	54.32	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH57-MH58

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.36	ft
Critical Depth	0.91	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00418	ft/ft

---

## Industrial-I-215 Trunk Sewer MH58-MH59

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	8.18	ft <sup>3</sup> /s

### Results

Normal Depth	1.44	ft
Flow Area	2.93	ft <sup>2</sup>
Wetted Perimeter	4.31	ft
Hydraulic Radius	0.68	ft
Top Width	2.47	ft
Critical Depth	0.95	ft
Percent Full	57.6	%
Critical Slope	0.00420	ft/ft
Velocity	2.79	ft/s
Velocity Head	0.12	ft
Specific Energy	1.56	ft
Froude Number	0.45	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00040	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	57.62	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH58-MH59

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.44	ft
Critical Depth	0.95	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00420	ft/ft

---

## Industrial-I-215 Trunk Sewer MH59-MH60

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	8.18	ft <sup>3</sup> /s

### Results

Normal Depth	1.44	ft
Flow Area	2.93	ft <sup>2</sup>
Wetted Perimeter	4.31	ft
Hydraulic Radius	0.68	ft
Top Width	2.47	ft
Critical Depth	0.95	ft
Percent Full	57.6	%
Critical Slope	0.00420	ft/ft
Velocity	2.79	ft/s
Velocity Head	0.12	ft
Specific Energy	1.56	ft
Froude Number	0.45	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00040	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	57.62	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH59-MH60

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.44	ft
Critical Depth	0.95	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00420	ft/ft

---

## Industrial-I-215 Trunk Sewer MH60-MH61

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	8.18	ft <sup>3</sup> /s

### Results

Normal Depth	1.44	ft
Flow Area	2.93	ft <sup>2</sup>
Wetted Perimeter	4.31	ft
Hydraulic Radius	0.68	ft
Top Width	2.47	ft
Critical Depth	0.95	ft
Percent Full	57.6	%
Critical Slope	0.00420	ft/ft
Velocity	2.79	ft/s
Velocity Head	0.12	ft
Specific Energy	1.56	ft
Froude Number	0.45	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00040	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	57.62	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-I-215 Trunk Sewer MH60-MH61

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.44	ft
Critical Depth	0.95	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00420	ft/ft

---

## Industrial-I-215 Trunk Sewer MH61-MH62

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	8.18	ft <sup>3</sup> /s

### Results

Normal Depth	1.44	ft
Flow Area	2.93	ft <sup>2</sup>
Wetted Perimeter	4.31	ft
Hydraulic Radius	0.68	ft
Top Width	2.47	ft
Critical Depth	0.95	ft
Percent Full	57.6	%
Critical Slope	0.00420	ft/ft
Velocity	2.79	ft/s
Velocity Head	0.12	ft
Specific Energy	1.56	ft
Froude Number	0.45	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00040	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	57.62	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH61-MH62

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.44	ft
Critical Depth	0.95	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00420	ft/ft

---

## Industrial-I-215 Trunk Sewer MH62-MH63

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	9.30	ft <sup>3</sup> /s

### Results

Normal Depth	1.57	ft
Flow Area	3.24	ft <sup>2</sup>
Wetted Perimeter	4.57	ft
Hydraulic Radius	0.71	ft
Top Width	2.42	ft
Critical Depth	1.02	ft
Percent Full	62.6	%
Critical Slope	0.00425	ft/ft
Velocity	2.87	ft/s
Velocity Head	0.13	ft
Specific Energy	1.69	ft
Froude Number	0.44	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00051	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	62.65	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH62-MH63

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.57	ft
Critical Depth	1.02	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00425	ft/ft

---

## Industrial-I-215 Trunk Sewer MH63-MH64

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	9.30	ft <sup>3</sup> /s

### Results

Normal Depth	1.57	ft
Flow Area	3.24	ft <sup>2</sup>
Wetted Perimeter	4.57	ft
Hydraulic Radius	0.71	ft
Top Width	2.42	ft
Critical Depth	1.02	ft
Percent Full	62.6	%
Critical Slope	0.00425	ft/ft
Velocity	2.87	ft/s
Velocity Head	0.13	ft
Specific Energy	1.69	ft
Froude Number	0.44	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00051	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	62.65	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH63-MH64

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.57	ft
Critical Depth	1.02	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00425	ft/ft

---

## Industrial-I-215 Trunk Sewer MH64-MH65

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	9.30	ft <sup>3</sup> /s

### Results

Normal Depth	1.57	ft
Flow Area	3.24	ft <sup>2</sup>
Wetted Perimeter	4.57	ft
Hydraulic Radius	0.71	ft
Top Width	2.42	ft
Critical Depth	1.02	ft
Percent Full	62.6	%
Critical Slope	0.00425	ft/ft
Velocity	2.87	ft/s
Velocity Head	0.13	ft
Specific Energy	1.69	ft
Froude Number	0.44	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00051	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	62.65	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-I-215 Trunk Sewer MH64-MH65

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.57	ft
Critical Depth	1.02	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00425	ft/ft

## Industrial-I-215 Trunk Sewer MH65-MH66

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	9.30	ft <sup>3</sup> /s

### Results

Normal Depth	1.57	ft
Flow Area	3.24	ft <sup>2</sup>
Wetted Perimeter	4.57	ft
Hydraulic Radius	0.71	ft
Top Width	2.42	ft
Critical Depth	1.02	ft
Percent Full	62.6	%
Critical Slope	0.00425	ft/ft
Velocity	2.87	ft/s
Velocity Head	0.13	ft
Specific Energy	1.69	ft
Froude Number	0.44	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00051	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	62.65	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH65-MH66

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.57	ft
Critical Depth	1.02	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00425	ft/ft

---

## Industrial-I-215 Trunk Sewer MH66-MH67

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	9.30	ft <sup>3</sup> /s

### Results

Normal Depth	1.57	ft
Flow Area	3.24	ft <sup>2</sup>
Wetted Perimeter	4.57	ft
Hydraulic Radius	0.71	ft
Top Width	2.42	ft
Critical Depth	1.02	ft
Percent Full	62.6	%
Critical Slope	0.00425	ft/ft
Velocity	2.87	ft/s
Velocity Head	0.13	ft
Specific Energy	1.69	ft
Froude Number	0.44	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00051	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	62.65	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH66-MH67

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.57	ft
Critical Depth	1.02	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00425	ft/ft

---

## Industrial-I-215 Trunk Sewer MH67-MH68

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	9.30	ft <sup>3</sup> /s

### Results

Normal Depth	1.57	ft
Flow Area	3.24	ft <sup>2</sup>
Wetted Perimeter	4.57	ft
Hydraulic Radius	0.71	ft
Top Width	2.42	ft
Critical Depth	1.02	ft
Percent Full	62.6	%
Critical Slope	0.00425	ft/ft
Velocity	2.87	ft/s
Velocity Head	0.13	ft
Specific Energy	1.69	ft
Froude Number	0.44	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00051	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	62.65	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH67-MH68

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.57	ft
Critical Depth	1.02	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00425	ft/ft

---

## Industrial-I-215 Trunk Sewer MH68-MH69

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	9.30	ft <sup>3</sup> /s

### Results

Normal Depth	1.57	ft
Flow Area	3.24	ft <sup>2</sup>
Wetted Perimeter	4.57	ft
Hydraulic Radius	0.71	ft
Top Width	2.42	ft
Critical Depth	1.02	ft
Percent Full	62.6	%
Critical Slope	0.00425	ft/ft
Velocity	2.87	ft/s
Velocity Head	0.13	ft
Specific Energy	1.69	ft
Froude Number	0.44	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00051	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	62.65	%
Downstream Velocity	Infinity	ft/s



---

## Industrial-I-215 Trunk Sewer MH68-MH69

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.57	ft
Critical Depth	1.02	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00425	ft/ft

---

## Industrial-I-215 Trunk Sewer MH69-MH70

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	9.30	ft <sup>3</sup> /s

### Results

Normal Depth	1.57	ft
Flow Area	3.24	ft <sup>2</sup>
Wetted Perimeter	4.57	ft
Hydraulic Radius	0.71	ft
Top Width	2.42	ft
Critical Depth	1.02	ft
Percent Full	62.6	%
Critical Slope	0.00425	ft/ft
Velocity	2.87	ft/s
Velocity Head	0.13	ft
Specific Energy	1.69	ft
Froude Number	0.44	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00051	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	62.65	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH69-MH70

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.57	ft
Critical Depth	1.02	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00425	ft/ft

---

## Industrial-I-215 Trunk Sewer MH70-MH71

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	9.30	ft <sup>3</sup> /s

### Results

Normal Depth	1.57	ft
Flow Area	3.24	ft <sup>2</sup>
Wetted Perimeter	4.57	ft
Hydraulic Radius	0.71	ft
Top Width	2.42	ft
Critical Depth	1.02	ft
Percent Full	62.6	%
Critical Slope	0.00425	ft/ft
Velocity	2.87	ft/s
Velocity Head	0.13	ft
Specific Energy	1.69	ft
Froude Number	0.44	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00051	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	62.65	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH70-MH71

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.57	ft
Critical Depth	1.02	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00425	ft/ft

---

## Industrial-I-215 Trunk Sewer MH71-MH72

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	10.51	ft <sup>3</sup> /s

### Results

Normal Depth	1.71	ft
Flow Area	3.57	ft <sup>2</sup>
Wetted Perimeter	4.86	ft
Hydraulic Radius	0.73	ft
Top Width	2.33	ft
Critical Depth	1.08	ft
Percent Full	68.3	%
Critical Slope	0.00432	ft/ft
Velocity	2.94	ft/s
Velocity Head	0.13	ft
Specific Energy	1.84	ft
Froude Number	0.42	
Maximum Discharge	13.95	ft <sup>3</sup> /s
Discharge Full	12.97	ft <sup>3</sup> /s
Slope Full	0.00066	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	68.29	%
Downstream Velocity	Infinity	ft/s

---

## Industrial-I-215 Trunk Sewer MH71-MH72

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.71	ft
Critical Depth	1.08	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00432	ft/ft

---

## Industrial- EXIST 27" SW MH72-MH20

---

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00300	ft/ft
Diameter	2.25	ft
Discharge	16.79	ft <sup>3</sup> /s

### Results

Normal Depth	1.82	ft
Flow Area	3.45	ft <sup>2</sup>
Wetted Perimeter	5.04	ft
Hydraulic Radius	0.68	ft
Top Width	1.76	ft
Critical Depth	1.43	ft
Percent Full	81.1	%
Critical Slope	0.00548	ft/ft
Velocity	4.86	ft/s
Velocity Head	0.37	ft
Specific Energy	2.19	ft
Froude Number	0.61	
Maximum Discharge	18.25	ft <sup>3</sup> /s
Discharge Full	16.96	ft <sup>3</sup> /s
Slope Full	0.00294	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	81.06	%
Downstream Velocity	Infinity	ft/s



---

## Industrial- EXIST 27" SW MH72-MH20

---

### GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.82	ft
Critical Depth	1.43	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00548	ft/ft

## Section 3 Figures

Fig. 3.0 Location Map

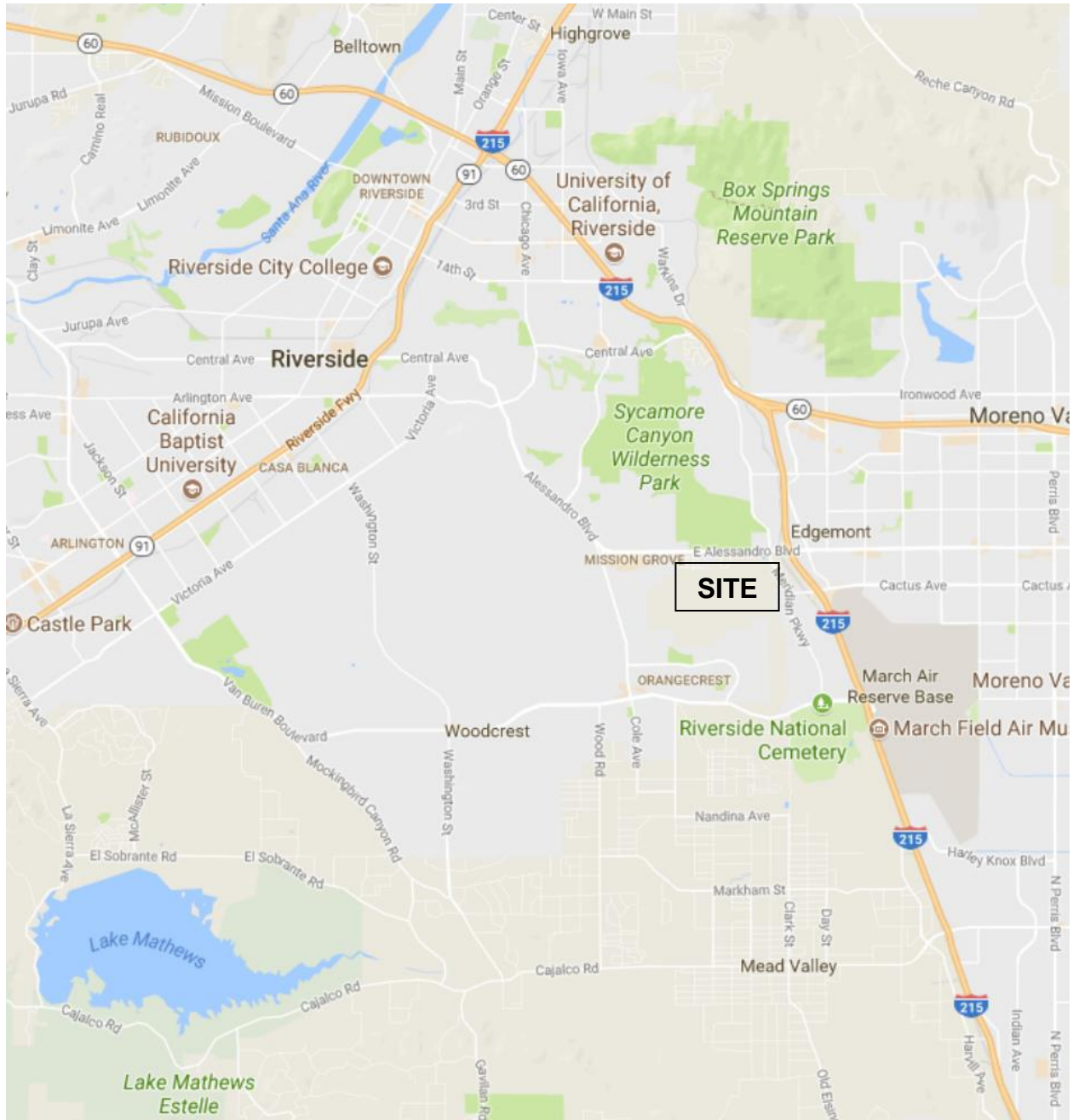




















Figure 3.3 Sewer Generation Summary - Ultimate Condition - Warehouse

Street Name	From MH (ID No.)	To MH (ID No.)	Pipe Diameter (in)	Pipe Area (ft <sup>2</sup> )	Pipe Length (feet)	Pipe Slope	Manning's Roughness Coefficient	Flow (cfs)	Velocity (ft/s)	Normal Depth (ft)	%Full
<b>Meridian Parkway Unit 1</b>	MH 10	MH 9	10	0.55	487	0.0043	0.013	0.18	0.33	0.20	24%
<b>NORTH OF INNOVATION</b>	MH 9	MH 8	10	0.55	258.94	0.0025	0.013	0.27	0.50	0.28	34%
	MH 32	MH 8	10	0.55	96.56	0.01	0.013	0.02	0.03	0.05	6%
<b>Meridian Parkway Unit 1</b>	MH 31	MH 30	10	0.55	254.27	0.0140	0.0130	0.33	0.60	0.20	24%
<b>SOUTH OF CACTUS</b>	MH 30	MH29	10	0.55	343.41	0.0060	0.0130	0.31	0.57	0.24	29%
	MH 29	MH 28	10	0.55	230.10	0.0045	0.0130	0.31	0.57	0.26	31%
	MH 28	MH 27	10	0.55	302.99	0.0035	0.0130	0.32	0.59	0.28	34%
	MH 27	MH 26	10	0.55	178.50	0.0035	0.0130	0.34	0.63	0.29	35%
	MH 26	MH 25	10	0.55	504.68	0.0035	0.0130	0.35	0.64	0.30	36%
<b>Cactus Avenue</b>	CACTUS EXT	MH 22	15	1.23	3343.50	0.0080	0.0130	1.89	1.54	0.49	39%
	MH 22	MH 25	18	1.77	45.00	0.0052	0.0130	1.93	1.09	0.52	35%
	MH 25	MH 21	18	1.77	16.00	0.0052	0.0130	2.18	1.23	0.55	37%
	MH 21	MH 20	18	1.77	70.01	0.0028	0.0130	2.44	1.38	0.70	47%
	MH 20	MH 19	18	1.77	396.60	0.0020	0.0130	2.50	1.41	0.78	52%
	MH 19	MH 18	18	1.77	176.14	0.0020	0.0130	2.49	1.41	0.78	52%
<b>Meridian Parkway Unit 2</b>	MH 1	MH 2	10	0.55	385.00	0.0060	0.0130	0.16	0.28	0.17	20%
	MH 2	MH 3	10	0.55	95.00	0.0037	0.0130	0.30	0.55	0.27	32%
	MH 3	MH 4	10	0.55	135.00	0.0166	0.0130	0.30	0.55	0.18	22%
	MH 4	MH 5	10	0.55	195.00	0.0181	0.0130	0.29	0.53	0.18	22%
	MH 5	MH 6	10	0.55	354.46	0.0106	0.0130	0.29	0.53	0.20	24%
	MH 6	MH 7	10	0.55	264.30	0.0028	0.0130	0.29	0.54	0.29	35%
	MH 7	MH 8	10	0.55	411.43	0.0132	0.0130	0.38	0.69	0.22	26%
	MH 8	MH 9	10	0.55	91.63	0.0064	0.0130	0.41	0.75	0.27	32%
	MH 9	MH 10	10	0.55	29.87	0.0120	0.0130	0.43	0.79	0.24	29%
<b>Innovation Drive</b>	MH18	MH17	18	1.77	497.33	0.0020	0.0130	2.49	1.41	0.78	52%
	MH 17	MH16	18	1.77	84.86	0.0317	0.0130	2.51	1.42	0.37	25%
	MH16	MH15	18	1.77	395.97	0.0020	0.0130	2.54	1.44	0.78	52%
	MH15	MH14	18	1.77	46.63	0.0020	0.0130	2.54	1.44	0.78	52%
	MH14	MH13	18	1.77	305.99	0.0020	0.0130	2.54	1.44	0.79	53%
	MH13	MH12	18	1.77	37.83	0.0020	0.0130	2.54	1.44	0.79	53%
	MH12	MH11	18	1.77	453.56	0.0020	0.0130	2.71	1.53	0.82	55%
	MH11	MH4	18	1.77	485.53	0.0020	0.0130	2.71	1.53	0.82	55%
	MH8	MH7	10	1.77	254.33	0.0020	0.0130	0.29	0.16	0.31	37%
	MH7	MH6	10	0.55	395.00	0.0020	0.0130	0.26	0.48	0.3	36%
	MH6	MH5	10	0.55	400.34	0.0164	0.0130	0.26	0.48	0.17	20%
	MH5	MH4	10	0.55	157.29	0.0202	0.0130	0.26	0.48	0.16	19%
	MH4	MH3	18	0.55	40.34	0.0027	0.0130	2.65	4.87	0.74	49%
	MH3	MH2	18	1.77	324.85	0.0020	0.0130	2.65	1.50	0.81	54%
	MH2	MH1	18	1.77	116.17	0.0020	0.0130	2.65	1.50	0.81	54%
	MH1	MH45	18	1.77	64.25	0.0020	0.0130	2.65	1.50	0.81	54%
<b>Unit 1-Offsite Trunk Sewer</b>	MH1	MH45	18	1.77	490.22	0.0039	0.0130	2.65	1.50	0.66	44%
	MH45	MH44	18	1.77	495.00	0.0020	0.0130	2.65	1.50	0.81	54%

	MH44	MH43	18	1.77	495.00	0.0020	0.0130	2.65	1.50	0.81	54%
	MH43	MH42	18	1.77	495.00	0.0020	0.0130	2.65	1.50	0.81	54%
	MH42	MH41	18	1.77	477.78	0.0020	0.0130	2.65	1.50	0.81	54%
	MH41	MH40	18	1.77	391.24	0.0020	0.0130	2.86	1.62	0.84	56%
	MH40	MH39	24	3.14	495.00	0.0017	0.0130	2.86	0.91	0.76	38%
	MH39	MH38	24	3.14	495.00	0.0017	0.0130	2.86	0.91	0.76	38%
	MH38	MH37	24	3.14	98.76	0.0020	0.0130	2.86	0.91	0.73	37%
	MH37	MH36	24	3.14	362.24	0.0020	0.0130	4.73	1.51	0.96	48%
	MH36	MH35	24	3.14	302.57	0.0020	0.0130	4.73	1.51	0.96	48%
	MH35	MH34	24	3.14	276.93	0.0020	0.0130	4.73	1.51	0.96	48%
	MH34	MH33	24	3.14	325.50	0.0020	0.0130	4.73	1.51	0.96	48%
<b>I-215 Trunk Sewer</b>	MH33	MH50	24	3.14	533.41	0.0028	0.0130	4.73	1.51	0.87	44%
	MH50	MH51	24	3.14	498.74	0.0028	0.0130	4.73	1.51	0.87	44%
	MH51	MH52	24	3.14	102.36	0.0028	0.0130	4.99	1.59	0.90	45%
	MH52	MH53	24	3.14	396.29	0.0028	0.0130	4.99	1.59	0.90	45%
	MH53	MH54	24	3.14	429.84	0.0028	0.0130	4.99	1.59	0.90	45%
	MH54	MH55	24	3.14	76.97	0.0028	0.0130	4.99	1.59	0.90	45%
	MH55	MH56	24	3.14	487.00	0.0028	0.0130	4.99	1.59	0.90	45%
	MH56	MH57	24	3.14	487.00	0.0028	0.0130	4.99	1.59	0.90	45%
	MH57	MH58	30	4.91	113.07	0.0010	0.0130	4.99	1.02	1.08	43%
	MH58	MH59	30	4.91	368.93	0.0010	0.0130	5.72	1.17	1.16	46%
	MH59	MH60	30	4.91	103.15	0.0010	0.0130	5.72	1.17	1.16	46%
	MH60	MH61	30	4.91	457.00	0.0010	0.0130	5.72	1.17	1.16	46%
	MH61	MH62	30	4.91	348.21	0.0010	0.0130	5.72	1.17	1.16	46%
	MH62	MH63	30	4.91	103.79	0.0010	0.0130	6.84	1.39	1.29	52%
	MH63	MH64	30	4.91	457.00	0.0010	0.0130	6.84	1.39	1.29	52%
	MH64	MH65	30	4.91	457.00	0.0010	0.0130	6.84	1.39	1.29	52%
	MH65	MH66	30	4.91	457.00	0.0010	0.0130	6.84	1.39	1.29	52%
	MH66	MH67	30	4.91	457.00	0.0010	0.0130	6.84	1.39	1.29	52%
	MH67	MH68	30	4.91	457.00	0.0010	0.0130	6.84	1.39	1.29	52%
	MH68	MH69	30	4.91	459.90	0.0010	0.0130	6.84	1.39	1.29	52%
	MH69	MH70	30	4.91	548.41	0.0010	0.0130	6.84	1.39	1.29	52%
	MH70	MH71	30	4.91	506.92	0.0010	0.0130	6.84	1.39	1.29	52%
	MH71	MH72	30	4.91	251.53	0.0010	0.0130	8.05	1.64	1.43	57%
<b>Existing 27" VCP Sewer</b>	MH72	MH20	27	3.97	81.00	0.0030	0.0130	14.33	3.61	1.59	71%

Figure 3.4 Sewer Generation Summary - Ultimate Condition - Industrial

Street Name	From MH (ID No.)	To MH (ID No.)	Pipe Diameter (in)	Pipe Area (ft^2)	Pipe Length (feet)	Pipe Slope	Manning's Roughness Coefficient	Flow (cfs)	Velocity (ft/s)	Normal Depth (ft)	%Full
<b>Meridian Parkway Unit 1</b>	MH 10	MH 9	10	0.55	487	0.0043	0.013	0.43	0.78	0.31	37%
<b>NORTH OF INNOVATION</b>	MH 9	MH 8	10	0.55	258.94	0.0025	0.013	0.59	1.09	0.44	53%
	MH 32	MH 8	10	0.55	96.56	0.01	0.013	0.09	0.16	0.11	13%
<b>Meridian Parkway Unit 1</b>	MH 31	MH 30	10	0.55	254.27	0.0140	0.0130	0.35	0.64	0.21	25%
<b>SOUTH OF CACTUS</b>	MH 30	MH29	10	0.55	343.41	0.0060	0.0130	0.52	0.95	0.31	37%
	MH 29	MH 28	10	0.55	230.10	0.0045	0.0130	0.52	0.95	0.34	41%
	MH 28	MH 27	10	0.55	302.99	0.0035	0.0130	0.55	1.00	0.38	46%
	MH 27	MH 26	10	0.55	178.50	0.0035	0.0130	0.57	1.05	0.39	47%
	MH 26	MH 25	10	0.55	504.68	0.0035	0.0130	0.59	1.08	0.39	47%
<b>Cactus Avenue</b>	CACTUS EXT	MH 22	15	1.23	3343.50	0.0080	0.0130	1.89	1.54	0.49	39%
	MH 22	MH 25	18	1.77	45.00	0.0052	0.0130	1.93	1.09	0.52	35%
	MH 25	MH 21	18	1.77	16.00	0.0052	0.0130	2.29	1.29	0.56	37%
	MH 21	MH 20	18	1.77	70.01	0.0028	0.0130	2.67	1.51	0.73	49%
	MH 20	MH 19	18	1.77	396.60	0.0020	0.0130	2.72	1.54	0.82	55%
	MH 19	MH 18	18	1.77	176.14	0.0020	0.0130	2.72	1.54	0.82	55%
<b>Meridian Parkway Unit 2</b>	MH 1	MH 2	10	0.55	385.00	0.0060	0.0130	0.16	0.28	0.17	20%
	MH 2	MH 3	10	0.55	95.00	0.0037	0.0130	0.30	0.55	0.27	32%
	MH 3	MH 4	10	0.55	135.00	0.0166	0.0130	0.30	0.55	0.18	22%
	MH 4	MH 5	10	0.55	195.00	0.0181	0.0130	0.29	0.53	0.18	22%
	MH 5	MH 6	10	0.55	354.46	0.0106	0.0130	0.29	0.53	0.20	24%
	MH 6	MH 7	10	0.55	264.30	0.0028	0.0130	0.30	0.55	0.29	35%
	MH 7	MH 8	10	0.55	411.43	0.0132	0.0130	0.62	1.13	0.28	34%
	MH 8	MH 9	10	0.55	91.63	0.0064	0.0130	0.64	1.18	0.35	42%
	MH 9	MH 10	10	0.55	29.87	0.0120	0.0130	0.67	1.22	0.30	36%
<b>Innovation Drive</b>	MH18	MH17	18	1.77	497.33	0.0020	0.0130	2.72	1.54	0.82	55%
	MH 17	MH16	18	1.77	84.86	0.0317	0.0130	2.74	1.55	0.82	55%
	MH16	MH15	18	1.77	395.97	0.0020	0.0130	2.81	1.59	0.39	26%
	MH15	MH14	18	1.77	46.63	0.0020	0.0130	2.81	1.59	0.84	56%
	MH14	MH13	18	1.77	305.99	0.0020	0.0130	2.83	1.60	0.84	56%
	MH13	MH12	18	1.77	37.83	0.0020	0.0130	2.83	1.60	0.84	56%
	MH12	MH11	18	1.77	453.56	0.0020	0.0130	3.05	1.73	0.88	59%
	MH11	MH4	18	1.77	485.53	0.0020	0.0130	3.05	1.73	0.88	59%
	MH8	MH7	10	1.77	254.33	0.0020	0.0130	0.62	0.35	0.48	58%
	MH7	MH6	10	0.55	395.00	0.0020	0.0130	0.69	1.27	0.52	62%
	MH6	MH5	10	0.55	400.34	0.0164	0.0130	0.69	1.27	0.28	34%
	MH5	MH4	10	0.55	157.29	0.0202	0.0130	0.69	1.27	0.27	32%
	MH4	MH3	18	0.55	40.34	0.0027	0.0130	3.58	6.57	0.89	59%
	MH3	MH2	18	1.77	324.85	0.0020	0.0130	3.58	2.03	0.98	65%
	MH2	MH1	18	1.77	116.17	0.0020	0.0130	3.58	2.03	0.98	65%
	MH1	MH45	18	1.77	64.25	0.0020	0.0130	3.58	2.03	0.98	65%
<b>Unit 1-Offsite Trunk Sewer</b>	MH1	MH45	18	1.77	490.22	0.0039	0.0130	3.58	2.03	0.79	53%
	MH45	MH44	18	1.77	495.00	0.0020	0.0130	3.58	2.03	0.98	65%

	MH44	MH43	18	1.77	495.00	0.0020	0.0130	3.58	2.03	0.98	65%
	MH43	MH42	18	1.77	495.00	0.0020	0.0130	3.58	2.03	0.98	65%
	MH42	MH41	18	1.77	477.78	0.0020	0.0130	3.58	2.03	0.98	65%
	MH41	MH40	18	1.77	391.24	0.0020	0.0130	4.02	2.27	1.07	71%
	MH40	MH39	24	3.14	495.00	0.0017	0.0130	4.02	1.28	0.92	46%
	MH39	MH38	24	3.14	495.00	0.0017	0.0130	4.02	1.28	0.92	46%
	MH38	MH37	24	3.14	98.76	0.0020	0.0130	4.02	1.28	0.88	44%
	MH37	MH36	24	3.14	362.24	0.0020	0.0130	7.19	2.29	1.25	63%
	MH36	MH35	24	3.14	302.57	0.0020	0.0130	7.19	2.29	1.25	63%
	MH35	MH34	24	3.14	276.93	0.0020	0.0130	7.19	2.29	1.25	63%
	MH34	MH33	24	3.14	325.50	0.0020	0.0130	7.19	2.29	1.25	63%
<b>I-215 Trunk Sewer</b>	MH33	MH50	24	3.14	533.41	0.0028	0.0130	7.19	2.29	1.12	56%
	MH50	MH51	24	3.14	498.74	0.0028	0.0130	7.19	2.29	1.12	56%
	MH51	MH52	24	3.14	102.36	0.0028	0.0130	7.45	2.37	1.14	57%
	MH52	MH53	24	3.14	396.29	0.0028	0.0130	7.45	2.37	1.14	57%
	MH53	MH54	24	3.14	429.84	0.0028	0.0130	7.45	2.37	1.14	57%
	MH54	MH55	24	3.14	76.97	0.0028	0.0130	7.45	2.37	1.14	57%
	MH55	MH56	24	3.14	487.00	0.0028	0.0130	7.45	2.37	1.14	57%
	MH56	MH57	24	3.14	487.00	0.0028	0.0130	7.45	2.37	1.14	57%
	MH57	MH58	30	4.91	113.07	0.0010	0.0130	7.45	1.52	1.36	54%
	MH58	MH59	30	4.91	368.93	0.0010	0.0130	8.18	1.67	1.44	58%
	MH59	MH60	30	4.91	103.15	0.0010	0.0130	8.18	1.67	1.44	58%
	MH60	MH61	30	4.91	457.00	0.0010	0.0130	8.18	1.67	1.44	58%
	MH61	MH62	30	4.91	348.21	0.0010	0.0130	8.18	1.67	1.44	58%
	MH62	MH63	30	4.91	103.79	0.0010	0.0130	9.30	1.90	1.57	63%
	MH63	MH64	30	4.91	457.00	0.0010	0.0130	9.30	1.90	1.57	63%
	MH64	MH65	30	4.91	457.00	0.0010	0.0130	9.30	1.90	1.57	63%
	MH65	MH66	30	4.91	457.00	0.0010	0.0130	9.30	1.90	1.57	63%
	MH66	MH67	30	4.91	457.00	0.0010	0.0130	9.30	1.90	1.57	63%
	MH67	MH68	30	4.91	457.00	0.0010	0.0130	9.30	1.90	1.57	63%
	MH68	MH69	30	4.91	459.90	0.0010	0.0130	9.30	1.90	1.57	63%
	MH69	MH70	30	4.91	548.41	0.0010	0.0130	9.30	1.90	1.57	63%
	MH70	MH71	30	4.91	506.92	0.0010	0.0130	9.30	1.90	1.57	63%
	MH71	MH72	30	4.91	251.53	0.0010	0.0130	10.51	2.14	1.71	68%
<b>Existing 27" VCP Sewer</b>	MH72	MH20	27	3.97	81.00	0.0030	0.0130	16.79	4.23	1.82	81%

Figure 3.5 SEWER SUBAREA FLOW GENERATION SUMMARY - ULTIMATE BUILD OUT WAREHOUSE ZONING

Street Name	From MH (ID No.)	To MH (ID No.)	TRIBUTARY AREA (ACRES)	ZONED AREA	WASTEWATER GENERATION FACTOR	UNFACTORED TRIBUTARY FLOW (GPD)	UNFACTORED CUMULATIVE TRIBUTARY FLOW (GPD)	PEAKING FACTOR	FACTORED CUMULATIVE TRIBUTARY FLOW (GPD)	TOTAL CUMULATIVE SEWER MAIN FLOW (CFS)	
Meridian Parkway Unit 1	MH 10	MH 9	56.0	WAREHOUSE (INDUSTRIAL)	420 GPD/AC	23,520	23,520	5.00	117,600	0.182	
NORTH OF INNOVATION	MH 9	MH 8	29.2	WAREHOUSE (INDUSTRIAL)	420 GPD/AC	12,264	35,784	4.90	175,342	0.271	
	MH 32	MH 8	5.6	WAREHOUSE (INDUSTRIAL)	420 GPD/AC	2,352	2,352	5.00	11,760	0.018	
Meridian Parkway Unit 1	MH 31	MH 30	17.6	WAREHOUSE (INDUSTRIAL)	420 GPD/AC	7,392					
SOUTH OF CACTUS			26.8	BUSINESS PARK	1,700 GPD/AC	45,560	52,952	4.00	211,808	0.328	
	MH 30	MH 29	32.5	WAREHOUSE (INDUSTRIAL)	420 GPD/AC	13,650	66,602	3.00	199,806	0.309	
	MH 29	MH 28	0.0	-	GPD/AC	0	66,602	3.00	199,806	0.309	
	MH 28	MH 27	4.3	MIXED USE	1,700 GPD/AC	7,310	73,912	2.80	206,954	0.320	
	MH 27	MH 26	4.5	COMMERCIAL	1,700 GPD/AC	7,650	81,562	2.70	220,217	0.341	
	MH 26	MH 25	3.1	MIXED USE	1,700 GPD/AC	5,270	86,832	2.60	225,763	0.349	
Cactus Avenue	CACTUS EXT	MH22	304.0	INDUSTRIAL	2,000 GPD/AC	608,000				0.000	
			60.0	PARK/RECREATION/OPEN SPACE	600 GPD/AC	36,000	644,000	1.90	1,223,600	1.893	
		MH22	MH25	6.6	BUSINESS PARK	1,700 GPD/AC	11,220	655,220	1.90	1,244,918	1.926
	ADD MH25 FROM UNIT 1 ABOVE	MH 25	MH 21	0.0	-	GPD/AC	0	742,052	1.90	1,409,899	2.181
	ADD MH10 FROM UNIT 2 BELOW	MH 21	MH 20	0.0	-	GPD/AC	0	853,820	1.85	1,579,567	2.444
		MH 20	MH 19	10.4	MIXED USE	1,700 GPD/AC	17,680	871,500	1.85	1,612,275	2.495
		MH 19	MH 18	1.3	MIXED USE	1,700 GPD/AC	2,210	873,710	1.84	1,607,626	2.487
	Innovation Drive	MH 18	MH 17	0.0	-	GPD/AC	0	873,710	1.84	1,607,626	2.487
		MH 17	MH 16	3.2	INDUSTRIAL	2,000 GPD/AC	6,400	880,110	1.84	1,619,402	2.506
	MH 16	MH 15	6.0	WAREHOUSE (INDUSTRIAL)	420 GPD/AC	2,520				0.000	
			7.4	MIXED USE	1,700 GPD/AC	12,580	895,210	1.83	1,638,234	2.535	
	MH 15	MH 14	0.0	-	GPD/AC	0	895,210	1.83	1,638,234	2.535	
	MH 14	MH 13	5.0	WAREHOUSE (INDUSTRIAL)	420 GPD/AC	2,100	897,310	1.83	1,642,077	2.541	
	MH 13	MH 12	0.0	-	GPD/AC	0	897,310	1.83	1,642,077	2.541	
	MH 12	MH 11	8.6	WAREHOUSE (INDUSTRIAL)	420 GPD/AC	3,612				0.000	
			32.5	INDUSTRIAL	2,000 GPD/AC	65,000	965,922	1.81	1,748,319	2.705	
	MH 11	MH 4	0.0	-	GPD/AC	0	965,922	1.81	1,748,319	2.705	
ADD MH8 FROM UNIT 1 ABOVE	MH 8	MH 7	0.0	-	GPD/AC	0	38,136	4.90	186,866	0.289	
	MH 7	MH 6	10.8	WAREHOUSE (INDUSTRIAL)	420 GPD/AC	4,536	42,672	4.00	170,688	0.264	
	MH 6	MH 5	0.0	-	GPD/AC	0	42,672	4.00	170,688	0.264	
	MH 5	MH 4	0.0	-	GPD/AC	0	42,672	4.00	170,688	0.264	
ADD MH4 FROM INNOVATION ABOVE	MH 4	MH 3	0.0	-	GPD/AC	0	1,008,594	1.70	1,714,610	2.653	
	MH 3	MH 2	0.0	-	GPD/AC	0	1,008,594	1.70	1,714,610	2.653	
	MH 2	MH 1	0.0	-	GPD/AC	0	1,008,594	1.70	1,714,610	2.653	
	MH 1	MH45	0.0	-	GPD/AC	0	1,008,594	1.70	1,714,610	2.653	
Meridian Parkway Unit 2	MH 1	MH 2	11.8	BUSINESS PARK	1,700 GPD/AC	20,060	20,060	5.00	100,300	0.155	
	MH 2	MH 3	8.2	COMMERCIAL	1,700 GPD/AC	13,940				0.000	
			3.2	BUSINESS PARK	1,700 GPD/AC	5,440	39,440	4.90	193,256	0.299	
	MH 3	MH 4	0.0	-	GPD/AC	0	39,440	4.90	193,256	0.299	
	MH 4	MH 5	11.4	COMMERCIAL	1,700 GPD/AC	19,380				0.000	
			1.9	BUSINESS PARK	1,700 GPD/AC	3,230	62,050	3.00	186,150	0.288	
	MH 5	MH 6	0.0	-	GPD/AC	0	62,050	3.00	186,150	0.288	
	MH 6	MH 7	3.1	BUSINESS PARK	1,700 GPD/AC	5,270	67,320	2.80	188,496	0.292	
		MH 7	MH 8	52.4	WAREHOUSE (INDUSTRIAL)	420 GPD/AC	22,008				0.000
			4.6	MIXED USE	1,700 GPD/AC	7,820	97,148	2.50	242,870	0.376	
		MH 8	MH 9	3.0	OPEN SPACE / BASIN	0 GPD/AC	0				0.000
			4.7	BUSINESS PARK	1,700 GPD/AC	7,990	105,138	2.50	262,845	0.407	
		MH 9	MH 10	15.0	OPEN SPACE	0 GPD/AC	0				0.000
		3.9	MIXED USE	1,700 GPD/AC	6,630	111,768	2.50	279,420	0.432		
Unit 1-Offsite Trunk Sewer	MH1	MH45	0.0		GPD/AC	0	1,008,594	1.70	1,714,610	2.653	
	MH45	MH44	0.0		GPD/AC	0	1,008,594	1.70	1,714,610	2.653	
	MH44	MH43	35.3	OPEN SPACE	0 GPD/AC	0	1,008,594	1.70	1,714,610	2.653	
	MH43	MH42	0.0		GPD/AC	0	1,008,594	1.70	1,714,610	2.653	



	MH42	MH41	0.0			GPD/AC	0	1,008,594	1.70	1,714,610	2.653
	MH41	MH40	23.8	WAREHOUSE (INDUSTRIAL)	420	GPD/AC	9,996				0.000
			18.6	WAREHOUSE (INDUSTRIAL)	420	GPD/AC	7,812				0.000
			18.0	INDUSTRIAL	2,000	GPD/AC	36,000				0.000
			13.2	WAREHOUSE (INDUSTRIAL)	420	GPD/AC	5,544				0.000
			10.2	BUSINESS PARK	1,700	GPD/AC	17,340	1,085,286	1.70	1,844,986	2.855
	MH40	MH39	0.0			GPD/AC	0	1,085,286	1.70	1,844,986	2.855
	MH39	MH38	0.0			GPD/AC	0	1,085,286	1.70	1,844,986	2.855
	MH38	MH37	0.0			GPD/AC	0	1,085,286	1.70	1,844,986	2.855
	MH37	MH36	312.7	WAREHOUSE (INDUSTRIAL)	420	GPD/AC	131,334				0.000
			67.7	INDUSTRIAL	2,000	GPD/AC	135,400				0.000
			149.7	BUSINESS PARK	1,700	GPD/AC	254,490				0.000
			19.1	MIXED USE	1,700	GPD/AC	32,470				0.000
			72.0	COMMERCIAL (INCLUDES OFFICE)	1,700	GPD/AC	122,400				0.000
			61.4	PARK	600	GPD/AC	36,840	1,798,220	1.70	3,056,974	4.730
	MH36	MH35	0.0			GPD/AC	0	1,798,220	1.70	3,056,974	4.730
	MH35	MH34	0.0			GPD/AC	0	1,798,220	1.70	3,056,974	4.730
	MH34	MH33	0.0			GPD/AC	0	1,798,220	1.70	3,056,974	4.730

<b>I- 215 Trunk Sewer</b>	MH33	MH50	0.0			GPD/AC	0	1,798,220	1.70	3,056,974	4.730
	MH50	MH51	0.0			GPD/AC	0	1,798,220	1.70	3,056,974	4.730
	MH51	MH52	162.0	CEMETERY	600	GPD/AC	97,200	1,895,420	1.70	3,222,214	4.986
	MH52	MH53	0.0			GPD/AC	0	1,895,420	1.70	3,222,214	4.986
	MH53	MH54	0.0			GPD/AC	0	1,895,420	1.70	3,222,214	4.986
	MH54	MH55	0.0			GPD/AC	0	1,895,420	1.70	3,222,214	4.986
	MH55	MH56	0.0			GPD/AC	0	1,895,420	1.70	3,222,214	4.986
	MH56	MH57	0.0			GPD/AC	0	1,895,420	1.70	3,222,214	4.986
	MH57	MH58	0.0			GPD/AC	0	1,895,420	1.70	3,222,214	4.986
	MH58	MH59	145.0	CEMETERY	600	GPD/AC	87,000				0.000
			321.0	GOLF COURSE/PARK	600	GPD/AC	192,600	2,175,020	1.70	3,697,534	5.721
	MH59	MH60	0.0			GPD/AC	0	2,175,020	1.70	3,697,534	5.721
	MH60	MH61	0.0			GPD/AC	0	2,175,020	1.70	3,697,534	5.721
	MH61	MH62	0.0			GPD/AC	0	2,175,020	1.70	3,697,534	5.721
	MH62	MH63	708.0	CEMETERY	600	GPD/AC	424,800	2,599,820	1.70	4,419,694	6.838
	MH63	MH64	0.0			GPD/AC	0	2,599,820	1.70	4,419,694	6.838
	MH64	MH65	0.0			GPD/AC	0	2,599,820	1.70	4,419,694	6.838
	MH65	MH66	0.0			GPD/AC	0	2,599,820	1.70	4,419,694	6.838
	MH66	MH67	0.0			GPD/AC	0	2,599,820	1.70	4,419,694	6.838
	MH67	MH68	0.0			GPD/AC	0	2,599,820	1.70	4,419,694	6.838
	MH68	MH69	0.0			GPD/AC	0	2,599,820	1.70	4,419,694	6.838
	MH69	MH70	0.0			GPD/AC	0	2,599,820	1.70	4,419,694	6.838
	MH70	MH71	0.0			GPD/AC	0	2,599,820	1.70	4,419,694	6.838
WGF BASED ON 200 GPD/EDU AND 480DU FROM MASTER PLAN	MH71	MH72	157.0	RESIDENTIAL	611	GPD/AC	95,927				0.000
			364.0	PUBLIC FACILITY	1,000	GPD/AC	364,000	3,059,747	1.70	5,201,570	8.048
		TOTAL AREAS (AC)	3417.3								

<b>EXISTING 27" VCP SEWER WWRF</b>	MH72	MH20	0	FLows FROM MH 72						5,201,570	8.048	
			0	MARKHAM LIFT STATION (1,950 GPM)							8,009,570	12.393
			0	1269 LIFT STATION (870 GPM)								9,262,370



Figure 3.5 SEWER SUBAREA FLOW GENERATION SUMMARY - ULTIMATE BUILD OUT INDUSTRIAL ZONING

Street Name	From MH (ID No.)	To MH (ID No.)	TRIBUTARY AREA (ACRES)	ZONED AREA	WASTEWATER GENERATION FACTOR	UNFACTORED TRIBUTARY FLOW (GPD)	UNFACTORED CUMULATIVE TRIBUTARY FLOW (GPD)	PEAKING FACTOR	FACTORED CUMULATIVE TRIBUTARY FLOW (GPD)	TOTAL CUMULATIVE SEWER MAIN FLOW (CFS)
Meridian Parkway Unit 1	MH 10	MH 9	56.0	WAREHOUSE (INDUSTRIAL)	2,000 GPD/AC	112,000	112,000	2.45	274,400	0.425
NORTH OF INNOVATION	MH 9	MH 8	29.2	WAREHOUSE (INDUSTRIAL)	2,000 GPD/AC	58,400	170,400	2.25	383,400	0.593
	MH 32	MH 8	5.6	WAREHOUSE (INDUSTRIAL)	2,000 GPD/AC	11,200	11,200	5.00	56,000	0.087
Meridian Parkway Unit 1	MH 31	MH 30	17.6	WAREHOUSE (INDUSTRIAL)	2,000 GPD/AC	35,200				
SOUTH OF CACTUS			26.8	BUSINESS PARK	1,700 GPD/AC	45,560	80,760	2.80	226,128	0.350
	MH 30	MH 29	32.5	WAREHOUSE (INDUSTRIAL)	2,000 GPD/AC	65,000	145,760	2.30	335,248	0.519
	MH 29	MH 28	0.0	-	GPD/AC	0	145,760	2.30	335,248	0.519
	MH 28	MH 27	4.3	MIXED USE	1,700 GPD/AC	7,310	153,070	2.30	352,061	0.545
	MH 27	MH 26	4.5	COMMERCIAL	1,700 GPD/AC	7,650	160,720	2.30	369,656	0.572
	MH 26	MH 25	3.1	MIXED USE	1,700 GPD/AC	5,270	165,990	2.29	380,117	0.588
Cactus Avenue	CACTUS EXT	MH22	304.0	INDUSTRIAL	2,000 GPD/AC	608,000				0.000
			60.0	PARK/RECREATION/OPEN SPACE	600 GPD/AC	36,000	644,000	1.90	1,223,600	1.893
	MH22	MH25	6.6	BUSINESS PARK	1,700 GPD/AC	11,220	655,220	1.90	1,244,918	1.926
ADD MH25 FROM UNIT 1 ABOVE	MH 25	MH 21	0.0	-	GPD/AC	0	821,210	1.80	1,478,178	2.287
ADD MH10 FROM UNIT 2 BELOW	MH 21	MH 20	0.0	-	GPD/AC	0	1,015,770	1.70	1,726,809	2.672
	MH 20	MH 19	10.4	MIXED USE	1,700 GPD/AC	17,680	1,033,450	1.70	1,756,865	2.718
	MH 19	MH 18	1.3	MIXED USE	1,700 GPD/AC	2,210	1,035,660	1.70	1,760,622	2.724
Innovation Drive	MH 18	MH 17	0.0	-	GPD/AC	0	1,035,660	1.70	1,760,622	2.724
	MH 17	MH 16	3.2	INDUSTRIAL	2,000 GPD/AC	6,400	1,042,060	1.70	1,771,502	2.741
			6.0	WAREHOUSE (INDUSTRIAL)	2,000 GPD/AC	12,000				0.000
	MH 16	MH 15	7.4	MIXED USE	1,700 GPD/AC	12,580	1,066,640	1.70	1,813,288	2.806
	MH 15	MH 14	0.0	-	GPD/AC	0	1,066,640	1.70	1,813,288	2.806
	MH 14	MH 13	5.0	WAREHOUSE (INDUSTRIAL)	2,000 GPD/AC	10,000	1,076,640	1.70	1,830,288	2.832
	MH 13	MH 12	0.0	-	GPD/AC	0	1,076,640	1.70	1,830,288	2.832
			8.6	WAREHOUSE (INDUSTRIAL)	2,000 GPD/AC	17,200				0.000
	MH 12	MH 11	32.5	INDUSTRIAL	2,000 GPD/AC	65,000	1,158,840	1.70	1,970,028	3.048
	MH 11	MH 4	0.0	-	GPD/AC	0	1,158,840	1.70	1,970,028	3.048
ADD MH8 FROM UNIT 1 ABOVE	MH 8	MH 7	0.0	-	GPD/AC	0	181,600	2.22	403,152	0.624
	MH 7	MH 6	10.8	WAREHOUSE (INDUSTRIAL)	2,000 GPD/AC	21,600	203,200	2.20	447,040	0.692
	MH 6	MH 5	0.0	-	GPD/AC	0	203,200	2.20	447,040	0.692
	MH 5	MH 4	0.0	-	GPD/AC	0	203,200	2.20	447,040	0.692
ADD MH4 FROM INNOVATION ABOVE	MH 4	MH 3	0.0	-	GPD/AC	0	1,362,040	1.70	2,315,468	3.583
	MH 3	MH 2	0.0	-	GPD/AC	0	1,362,040	1.70	2,315,468	3.583
	MH 2	MH 1	0.0	-	GPD/AC	0	1,362,040	1.70	2,315,468	3.583
	MH 1	MH45	0.0	-	GPD/AC	0	1,362,040	1.70	2,315,468	3.583
Meridian Parkway Unit 2	MH 1	MH 2	11.8	BUSINESS PARK	1,700 GPD/AC	20,060	20,060	5.00	100,300	0.155
	MH 2	MH 3	8.2	COMMERCIAL	1,700 GPD/AC	13,940				0.000
			3.2	BUSINESS PARK	1,700 GPD/AC	5,440	39,440	4.90	193,256	0.299
	MH 3	MH 4	0.0	-	GPD/AC	0	39,440	4.90	193,256	0.299
	MH 4	MH 5	11.4	COMMERCIAL	1,700 GPD/AC	19,380				0.000
			1.9	BUSINESS PARK	1,700 GPD/AC	3,230	62,050	3.00	186,150	0.288
	MH 5	MH 6	0.0	-	GPD/AC	0	62,050	3.00	186,150	0.288
	MH 6	MH 7	3.1	BUSINESS PARK	1,700 GPD/AC	5,270	67,320	2.90	195,228	0.302
			52.4	WAREHOUSE (INDUSTRIAL)	2,000 GPD/AC	104,800				0.000
			4.6	MIXED USE	1,700 GPD/AC	7,820	179,940	2.21	397,667	0.615
	MH 8	MH 9	3.0	OPEN SPACE / BASIN	0 GPD/AC	0				0.000
			4.7	BUSINESS PARK	1,700 GPD/AC	7,990	187,930	2.21	415,325	0.643
			15.0	OPEN SPACE	0 GPD/AC	0				0.000
	MH 9	MH 10	3.9	MIXED USE	1,700 GPD/AC	6,630	194,560	2.21	429,978	0.665
Unit 1-Offsite Trunk Sewer	MH1	MH45	0.0		GPD/AC	0	1,362,040	1.70	2,315,468	3.583
	MH45	MH44	0.0		GPD/AC	0	1,362,040	1.70	2,315,468	3.583
	MH44	MH43	35.3	OPEN SPACE	0 GPD/AC	0	1,362,040	1.70	2,315,468	3.583
	MH43	MH42	0.0		GPD/AC	0	1,362,040	1.70	2,315,468	3.583

	MH42	MH41	0.0			GPD/AC	0	1,362,040	1.70	2,315,468	3.583
	MH41	MH40	23.8	WAREHOUSE (INDUSTRIAL)	2,000	GPD/AC	47,600				0.000
			18.6	WAREHOUSE (INDUSTRIAL)	2,000	GPD/AC	37,200				0.000
			18.0	INDUSTRIAL	2,000	GPD/AC	36,000				0.000
			13.2	WAREHOUSE (INDUSTRIAL)	2,000	GPD/AC	26,400				0.000
			10.2	BUSINESS PARK	1,700	GPD/AC	17,340	1,526,580	1.70	2,595,186	4.015
	MH40	MH39	0.0			GPD/AC	0	1,526,580	1.70	2,595,186	4.015
	MH39	MH38	0.0			GPD/AC	0	1,526,580	1.70	2,595,186	4.015
	MH38	MH37	0.0			GPD/AC	0	1,526,580	1.70	2,595,186	4.015
	MH37	MH36	312.7	WAREHOUSE (INDUSTRIAL)	2,000	GPD/AC	625,400				0.000
			67.7	INDUSTRIAL	2,000	GPD/AC	135,400				0.000
			149.7	BUSINESS PARK	1,700	GPD/AC	254,490				0.000
			19.1	MIXED USE	1,700	GPD/AC	32,470				0.000
			72.0	COMMERCIAL (INCLUDES OFFICE)	1,700	GPD/AC	122,400				0.000
			61.4	PARK	600	GPD/AC	36,840	2,733,580	1.70	4,647,086	7.190
	MH36	MH35	0.0			GPD/AC	0	2,733,580	1.70	4,647,086	7.190
	MH35	MH34	0.0			GPD/AC	0	2,733,580	1.70	4,647,086	7.190
	MH34	MH33	0.0			GPD/AC	0	2,733,580	1.70	4,647,086	7.190

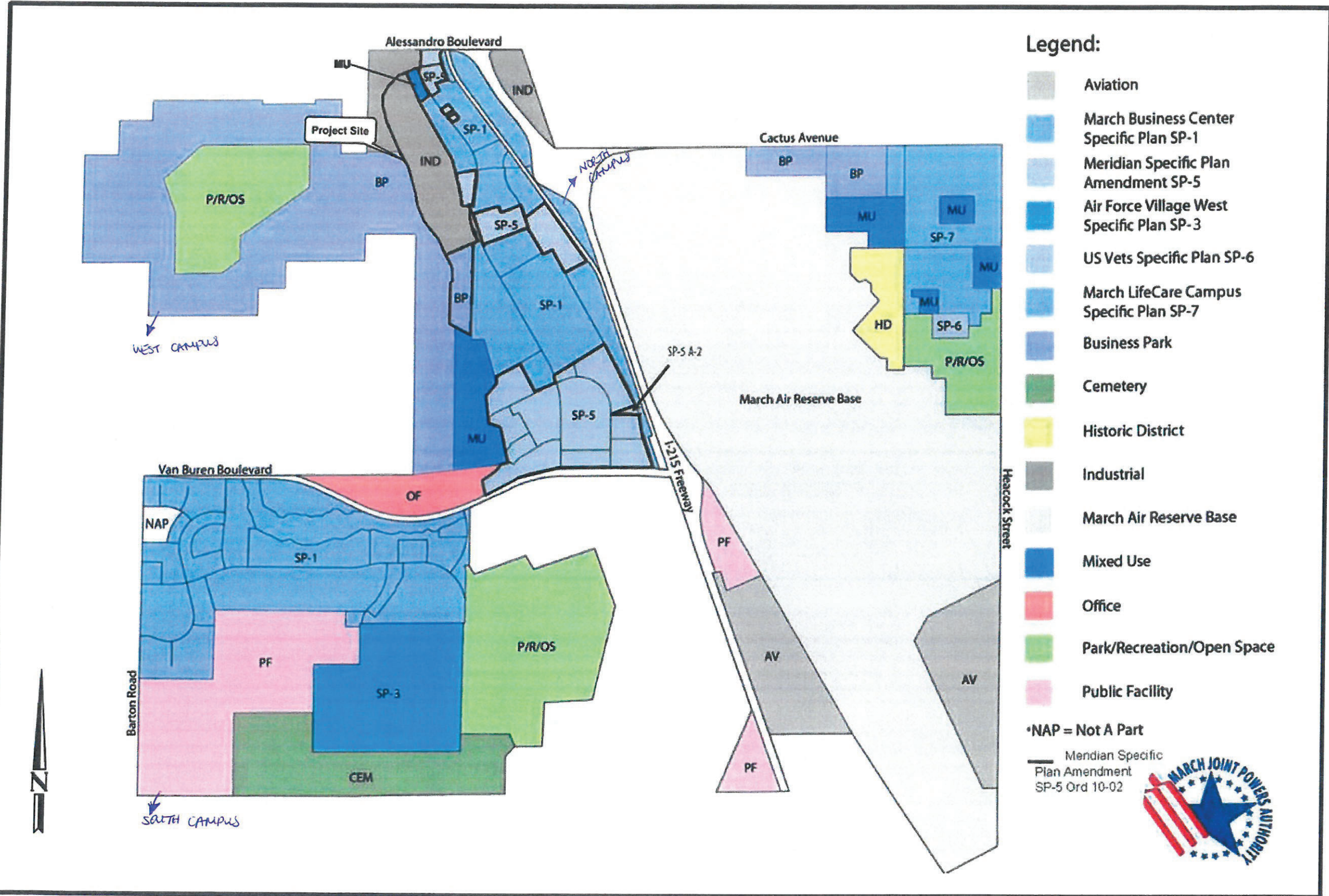
<b>I- 215 Trunk Sewer</b>	MH33	MH50	0.0			GPD/AC	0	2,733,580	1.70	4,647,086	7.190
	MH50	MH51	0.0			GPD/AC	0	2,733,580	1.70	4,647,086	7.190
	MH51	MH52	162.0	CEMETERY	600	GPD/AC	97,200	2,830,780	1.70	4,812,326	7.446
	MH52	MH53	0.0			GPD/AC	0	2,830,780	1.70	4,812,326	7.446
	MH53	MH54	0.0			GPD/AC	0	2,830,780	1.70	4,812,326	7.446
	MH54	MH55	0.0			GPD/AC	0	2,830,780	1.70	4,812,326	7.446
	MH55	MH56	0.0			GPD/AC	0	2,830,780	1.70	4,812,326	7.446
	MH56	MH57	0.0			GPD/AC	0	2,830,780	1.70	4,812,326	7.446
	MH57	MH58	0.0			GPD/AC	0	2,830,780	1.70	4,812,326	7.446
	MH58	MH59	145.0	CEMETERY	600	GPD/AC	87,000				0.000
			321.0	GOLF COURSE/PARK	600	GPD/AC	192,600	3,110,380	1.70	5,287,646	8.181
	MH59	MH60	0.0			GPD/AC	0	3,110,380	1.70	5,287,646	8.181
	MH60	MH61	0.0			GPD/AC	0	3,110,380	1.70	5,287,646	8.181
	MH61	MH62	0.0			GPD/AC	0	3,110,380	1.70	5,287,646	8.181
	MH62	MH63	708.0	CEMETERY	600	GPD/AC	424,800	3,535,180	1.70	6,009,806	9.299
	MH63	MH64	0.0			GPD/AC	0	3,535,180	1.70	6,009,806	9.299
	MH64	MH65	0.0			GPD/AC	0	3,535,180	1.70	6,009,806	9.299
	MH65	MH66	0.0			GPD/AC	0	3,535,180	1.70	6,009,806	9.299
	MH66	MH67	0.0			GPD/AC	0	3,535,180	1.70	6,009,806	9.299
	MH67	MH68	0.0			GPD/AC	0	3,535,180	1.70	6,009,806	9.299
	MH68	MH69	0.0			GPD/AC	0	3,535,180	1.70	6,009,806	9.299
	MH69	MH70	0.0			GPD/AC	0	3,535,180	1.70	6,009,806	9.299
	MH70	MH71	0.0			GPD/AC	0	3,535,180	1.70	6,009,806	9.299
WGF BASED ON 200 GPD/EDU AND 480DU FROM MASTER PLAN	MH71	MH72	157.0	RESIDENTIAL	611	GPD/AC	95,927				0.000
			364.0	PUBLIC FACILITY	1,000	GPD/AC	364,000	3,995,107	1.70	6,791,682	10.508
		TOTAL AREAS (AC)	3417.3								

<b>EXISTING 27<sup>th</sup> VCP SEWER WWRF</b>	MH72	MH20	0	FLows FROM MH 72						6,791,682	10.508	
			0	MARKHAM LIFT STATION (1,950 GPM)							9,599,682	14.853
			0	1269 LIFT STATION (870 GPM)								10,852,482

## Section 4 Reference Plans



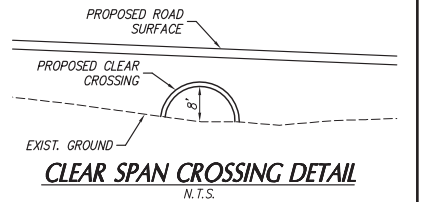
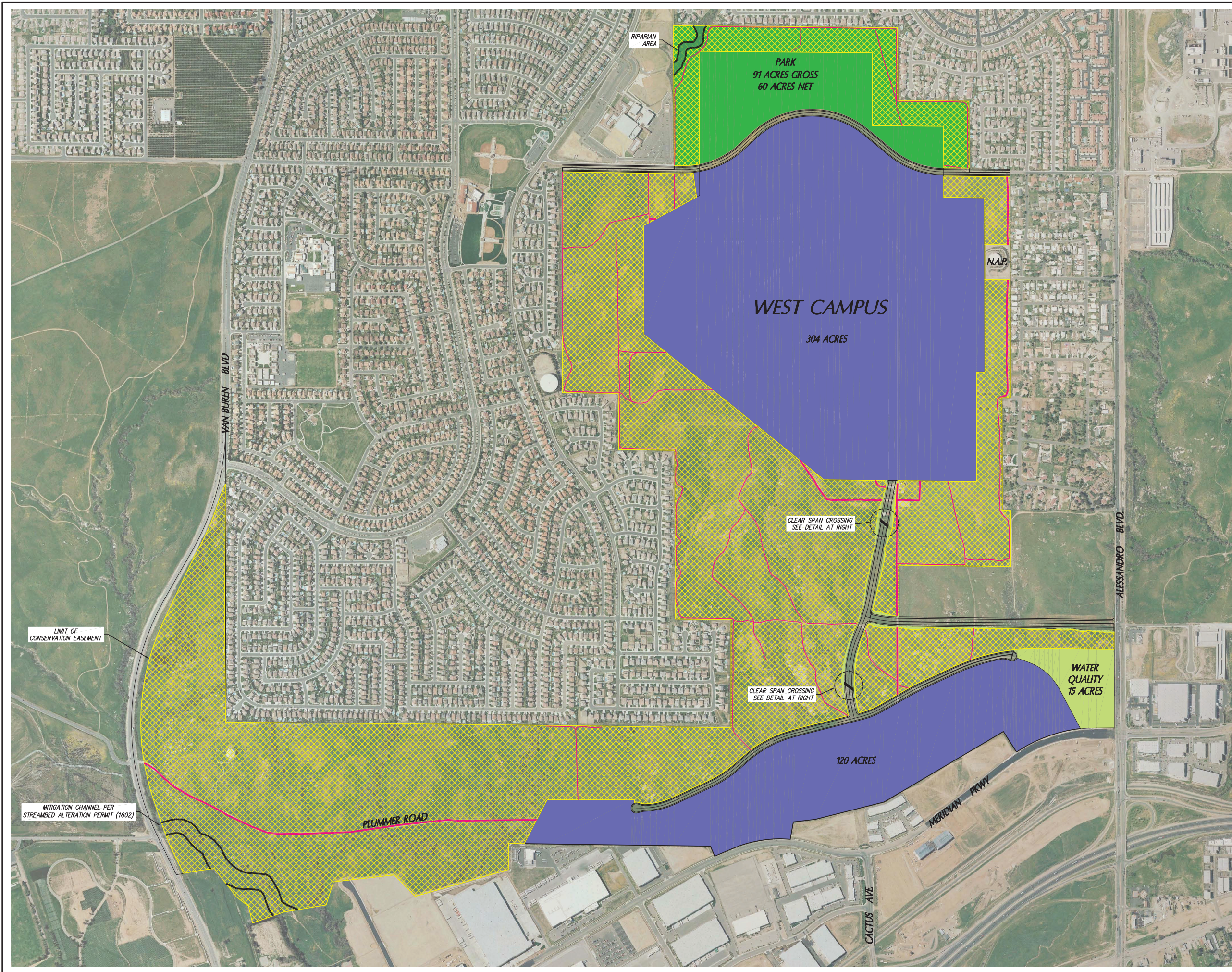




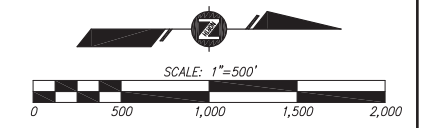
MERIDIAN WEST LOWER PLATEAU FINAL EIR (OCTOBER 2017)







- EXISTING ROADS, VEHICULAR ACCESS & PASSIVE RECREATIONAL TRAILS
- ▨ CONSERVATION EASEMENT 649 ACRES
- ▨ DEVELOPABLE AREA 424 ACRES
- ▨ PROPOSED PARK AREA 91 ACRES GROSS 60 ACRES NET
- ▨ WATER QUALITY OPEN SPACE AREA 15 ACRES



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**LNR - MERIDIAN  
 WEST CAMPUS  
 LAND USE  
 STUDY "B2"**

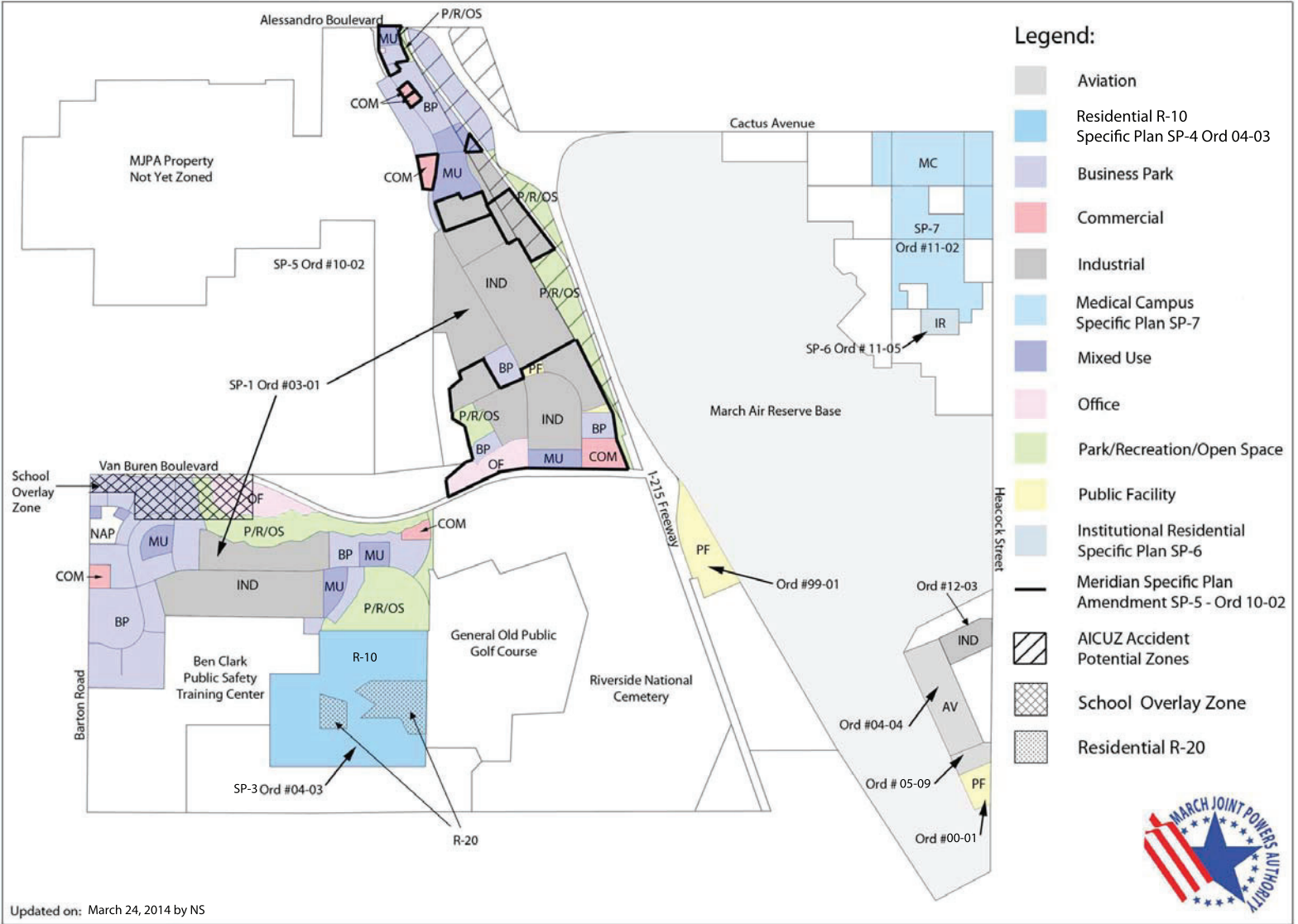






# Zoning Map

## March Joint Powers Authority



SFC WORKSHEET

ADDRESS

WYE MAP




PROPOSED

EXISTING

FACILITY	QUANTITY	per	UNITS	GPD	TOTAL SGF	Quantity	GPD	NET SGF
ADULT DAY CARE			PERSON					
APT- BACHELOR			Dwelling unit	80			80	
APT-1BD CONDO GUEST W/ KIT			Dwelling unit	120			120	
APT-2BD CONDO GUEST W/ KIT			Dwelling unit	160			160	
APT-3BD CONDO GUEST W/ KIT			Dwelling unit	200			200	
APT->3BD CONDO GUEST W/ KIT			add'l bd	40			40	
AUTO BODY/REPAIR		1000	gr.sf.	80			80	
BAR:JUICE NO BAKING		1000	gr.sf.	120			120	
BEAUTY PARLOR		1000	gr.sf.	280			280	
CARWASH (910 gpd estimate)		100	gpd					
CHURCH/COMMUNITY CTR			seat	4			4	
COFFEE HOUSE:NO BAKING		1000	gr.sf.	120			120	
CONVALESCENT			Bd	75			75	
DAY CARE			Child	8			8	
DENTAL OFFICE		1000	gr.sf.	250			250	
DOUGHNUT SHOP/ BAKERY		1000	gr.sf.	280			280	
DUPLEX- 1 BD			Dwelling unit	130			130	
DUPLEX- 2 BD			Dwelling unit	180			180	
DUPLEX- 3 BD			Dwelling unit	230			230	
GAS STATION: FOUR BAYS MAX			station	430			430	
GYM:BASKETBALL,VOLLEYBALL		1000	gr.sf.	250			250	
HEALTH CLUB SPA		1000	gr.sf.	800			800	
HOSPITAL			Bd	75			75	
HOTEL:GUEST ROOMS			Room	130			130	
ICE CREAM YOGURT STORE		1000	gr.sf.	80			80	
LAUNDROMAT			machine	170			170	
MANUFACTURING/IND. FACILITY		1000	gr.sf.	80			80	
MEDICALOFFICE/CLINIC		1000	gr.sf.	250			250	
MINI-MALL		1000	gr.sf.	80			80	
OFFICE BLDG		1000	gr.sf.	150			150	
RETAIL		1000	gr.sf.	80			80	
RESTAURANT FASTFOOD INDR			seat	20			20	
RESTAURANT FASTFOOD OUTDR			seat	12			12	
RESTAURANT FULL SERV INDR			seat	30			30	
RESTAURANT FULL SERV OUTDR			seat	18			18	
RESTAURANT TAKE-OUT		1000	gr.sf.	300			300	
SFD RM BD ADD/ CONVERT			add'l bd	50			50	
SFD, TOWNHOUSE- 1 BD			Dwelling unit	130			130	
SFD, TOWNHSE- 2 BD			Dwelling unit	180			180	
SFD, TOWNHOUSE- 3 BD			Dwelling unit	230			230	
SFD, TOWNHOUSE- > 3 BD			add'l bd	50			50	
SFD GUEST HOME W/O KITCHEN			Bd	50			50	
WAREHOUSE		1000	gr.sf.	20			20	
SCHOOL, HIGH SCHOOL			Student	12				

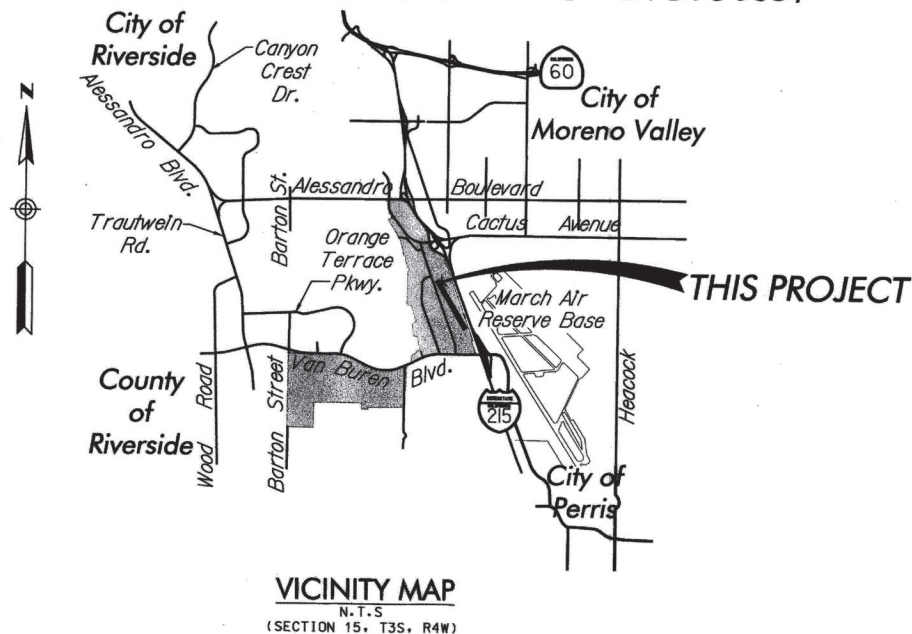
SGF(GPD)

EXISTG

NET SGF (GPD)



# WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY CALIFORNIA-UNIT 1 OFFSITE TRUNK SEWER PLANS MARCH BUSINESS CENTER-TRACT NO. 30857



**VICINITY MAP**  
N.T.S.  
(SECTION 15, T3S, R4W)

**GENERAL NOTES:**

1. SEWER SYSTEM IMPROVEMENTS SHALL BE CONSTRUCTED BY THE DEVELOPER FOR DEDICATION TO WESTERN MUNICIPAL WATER DISTRICT. CONSTRUCTION, MATERIALS, TESTING AND INSPECTION SHALL COMPLY WITH WESTERN MUNICIPAL WATER DISTRICT'S STANDARDS. THE INSTALLATION SHALL MEET OR EXCEED THE REQUIREMENTS OF ALL PUBLIC AGENCIES HAVING JURISDICTION AND THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION ('GREEN BOOK'), AND THE AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS. FAILURE TO MEET THESE REQUIREMENTS WILL BE CAUSE FOR REJECTION. SEWER PIPE 18" AND LARGER SHALL BE EXTRA STRENGTH VITRIFIED CLAY PIPE (VCP) UNLESS OTHERWISE NOTED. SEWER PIPE 15" AND SMALLER SHALL BE PVC (SDR-35) UNLESS OTHERWISE NOTED.
2. CONSTRUCTION OF THE SEWER SYSTEM IMPROVEMENTS SHALL NOT COMMENCE UNTIL A FINAL MAP HAS BEEN RECORDED BY RIVERSIDE COUNTY AND THE DEVELOPER'S ENGINEER HAS CERTIFIED THAT ALL STREETS ARE CONSTRUCTED TO FINAL GRADE.
3. CONTRACTOR SHALL PROVIDE TRENCH PROTECTION AND CONDUCT ALL CONSTRUCTION IN ACCORDANCE WITH CAL-OSHA REQUIREMENTS AND SHALL DETERMINE DEPTH AND LOCATION OF EXISTING UNDERGROUND FACILITIES PRIOR TO TRENCHING. OPEN TRENCH AT ANY ONE TIME SHALL BE LIMITED TO 500' ALONG ROAD RIGHT-OF-WAY AND SHALL BE BACKFILLED AND COMPACTED AT THE CONCLUSION OF EACH DAY. (CONTACT UNDERGROUND SERVICE ALERT 1-800-227-2600 PRIOR TO EXCAVATION.)
4. PIPE SHALL BE HANDLED SO AS TO PROTECT PIPE AT ALL TIMES AND SHALL BE CAREFULLY BEDDED TO PROVIDE CONTINUOUS BEARING AND TO PREVENT UNEVEN SETTLEMENT. PIPE SHALL BE PROTECTED AGAINST FLOATATION AT ALL TIMES. OPEN ENDS OF INSTALLED SEWER PIPE SHALL BE SEALED AT ALL TIMES WHEN CONSTRUCTION IS NOT IN PROGRESS.
5. PIPE JOINTS SHALL NOT BE DEFLECTED AT ANY ANGLE GREATER THAN THE MAXIMUM ANGLE RECOMMENDED BY THE PIPE MANUFACTURER.
6. CONNECTIONS TO EXISTING WESTERN SEWER PIPELINES SHALL NOT BE ACCOMPLISHED UNLESS WESTERN MUNICIPAL WATER DISTRICT'S INSPECTOR IS PRESENT. WESTERN MAY ELECT TO MAKE THE CONNECTION AT THE DEVELOPER'S EXPENSE. CONTRACTOR SHALL FIELD VERIFY BOTH HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING SEWER PIPELINES PRIOR TO CONSTRUCTION.
7. BACKFILL SHALL BE COMPACTED TO EITHER 90% RELATIVE DENSITY, EQUIVALENT TO THE SURROUNDING GROUND, OR IN ACCORDANCE WITH THE REQUIREMENTS OF THE AGENCY HAVING JURISDICTION, WHICHEVER IS MORE STRINGENT.
8. SEWER LATERALS SHALL BE 4" P.V.C. UNLESS OTHERWISE INDICATED. EXACT LOCATIONS OF WYES AND LATERALS SHALL BE ESTABLISHED IN THE FIELD PRIOR TO INSTALLATION. AN "S" SHALL BE IMPRINTED ON THE CURB FACE AT EACH SERVICE LATERAL LOCATION AND A STEEL ROD OR STAKE SHALL BE INSTALLED AT THE END OF EACH SEWER LATERAL TO ASSIST IN LOCATING AT A LATER DATE.
9. UNLESS WAIVED BY WESTERN MUNICIPAL WATER DISTRICT, 2" WIDE METALLIC LOCATOR TAPE SHALL BE PLACED WITH EACH SEWER AND SERVICE LATERAL TO ASSIST WITH FUTURE LOCATION. TAPE SHALL BE PLACED AT LEAST 6" ABOVE THE PIPE BUT NOT DEEPER THAN 4" FROM THE PROPOSED FINISHED GRADE.
10. ALL SEWERS SHALL BE BALLED, AIR TESTED AND VIDEO INSPECTED PRIOR TO ACCEPTANCE BY WESTERN.
11. SURFACE IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE RECONSTRUCTED BY THE CONTRACTOR TO THE REQUIREMENTS OF THE AGENCY (CITY OR COUNTY) HAVING JURISDICTION.
12. THE DEVELOPER SHALL PROVIDE ONE SET OF PRINTS SHOWING ALL 'AS-BUILT' CONDITIONS INCLUDING THE STATIONING OF SEWER LATERAL CONNECTIONS AND PAD ELEVATIONS, AS A CONDITION OF FINAL APPROVAL.
13. ANY REVISIONS TO THESE DRAWINGS MUST BE APPROVED IN WRITING BY WESTERN.
14. THE DEVELOPER SHALL INSTALL BACKWATER VALVES, WHERE REQUIRED, PER THE 1997 EDITION OF THE UNIFORM PLUMBING CODE (CHAPTER 7, SECTION 710.0), AND PER WESTERN'S STANDARDS.
15. THE CONTRACTOR IS ADVISED THAT THE WORK ON THIS PROJECT MAY INVOLVE WORKING IN A CONFINED AIR SPACE. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH "CONFINED AIR SPACE" ARTICLE 108, TITLE 8 CALIFORNIA ADMINISTRATIVE CODE.
16. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL POTHOLE ALL UTILITY CROSSINGS AND CONNECTIONS AND VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES AFFECTED. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BEFORE CONSTRUCTION BEGINS.
17. PRIOR TO CONSTRUCTING SEWERS, CONTRACTOR SHALL CONSTRUCT STREETS 7- FEET (MINIMUM) ABOVE PROPOSED SEWER FLOWLINE ELEVATIONS. THEREAFTER, CONTRACTOR SHALL CONSTRUCT SEWERS IN A TRENCH CONDITION.
18. CONTRACTOR SHALL WARRANT ALL WORK FOR 12 MONTHS AFTER DATE OF FINAL INSPECTION.

**EXISTING UNDERGROUND STRUCTURES:**

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPE STRUCTURES OR CONDUITS SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THESE PLANS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OWNERS OF THE UTILITIES OR STRUCTURES CONCERNED BEFORE STARTING WORK. CONTRACTOR FURTHER ASSUMES ALL LIABILITY AND RESPONSIBILITY FOR THE UNDERGROUND UTILITY PIPES, CONDUITS OR STRUCTURES SHOWN OR NOT SHOWN ON THESE PLANS.

**NOTICE TO CONTRACTORS:**

CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND SHALL REPORT ALL DISCREPANCIES TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.

**QUANTITY DISCLAIMER:**

QUANTITIES SHOWN HEREON ARE PROVIDED FOR BONDING PURPOSES ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES PRIOR TO CONSTRUCTION.

**BASIS OF BEARINGS AND COORDINATES NOTE:**

THE BASIS OF BEARINGS SHOWN HEREON FOR THIS PLAN IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, C.C.S. 83, ZONE 6. BASED LOCALLY ON GPS CONTROL RCFC D STATIONS AS SHOWN ON RECORD OF SURVEY MAP RS110/30.

**WORK TO BE DONE:**

THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE ACCORDING TO THESE PLANS AND THE FOLLOWING SPECIFICATIONS AND STANDARD DRAWINGS:

1. STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (2003 EDITION).
2. CALIFORNIA DEPARTMENT OF TRANSPORTATION 'MANUAL OF TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE WORK ZONE', (1996 ED.)
3. STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS (JULY 2002).
4. STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, STANDARD PLAN (JULY 2004)
5. WESTERN MUNICIPAL WATER DISTRICT (WMWD) 'DEVELOPER HANDBOOK & STANDARD DRAWINGS FOR WATER & SEWER FACILITIES', 2002.

**LEGEND:**



**NOTE:**

ALL SEWER LATERAL STATIONING IS BASED ON SEWER LINE STATIONING.

**NOTE:**

THE DESIGN AND CONSTRUCTABILITY OF THE PROJECT AS WELL AS THE ACCURACY OF FIGURES ARE THE RESPONSIBILITY OF THE DESIGN ENGINEER. PLAN CHECK SERVICES BY W.M.W.D. WILL BE LIMITED TO THE ADHERENCE TO THE DISTRICT STANDARDS, MATERIALS, QUANTITIES AND SIZE OF FACILITIES, AS THEY RELATE TO THE SERVICE DISCHARGE OR APPROVED MASTER PLAN.

**CONSTRUCTION NOTES**

		QTY.	UNIT
①	CONSTRUCT 18" EXTRA STRENGTH VCP SEWER MAIN AND PIPE BEDDING PER WMWD STD. DWG. NOS. W-1010 & W-1030	2854	LF
②	CONSTRUCT 24" EXTRA STRENGTH VCP SEWER MAIN AND PIPE BEDDING PER WMWD STD. DWG. NOS. W-1010 & W-1030	2416	EA
* ③	CONSTRUCT 60" I.D. PRECAST CONCRETE MANHOLE PER WMWD STD. DWG. NO. W-1130 MANHOLES TO HAVE FALSE BOTTOMS PER WMWD SPECIFICATIONS.	14	EA
④	CONSTRUCT 8" PVC SEWER LATERAL PER WMWD STD. DWG. NOS. W-1050 AND W-1090	12	EA
⑤	FOR STORM DRAIN PLAN & PROFILE, SEE RCFC/JPA DRAWINGS.		
⑥	FOR UNIT 1 SEWER PLAN & PROFILE SEE WMWD UNIT 1 SEWER PLANS		
⑦	FOR UNIT 1 EAST DETENTION BASIN GRADING SEE UNIT 1 M/JPA GRADING PLANS		
⑧	CONSTRUCT 32" STEEL CASING PER WMWD SPECIFICATIONS 6.07.09. SEE DETAIL C SHEET 6	25	LF
⑨	CONSTRUCT 15" PVC (SDR-35) PER WMWD SPECIFICATIONS.	19	LF

\* FOR MANHOLES 33 TO 43:  
MANHOLE COVER AND FRAME SHALL BE PLACED DIRECTLY ON ECCENTRIC CONE. CONE SHALL BE EXTENDED TO RIM ELEVATION AS NOTED ON PLANS. GRADE RINGS SHALL NOT BE USED.

**INDEX OF SHEETS**

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	INDEX SHEET & DETAIL SHEET
3	TRUNK SEWER STA 350+00 TO STA 358+00
4	TRUNK SEWER STA 358+00 TO STA 366+00
5	TRUNK SEWER STA 366+00 TO STA 374+00
6	TRUNK SEWER STA 374+00 TO STA 382+00
7	TRUNK SEWER STA 382+00 TO STA 390+00
8	TRUNK SEWER STA 390+00 TO STA 398+00
9	TRUNK SEWER STA 398+00 TO STA 403+25.25

**March Joint Powers Authority**

REVIEWED BY: *[Signature]* DATE: 2/2/05  
MARCH J.P.A. HABIL M/FLAHL DIRECTOR OF PUBLIC WORKS REVIEWED SHTS. 1-9 \*FOR REFERENCE ONLY



**Kimley-Horn and Associates, Inc.**  
Engineering, Planning and Environmental Consultants  
517 Fourth Avenue - Suite 301 - San Diego, Ca. - 92101  
Tel: (619) 234-9411 Fax: (619) 234-9433  
PREPARED BY: *[Signature]* DATE: 6/13/05  
TIMOTHY J. DEWITT R.C.E. 46579

**SEWER CERTIFICATION BLOCK**  
I certify that the design of the Sewer System in Tract No. 30857 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.  
APPROVED BY: *[Signature]* DATE: 6/13/05  
CIVIL ENGINEER R.C.E. 46812

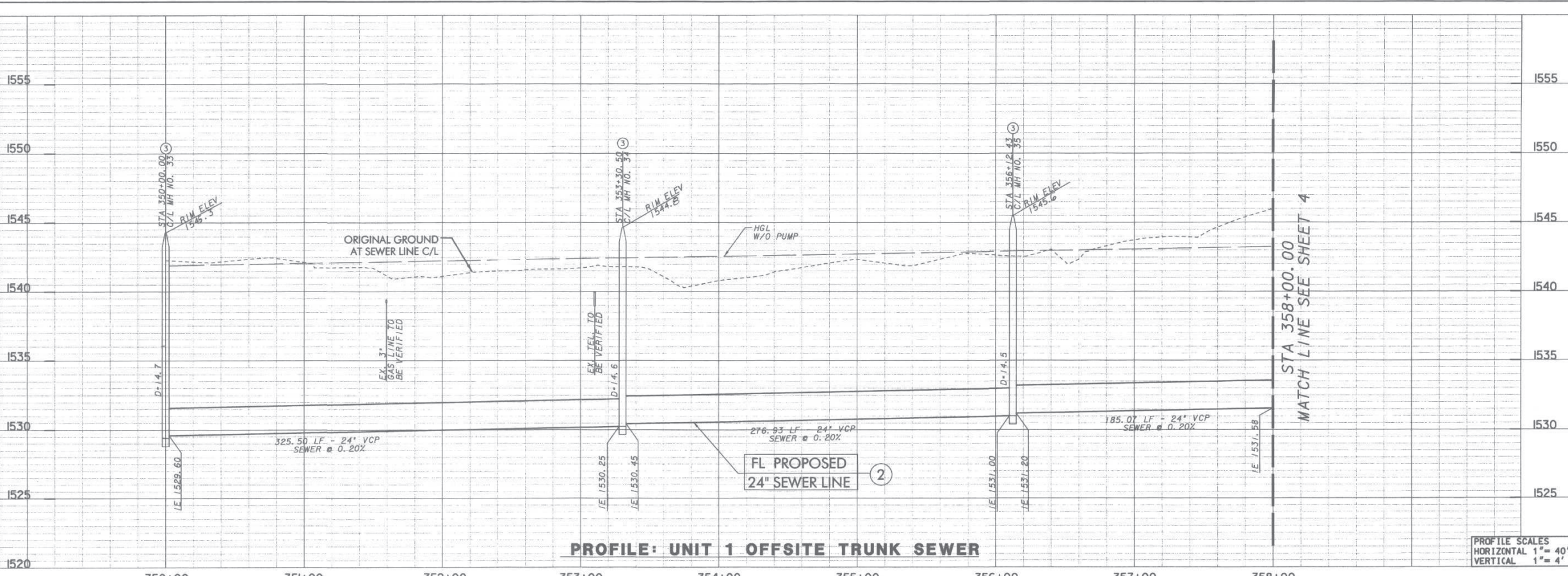
NO.	REVISIONS	DATE
1	AS-BUILT PLANS	6/07
2	THIENES ENG. REVISED SHEET 9	6/12

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*[Signature]* DATE: 6/29/05  
VOID AFTER ONE YEAR FROM THIS DATE  
BENCH MARK:  
NAIL W/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. Z7981 RCFC D NGVD 29. ELEVATION= 1568.64

**WESTERN MUNICIPAL WATER DISTRICT**  
P.O. BOX 5286  
RIVERSIDE, CA. 92517-5286  
450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508  
(909) 799-5000 (BUS) (909) 790-9837 (FAX)

**MARCH BUSINESS CENTER TRACT NO. 30857-UNIT 1**  
**UNIT 1-OFFSITE TRUNK SEWER PLANS**  
**TITLE SHEET**  
SHEET NO. 1 OF 9 SHTS  
DWG. NO. 1 F14  
SCALE: HORIZ: 1" = 40' VERT: 1" = 4'





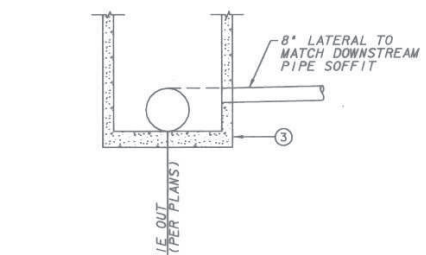
PROFILE: UNIT 1 OFFSITE TRUNK SEWER

PROFILE SCALES  
HORIZONTAL 1" = 40'  
VERTICAL 1" = 4'

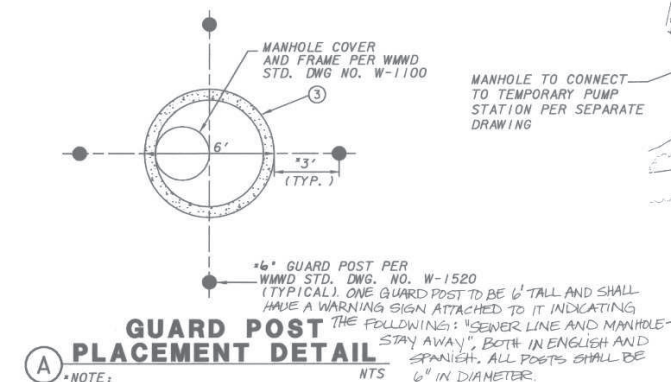
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1	N8°25'10"W		325.50'	24" VCP
2	N8°25'10"W		276.93'	24" VCP
3	N21°21'16"W		185.07'	24" VCP

CONSTRUCTION NOTES

- 2) CONSTRUCT EXTRA STRENGTH 24" VCP SEWER MAIN AND PIPE BEDDING PER MWWD STD. DWG. NOS. W-1010 & W-030.
- 3) CONSTRUCT 60" I.D. PRECAST CONCRETE MANHOLE PER MWWD STD. DWG. NO. W-1130
- 4) CONSTRUCT 8" PVC SEWER LATERAL PER STD. DWG. NOS. W-1050 & W-1090



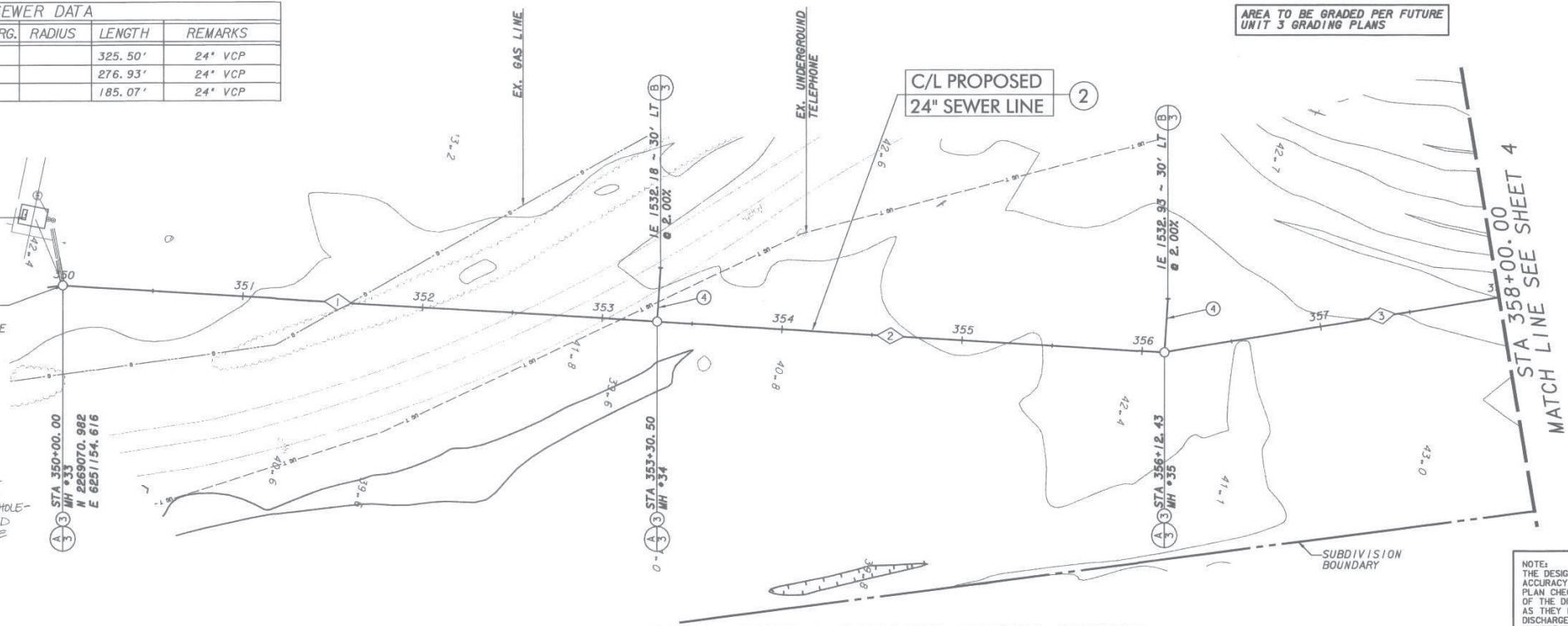
B LATERAL TO MH CONNECTION DETAIL  
(TYPICAL ALL LATERALS) NTS



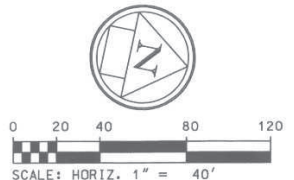
A GUARD POST PLACEMENT DETAIL  
NTS

\*NOTE:  
TO BE LOCATED AS DIRECTED BY WESTERN INSPECTOR

CAUTION!!  
LOCATION OF EXISTING UTILITIES ON THESE PLANS ARE APPROXIMATE AND SHALL BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION.



PLAN: UNIT 1 OFFSITE TRUNK SEWER



NOTE:  
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Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600  
FOR THE LOCATION OF BURIED UTILITY LINES. DON'T DISRUPT VITAL SERVICES.  
TWO WORKING DAYS BEFORE YOU DIG

**Kimley-Horn and Associates, Inc.**  
Engineering, Planning and Environmental Consultants  
517 Fourth Avenue - Suite 301 - San Diego, Ca. - 92101  
Tel: (619) 234-9400 Fax: (619) 234-9433

PREPARED BY:  
*[Signature]* 6/13/05  
TIMOTHY J. DEWITT R.C.E. 46579 DATE

MARK	REVISIONS	APPR.	DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*[Signature]* 6/29/05  
CIVIL ENGINEER R.C.E. 46812 DATE  
VOID AFTER ONE YEAR FROM THIS DATE

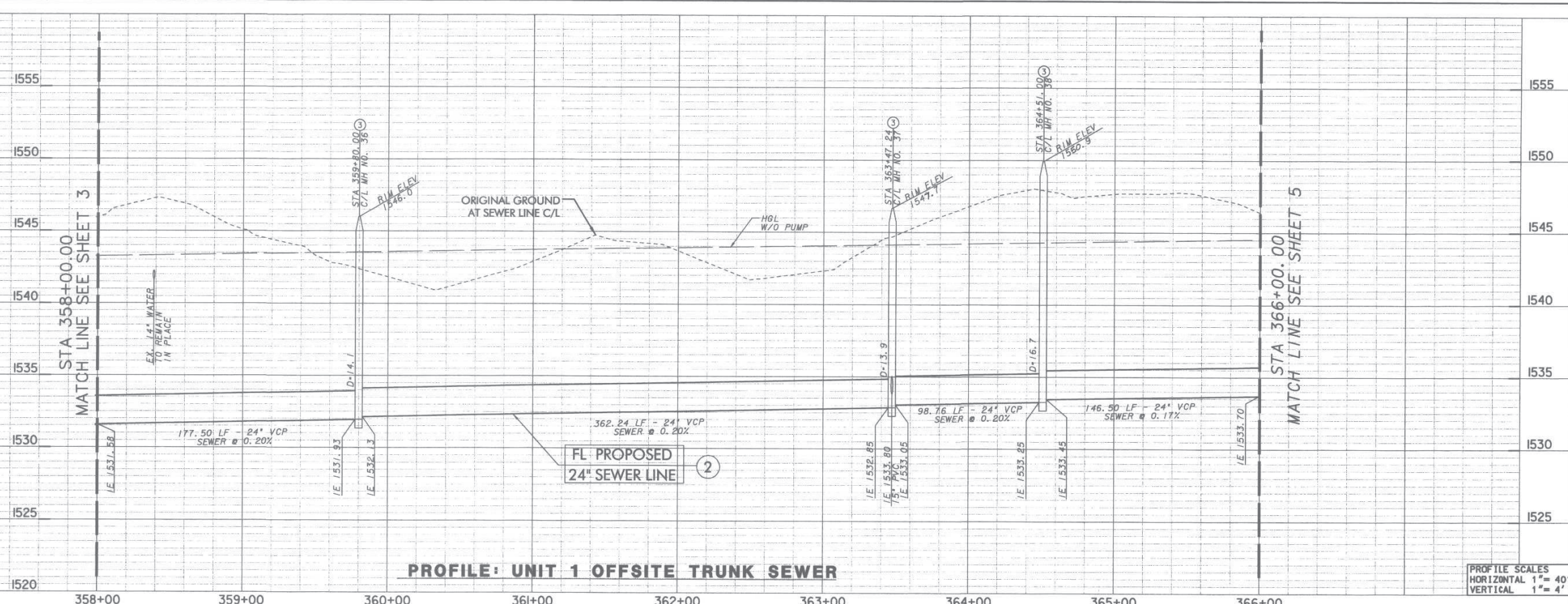
BENCH MARK:  
NAIL w/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. 27981 RCFC  
NGVD 29. ELEVATION = 1568.64

WESTERN MUNICIPAL WATER DISTRICT  
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RIVERSIDE, CA. 92517-5286  
450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508  
(909) 789-6000 (BUS) (909) 780-3837 (FAX) Rev: 2/28/00

MARCH BUSINESS CENTER TRACT NO. 30857-UNIT 1  
UNIT 1-OFFSITE TRUNK SEWER PLANS  
STA 350+00.00-STA 358+00.00  
PLAN AND PROFILE  
SCALE: HORIZ: 1" = 40' VERT: 1" = 4'

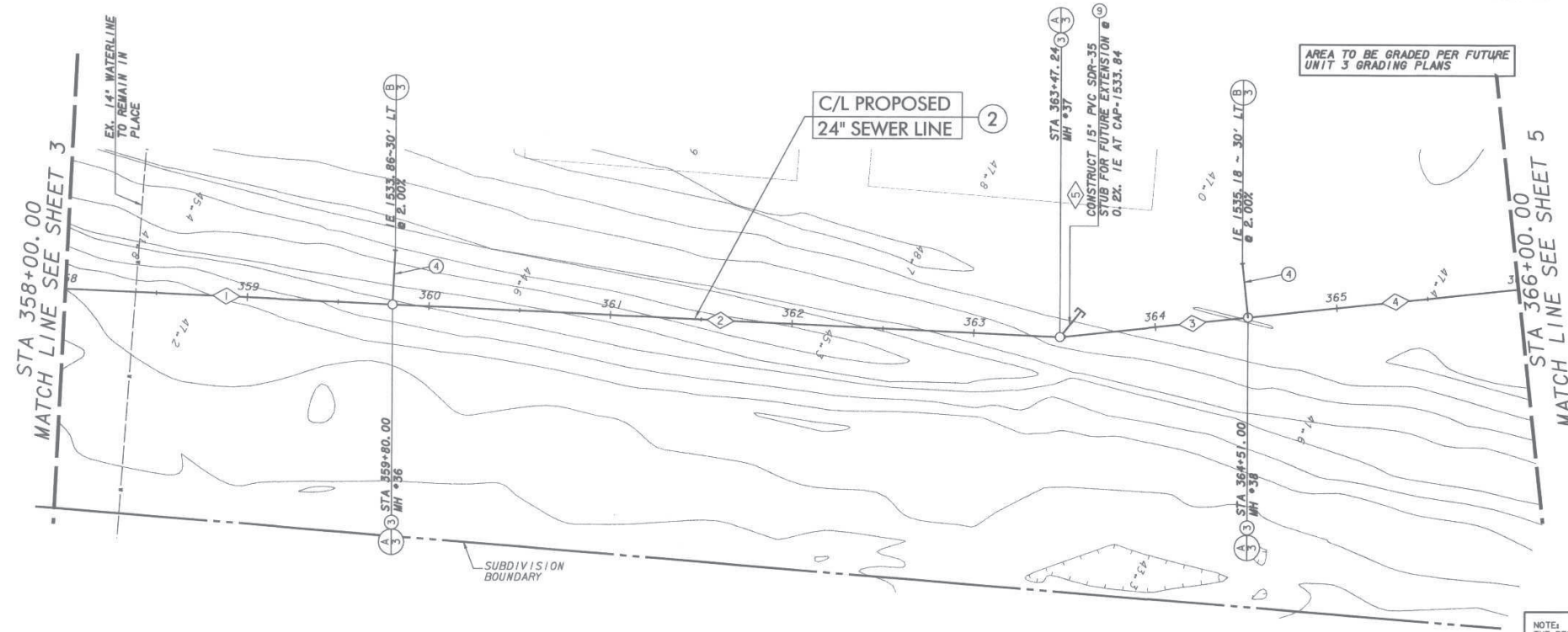
SHEET NO. 3 OF 9 SHTS  
DWC. NO. 1



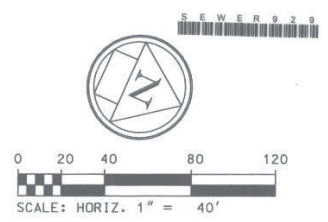


PROFILE SCALES  
HORIZONTAL 1" = 40'  
VERTICAL 1" = 4'

SEWER DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N21°21'16"W		177.50'	24" VCP
2	N21°21'16"W		362.24'	24" VCP
3	N30°07'48"W		98.76'	24" VCP
4	N30°07'48"W		146.50'	24" VCP
5	N75°07'48"W		18.71'	15" PVC (SDR-35)



- CONSTRUCTION NOTES**
- ② CONSTRUCT EXTRA STRENGTH 24" VCP SEWER MAIN AND PIPE BEDDING PER WMMD STD. DWGS. NOS. W-1010 & W-1030.
  - ③ CONSTRUCT 60" I.D. PRECAST CONCRETE MANHOLE PER WMMD STD. DWG. NO. W-1130
  - ④ CONSTRUCT 8" PVC SEWER LATERAL PER STD. DWG. NOS. W-1050 & W-1090
  - ⑤ CONSTRUCT 15" PVC (SDR-35) PER WMMD SPECIFICATIONS.



NOTE:  
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**PLAN: UNIT 1 OFFSITE TRUNK SEWER**

MARK	REVISIONS	APPR.	DATE

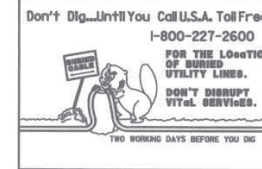
APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*[Signature]* 6/29/05  
DATE  
CIVIL ENGINEER R.C.E. 46812  
VOID AFTER ONE YEAR FROM THIS DATE  
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NAIL w/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. 27981 RCFCD NGVD 29. ELEVATION= 1568.64

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MARCH BUSINESS CENTER  
TRACT NO. 30857-UNIT 1  
UNIT 1-OFFSITE TRUNK SEWER PLANS  
STA 358+00.00-STA 366+00.00  
PLAN AND PROFILE  
SCALE: HORIZ: 1" = 40' VERT: 1" = 4'

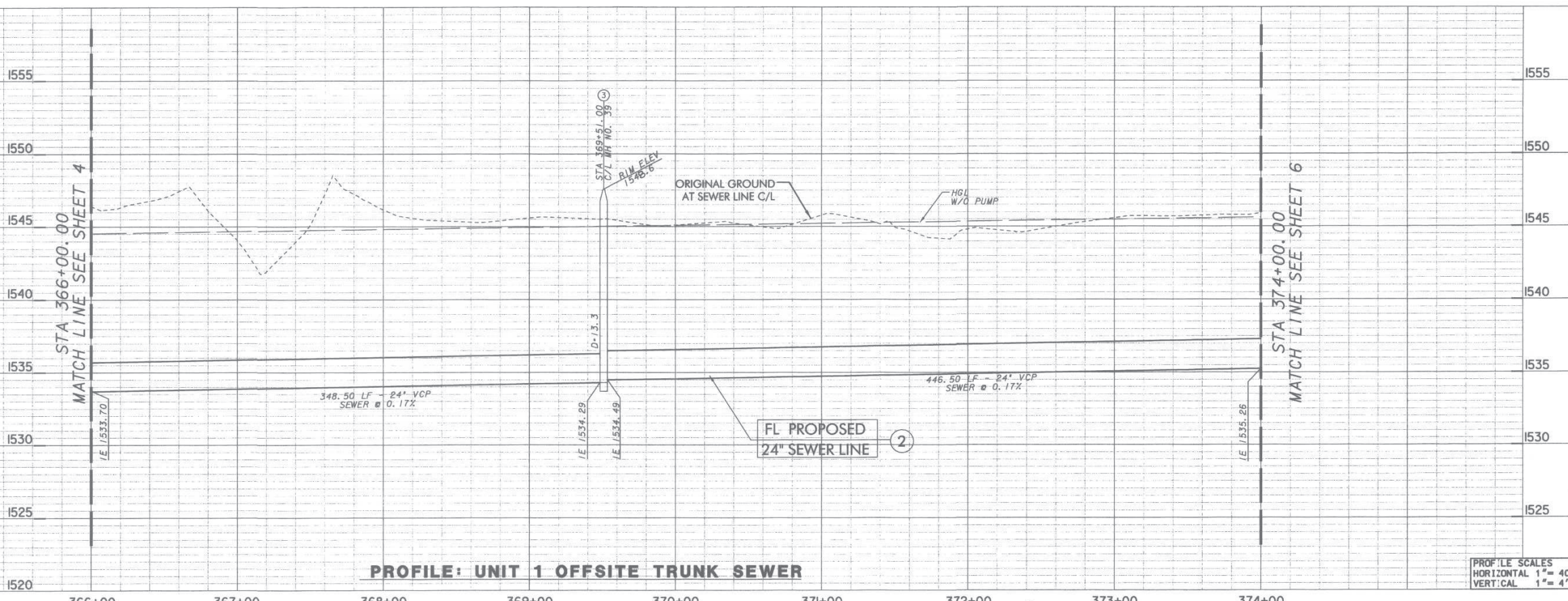
SHEET NO.  
4  
OF 9 SHTS  
DWG. NO.:

**CAUTION!!**  
LOCATION OF EXISTING UTILITIES ON THESE PLANS ARE APPROXIMATE AND SHALL BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION.

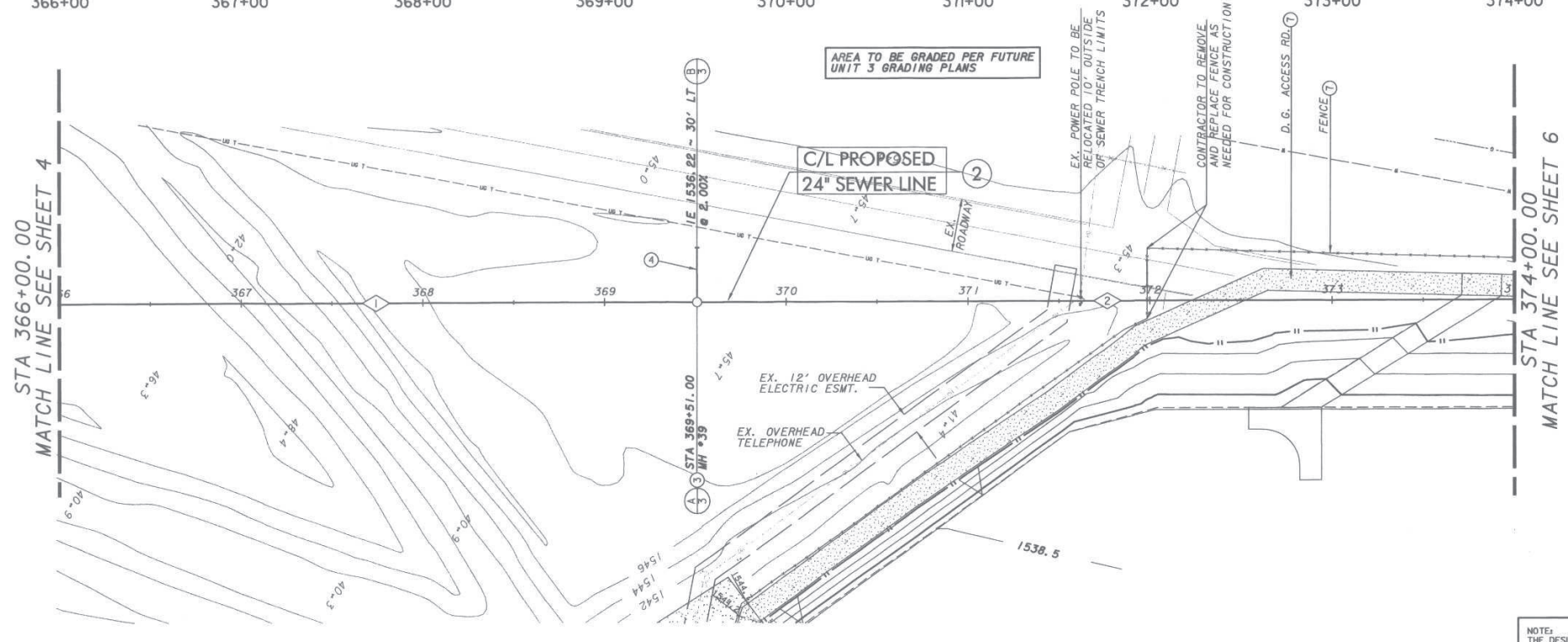


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PREPARED BY:  
*[Signature]* 6/13/05  
TIMOTHY J. DEWITT R.C.E. 46579 DATE

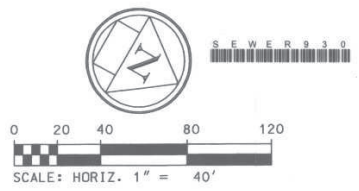




SEWER DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N30°07'48"W		348.50'	24" VCP
2	N30°07'48"W		446.50'	24" VCP



- CONSTRUCTION NOTES**
- ② CONSTRUCT EXTRA STRENGTH 24" VCP SEWER MAIN AND PIPE BEDDING PER WWD STD. DWG. NOS. W-1010 & W-1030.
  - ③ CONSTRUCT 60" I.D. PRECAST CONCRETE MANHOLE PER WWD STD. DWG. NO. W-1130
  - ④ CONSTRUCT 8" PVC SEWER LATERAL PER STD. DWG. NOS. W-1050 & W-1090
  - ⑦ FOR UNIT 1 EAST DETENTION BASIN GRADING SEE UNIT 1 MJPA GRADING PLANS



**CAUTION!!**  
LOCATION OF EXISTING UTILITIES ON THESE PLANS ARE APPROXIMATE AND SHALL BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION.



**Kimley-Horn and Associates, Inc.**  
Engineering, Planning and Environmental Consultants  
517 Fourth Avenue - Suite 301 - San Diego, Ca. - 92101  
Tel: (619) 234-9481 Fax: (619) 234-9433

PREPARED BY:  
*J. Dewitt* 6/13/05  
J. DEWITT R.C.E. 46579 DATE

MARK	REVISIONS	APPR.	DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*J. Dewitt* 6/29/05  
CIVIL ENGINEER R.C.E. 46212 DATE  
VOID AFTER ONE YEAR FROM THIS DATE

BENCH MARK:  
NAIL w/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. Z7981 RCFCD NGVD 29. ELEVATION= 1568.64

WESTERN MUNICIPAL WATER DISTRICT  
P.O. BOX 5286  
RIVERSIDE, CA. 92517-5286  
450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508  
(909) 789-8000 (BUS) (909) 780-3837 (FAX)

MARCH BUSINESS CENTER  
TRACT NO. 30857-UNIT 1

UNIT 1-OFFSITE TRUNK SEWER PLANS  
STA 366+00.00-STA 374+00.00  
PLAN AND PROFILE

SCALE: HORIZ: 1" = 40' VERT: 1" = 4'

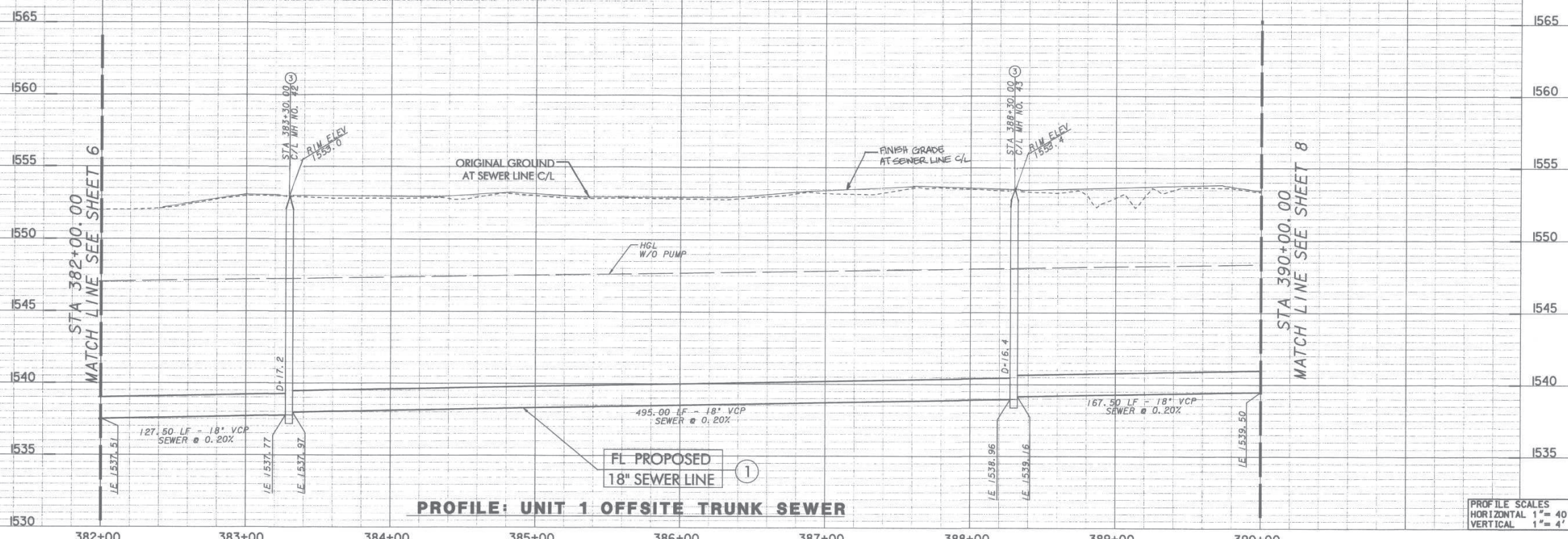
SHEET NO. 5 OF 9 SHTS  
DWG. NO. 2





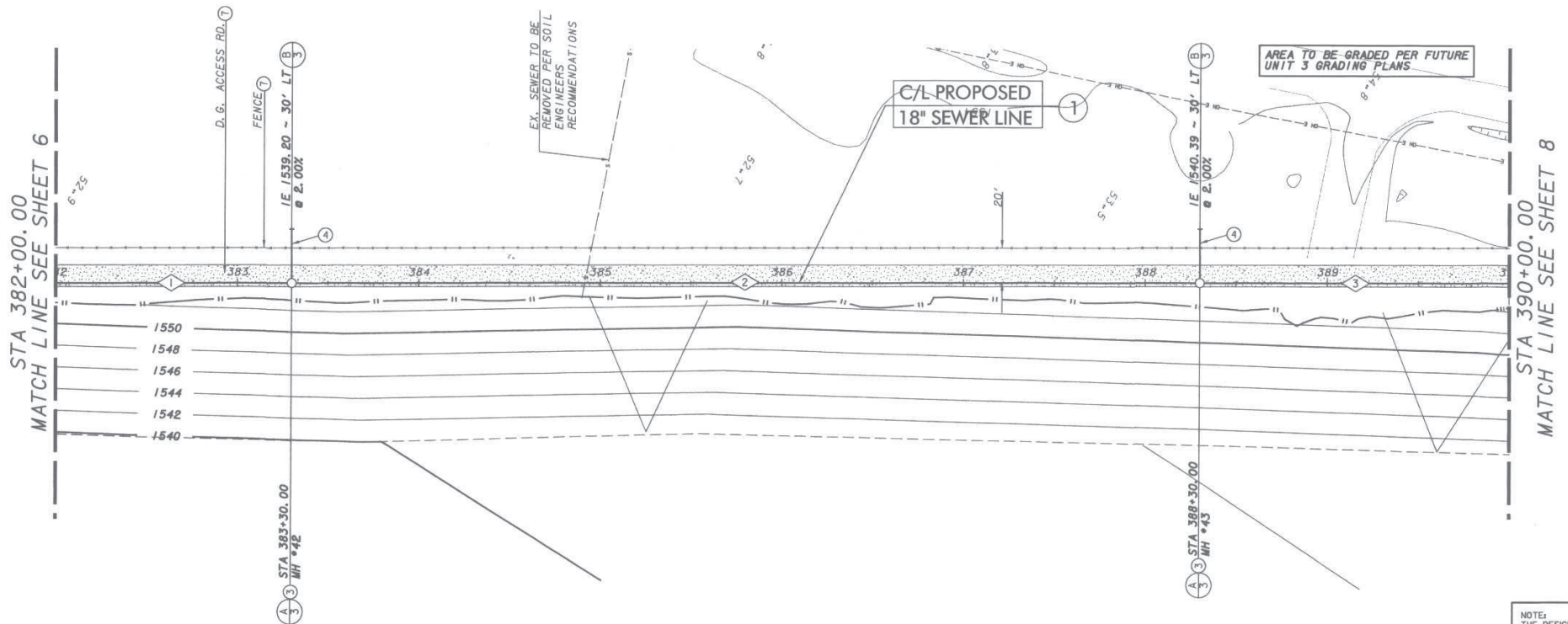


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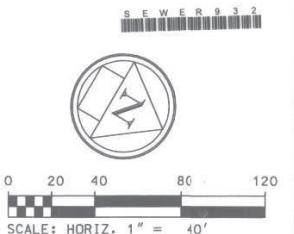


PROFILE SCALES  
HORIZONTAL 1" = 40'  
VERTICAL 1" = 4'

SEWER DATA			
NO.	DELTA OR BRG.	RADIUS	REMARKS
1	N30°07'48"W		127.50' 18" VCP
2	N30°07'48"W		495.00' 18" VCP
3	N30°07'48"W		167.50' 18" VCP

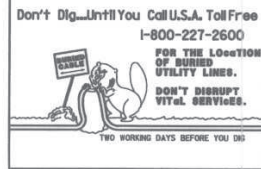


- CONSTRUCTION NOTES**
1. CONSTRUCT EXTRA STRENGTH 18" VCP SEWER MAIN AND PIPE BEDDING PER W.M.W.D. STD. DWG. NOS. W-1010 & W-1030.
  2. CONSTRUCT 60" I.D. PRECAST CONCRETE MANHOLE PER W.M.W.D. STD. DWG. NO. W-1130.
  3. CONSTRUCT 8" PVC SEWER LATERAL PER STD. DWG. NOS. W-1050 & W-1090.
  4. FOR UNIT 1 EAST DETENTION BASIN GRADING SEE UNIT 1 M/JPA GRADING PLANS.



**PLAN: UNIT 1 OFFSITE TRUNK SEWER**

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Tel: (619) 234-9411 Fax: (619) 234-9433

PREPARED BY:  
*J. Dewitt* 6/13/05  
DATE

MARK	REVISIONS	APPR.	DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*[Signature]* 6/29/05  
DATE  
CIVIL ENGINEER R.C.E. 46212  
VOID AFTER ONE YEAR FROM THIS DATE

BENCH MARK:  
NAIL W/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. 27981 RCFCD NGVD 29. ELEVATION= 1568.64

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MARCH BUSINESS CENTER  
TRACT NO. 30857-UNIT 1

UNIT 1-OFFSITE TRUNK SEWER PLANS  
STA 382+00.00-STA 390+00.00  
PLAN AND PROFILE

SCALE: HORIZ: 1" = 40' VERT: 1" = 4'

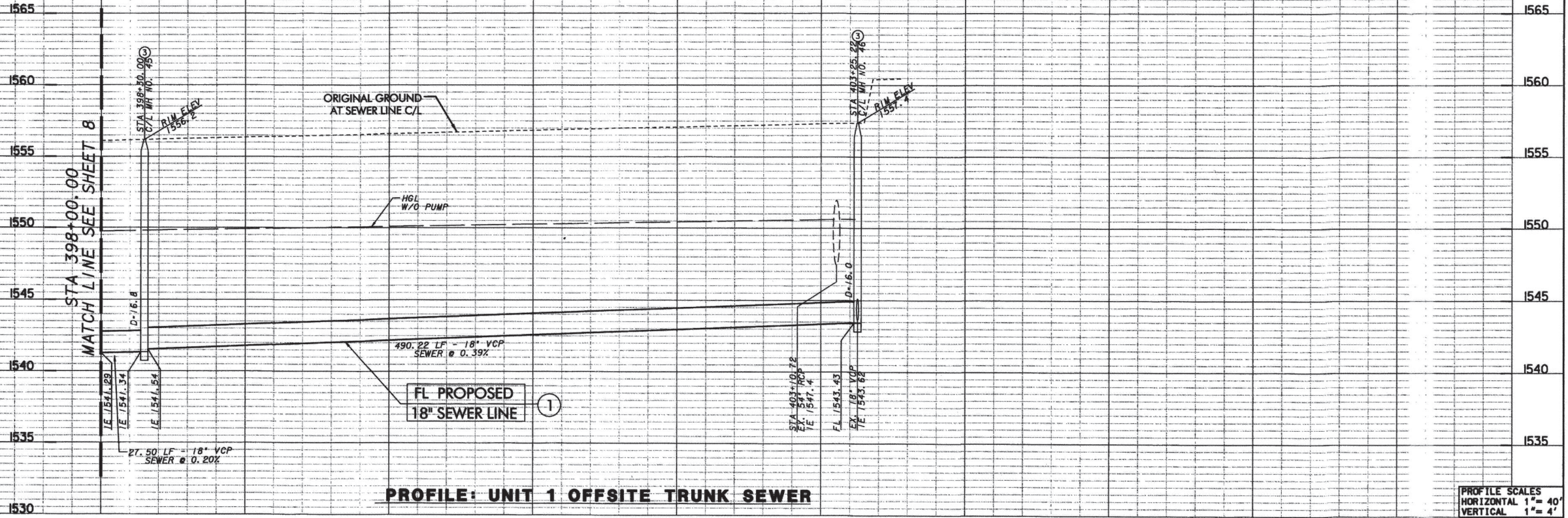
SHEET NO. 7 OF 9 SHTS  
DWG. NO.:

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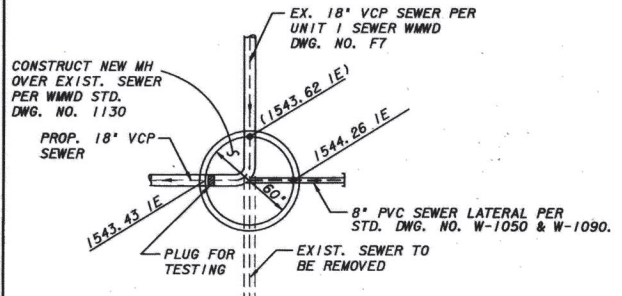






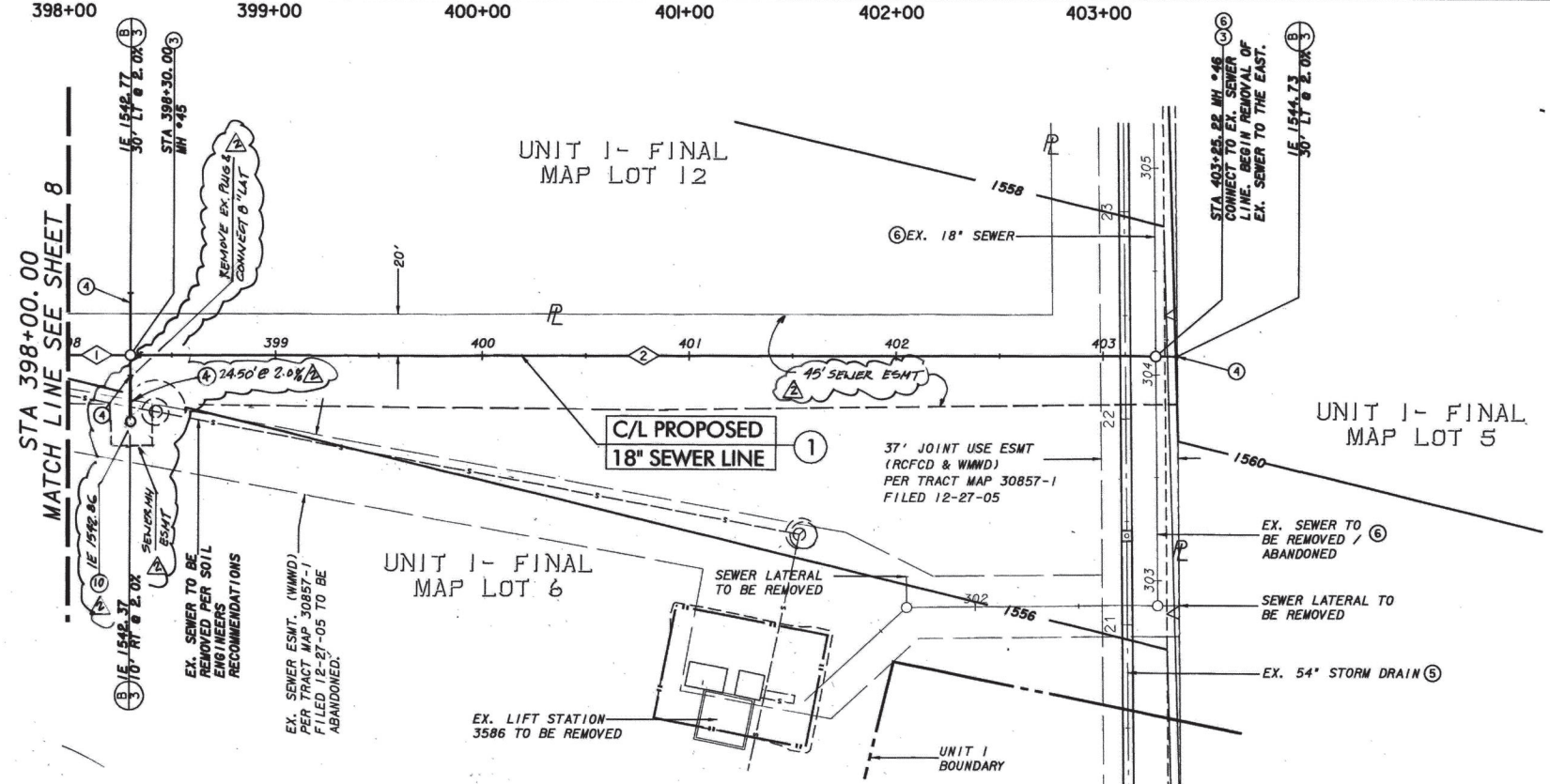
PROFILE SCALES  
HORIZONTAL 1" = 40'  
VERTICAL 1" = 4'

SEWER DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N30°07'48"W		27.50'	18" VCP
2	N30°07'48"W		490.22'	18" VCP



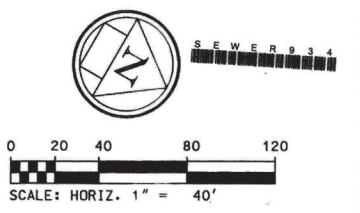
**DETAIL: MH #46 CONNECTION**

- NOTES:
- PRIOR TO CONSTRUCTION, CONTRACTOR SHALL POTHOLE EXISTING SEWER TO VERIFY HORIZONTAL AND VERTICAL LOCATION.
  - CONNECTION TO EXISTING SEWER BY CONTRACTOR TO BE COMPLETED UNDER CONTINUOUS INSPECTION BY W.M.W.D.
  - SEWER MAIN IS TO BE LAID THROUGH THE MANHOLE AND USED AS A FORM FOR THE INVERT. THE TOP 1/4" DIAMETER OF THE PIPE IS TO BE BROKEN OUT TO A NEAT LINE. BROKEN EDGES SHALL BE PLASTERED SMOOTH WITH CONCRETE MORTAR. NEW SEWER SHALL PASS LEAKAGE TEST AND BE APPROVED BY W.M.W.D. INSPECTOR PRIOR TO CONNECTING TO EXISTING SEWER.



**PLAN: UNIT 1 OFFSITE TRUNK SEWER**

- CONSTRUCTION NOTES**
- CONSTRUCT EXTRA STRENGTH 18" VCP SEWER MAIN AND PIPE BEDDING PER W.M.W.D. STD. DNG. NOS. W-1010 & W-1030.
  - CONSTRUCT 60" I.D. PRECAST CONCRETE MANHOLE PER W.M.W.D. STD. DNG. NO. W-1130
  - CONSTRUCT 8" PVC SEWER LATERAL PER STD. DNG. NOS. W-1050 & W-1090
  - FOR STORM DRAIN PLAN AND PROFILE, SEE RCFC/JPA DRAWINGS
  - FOR UNIT 1 SEWER PLAN & PROFILE SEE W.M.W.D. UNIT 1 SEWER PLANS
  - CONSTRUCT SAMPLING MANHOLE PER W.M.W.D. STD. NO. W-1071.



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FOR THE LOCATION OF BURIED UTILITY LINES. DON'T DISRUPT VITAL SERVICES. TWO WORKING DAYS BEFORE YOU DIG.



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Tel: (619) 234-9411 Fax: (619) 234-9433  
PREPARED BY: *Timothy J. DeWitt* 6/13/05  
TIMOTHY J. DEWITT R. C. E. 46579 DATE

NO.	REVISIONS	APPR.	DATE
1	AS-BUILT PLANS		
2	THIENES ENGG - EXTENDED 8" SEWER LATERAL AND INSTALLED SAMPLING MANHOLE		

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*[Signature]* 6/29/05  
DATE  
CIVIL ENGINEER R.C.E. 46818  
VOID AFTER ONE YEAR FROM THIS DATE  
BENCH MARK:  
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450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508  
(909) 788-5000 (BUS) (909) 780-3857 (FAX) Rev: 2/28/00

MARCH BUSINESS CENTER  
TRACT NO. 30857-UNIT 1  
UNIT 1-OFFSITE TRUNK SEWER PLANS  
STA 398+00.00-STA 403+25.22  
PLAN AND PROFILE  
SCALE: HORIZ: 1" = 40' VERT: 1" = 4'

SHEET NO. 9 OF 9 SHTS  
DWG. NO.:

PLOTTED: 6/20/2005 8:15:09 AM \\S:\V\30857\UNIT1\30857-Trunks-09.dwg



**GENERAL NOTES:**

- SEWER SYSTEM IMPROVEMENTS SHALL BE CONSTRUCTED BY THE DEVELOPER FOR DEDICATION TO WESTERN MUNICIPAL WATER DISTRICT. CONSTRUCTION, MATERIALS, TESTING AND INSPECTION SHALL COMPLY WITH WESTERN MUNICIPAL WATER DISTRICT'S STANDARDS. THE INSTALLATION SHALL MEET OR EXCEED THE REQUIREMENTS OF ALL PUBLIC AGENCIES HAVING JURISDICTION AND THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION ('GREEN BOOK'), AND THE AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS. FAILURE TO MEET THESE REQUIREMENTS WILL BE CAUSE FOR REJECTION. SEWER PIPE 18" AND LARGER SHALL BE EXTRA STRENGTH VITRIFIED CLAY PIPE (VCP) UNLESS OTHERWISE NOTED. SEWER PIPE 15" AND SMALLER SHALL BE PVC (SDR-35) UNLESS OTHERWISE NOTED.
- CONSTRUCTION OF THE SEWER SYSTEM IMPROVEMENTS SHALL NOT COMMENCE UNTIL A FINAL MAP HAS BEEN RECORDED BY RIVERSIDE COUNTY AND THE DEVELOPER'S ENGINEER HAS CERTIFIED THAT ALL STREETS ARE CONSTRUCTED TO FINAL GRADE.
- CONTRACTOR SHALL PROVIDE TRENCH PROTECTION AND CONDUCT ALL CONSTRUCTION IN ACCORDANCE WITH CAL-OSHA REQUIREMENTS AND SHALL DETERMINE DEPTH AND LOCATION OF EXISTING UNDERGROUND FACILITIES PRIOR TO TRENCHING. OPEN TRENCH AT ANY ONE TIME SHALL BE LIMITED TO 500' ALONG ROAD RIGHT-OF-WAY AND SHALL BE BACKFILLED AND COMPACTED AT THE CONCLUSION OF EACH DAY. (CONTACT UNDERGROUND SERVICE ALERT 1-800-227-2600 PRIOR TO EXCAVATION.)
- PIPE SHALL BE HANDLED SO AS TO PROTECT PIPE AT ALL TIMES AND SHALL BE CAREFULLY BEDDED TO PROVIDE CONTINUOUS BEARING AND TO PREVENT UNEVEN SETTLEMENT. PIPE SHALL BE PROTECTED AGAINST FLOATATION AT ALL TIMES. OPEN ENDS OF INSTALLED SEWER PIPE SHALL BE SEALED AT ALL TIMES WHEN CONSTRUCTION IS NOT IN PROGRESS.
- PIPE JOINTS SHALL NOT BE DEFLECTED AT ANY ANGLE GREATER THAN THE MAXIMUM ANGLE RECOMMENDED BY THE PIPE MANUFACTURER.
- CONNECTIONS TO EXISTING WESTERN SEWER PIPELINES SHALL NOT BE ACCOMPLISHED UNLESS WESTERN MUNICIPAL WATER DISTRICT'S INSPECTOR IS PRESENT. WESTERN MAY ELECT TO MAKE THE CONNECTION AT THE DEVELOPER'S EXPENSE. COPY BOTH HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING SEWER PIPELINES PRIOR TO CONSTRUCTION.
- BACKFILL SHALL BE COMPACTED TO EITHER 90% RELATIVE DENSITY, EQUIVALENT TO THE SURROUNDING GROUND, OR IN ACCORDANCE WITH THE REQUIREMENTS OF THE AGENCY HAVING JURISDICTION, WHICHEVER IS MORE STRINGENT.
- SEWER LATERALS SHALL BE 4" P.V.C. UNLESS OTHERWISE INDICATED. EXACT LOCATIONS OF WYES AND LATERALS SHALL BE ESTABLISHED IN THE FIELD PRIOR TO INSTALLATION. AN 'S' SHALL BE IMPRINTED ON THE CURB FACE AT EACH SERVICE LATERAL LOCATION AND A STEEL ROD OR STAKE SHALL BE INSTALLED AT THE END OF EACH SEWER LATERAL TO ASSIST IN LOCATING AT A LATER DATE.
- UNLESS WAIVED BY WESTERN MUNICIPAL WATER DISTRICT, 2" WIDE METALLIC LOCATOR TAPE SHALL BE PLACED WITH EACH SEWER AND SERVICE LATERAL TO ASSIST WITH FUTURE LOCATION. TAPE SHALL BE PLACED AT LEAST 6" ABOVE THE PIPE BUT NOT DEEPER THAN 4' FROM THE PROPOSED FINISHED GRADE.
- ALL SEWERS SHALL BE BALLED, AIR TESTED AND VIDEO INSPECTED PRIOR TO ACCEPTANCE BY WESTERN.
- SURFACE IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE RECONSTRUCTED BY THE CONTRACTOR TO THE REQUIREMENTS OF THE AGENCY (CITY OR COUNTY) HAVING JURISDICTION.
- THE DEVELOPER SHALL PROVIDE ONE SET OF PRINTS SHOWING ALL 'AS-BUILT' CONDITIONS, INCLUDING THE STATIONING OF SEWER LATERAL CONNECTIONS AND PAID ELEVATIONS, AS A CONDITION OF FINAL APPROVAL.
- ANY REVISIONS TO THESE DRAWINGS MUST BE APPROVED IN WRITING BY WESTERN.
- THE DEVELOPER SHALL INSTALL BACKWATER VALVES, WHERE REQUIRED, PER THE 1997 EDITION OF THE UNIFORM PLUMBING CODE (CHAPTER 7, SECTION 710.0), AND PER WESTERN'S STANDARDS.
- THE CONTRACTOR IS ADVISED THAT THE WORK ON THIS PROJECT MAY INVOLVE WORKING IN A CONFINED AIR SPACE. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH 'CONFINED AIR SPACE' ARTICLE 108, TITLE 8 CALIFORNIA ADMINISTRATIVE CODE.
- PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL POTHOLE ALL UTILITY CROSSINGS AND CONNECTIONS AND VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES AFFECTED. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BEFORE CONSTRUCTION BEGINS.
- PRIOR TO CONSTRUCTING SEWERS, CONTRACTOR SHALL CONSTRUCT STREETS 7- FEET (MINIMUM) ABOVE PROPOSED SEWER FLOWLINE ELEVATIONS. THEREAFTER, CONTRACTOR SHALL CONSTRUCT SEWERS IN A TRENCH CONDITION.
- CONTRACTOR SHALL WARRANTY ALL WORK FOR 12 MONTHS AFTER DATE OF FINAL INSPECTION.

**EXISTING UNDERGROUND STRUCTURES:**

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPE STRUCTURES OR CONDUITS SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THESE PLANS. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE OWNERS OF THE UTILITIES OR STRUCTURES CONCERNED BEFORE STARTING WORK. CONTRACTOR FURTHER ASSUMES ALL LIABILITY AND RESPONSIBILITY FOR THE UNDERGROUND UTILITY PIPES, CONDUITS OR STRUCTURES SHOWN OR NOT SHOWN ON THESE PLANS.

**NOTICE TO CONTRACTORS:**

CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND SHALL REPORT ALL DISCREPANCIES TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.

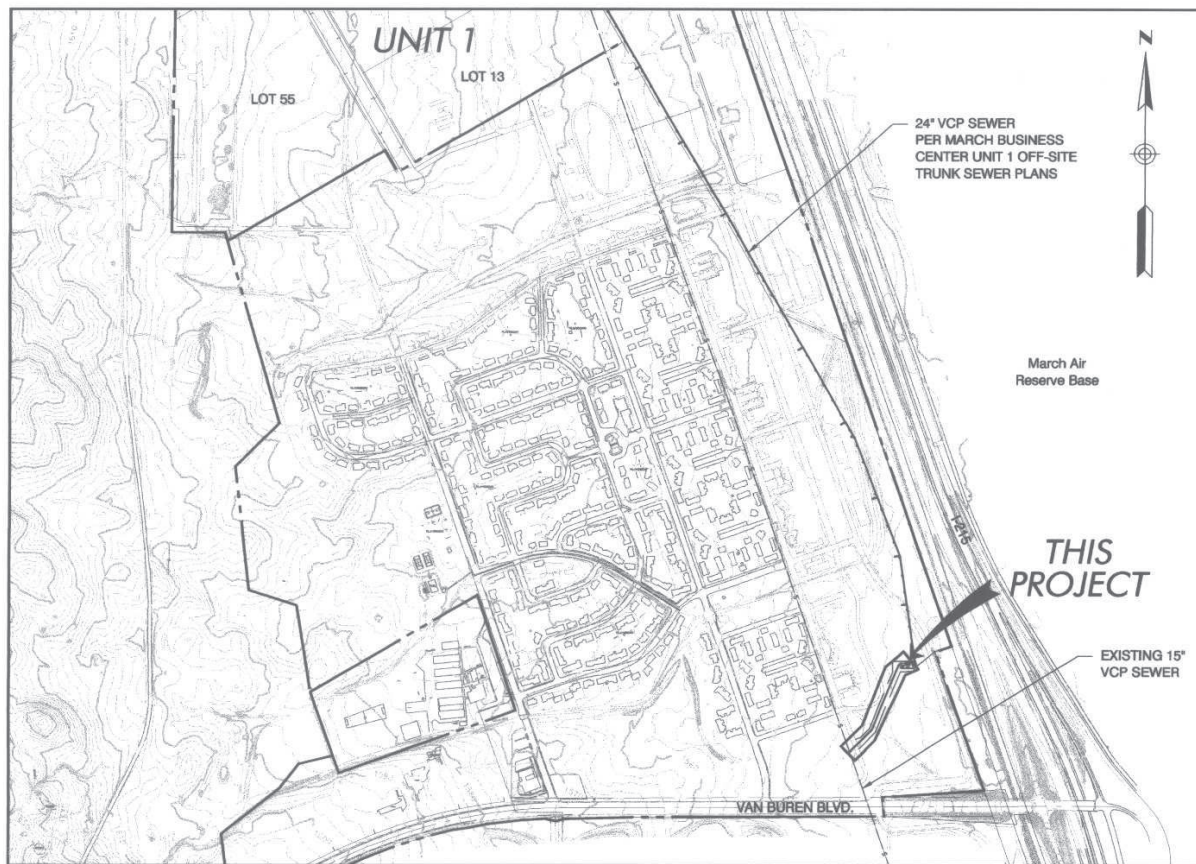
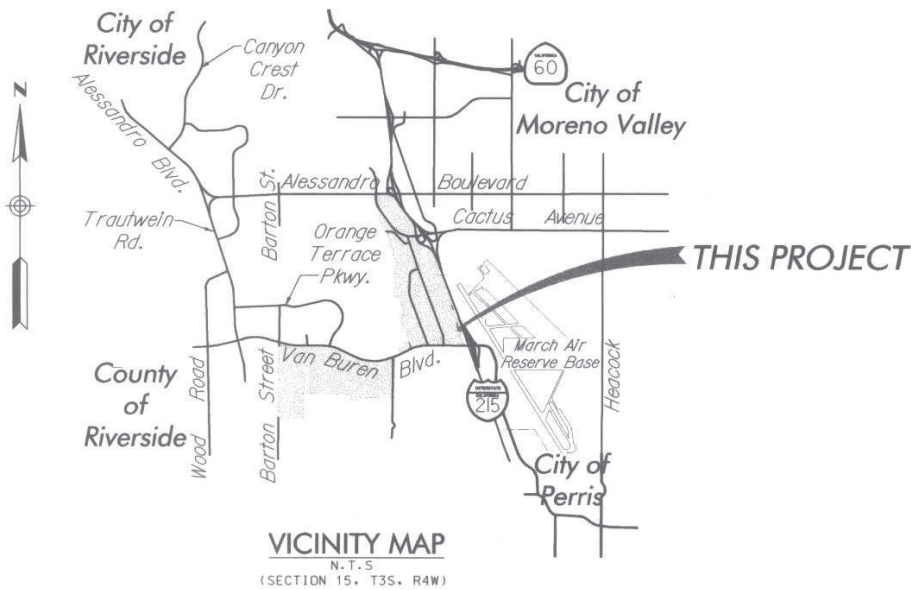
**QUANTITY DISCLAIMER:**

QUANTITIES SHOWN HEREON ARE PROVIDED FOR BONDING PURPOSES ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES PRIOR TO CONSTRUCTION.

**BASIS OF BEARINGS AND COORDINATES NOTE:**

THE BASIS OF BEARINGS SHOWN HEREON FOR THIS PLAN IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, C. C. S. 83, ZONE 6, BASED LOCALLY ON GPS CONTROL RCFCD STATIONS AS SHOWN ON RECORD OF SURVEY MAP RS110/30.

# VAN BUREN SEWER LIFT STATION PLANS MARCH BUSINESS CENTER - TRACT NO. 30857



**WORK TO BE DONE:**

THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE ACCORDING TO THESE PLANS AND THE FOLLOWING SPECIFICATIONS AND STANDARD DRAWINGS:

- STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (2003 EDITION).
- CALIFORNIA DEPARTMENT OF TRANSPORTATION 'MANUAL OF TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE WORK ZONE', (1996 ED.), DOCUMENT NO. 769843, FILED JANUARY 24, 2000.
- STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS (JULY 2002), DOCUMENT NO. 769894 FILED JUNE 5, 2003.
- STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, STANDARD PLANS (JULY 2002), DOCUMENT NO. 769894, FILED JUNE 5, 2003.
- WESTERN MUNICIPAL WATER DISTRICT 'DEVELOPER HANDBOOK & STANDARD DRAWINGS FOR WATER & SEWER FACILITIES', 2004.

**LEGEND:**

TRACT BOUNDARY	---
SEWER FORCE MAIN	—●—
SEWER LINE & MANHOLE	—○—
WATER LATERAL	—○—
ELECTRICAL LINES	—●—
TRENCH RESURFACING	—

**NOTE:**

WORK CONTAINED WITHIN THE SET OF PLANS SHALL NOT COMMENCE UNTIL AN ENCROACHMENT PERMIT AND/OR GRADING PERMIT HAS BEEN ISSUED.

**INDEX OF SHEETS**

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	PLAN & PROFILE
3	SITE PLAN
4	GRADING PLAN
5	MECHANICAL PLAN
6	WET WELL DETAILS
7	DETAILS
8	ELECTRICAL NOTES
9	ELECTRICAL PLAN
10	ELECTRICAL SINGLE LINE DIAGRAM
11	ELECTRICAL CONTROL DIAGRAM & SCHEDULES
12	ELECTRICAL PANEL DETAILS
13	ELECTRICAL PANEL DETAILS

NOTE: THE DESIGN AND THE CONSTRUCTABILITY OF THE PROJECT AS WELL AS THE ACCURACY OF FIGURES ARE THE RESPONSIBILITY OF THE DESIGN ENGINEER. PLAN CHECK SERVICES BY W.M.W.D. WILL BE LIMITED TO THE ADHERENCE OF THE DISTRICT STANDARDS, MATERIALS, QUANTITIES AND SIZE OF FACILITIES, AS THEY RELATE TO THE SERVICE DISCHARGE OR APPROVED MASTER PLAN. DISCHARGE OF WASTEWATER FROM THE IMPROVEMENTS SHOWN ON THESE PLANS IS DEPENDENT UPON COMPLETION OF THE PIPING PROPOSED AS PART OF OTHER PHASES OF THIS TRACT AND/OR OTHER ADJACENT TRACTS.

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 FOR THE LOCATION OF BURIED UTILITY LINES. DON'T DISRUPT THEM. RESERVE TWO WORKING DAYS BEFORE YOU DIG.

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57 Fourth Avenue - Suite 301 - San Diego, Ca. - 92011  
Tel: (619) 234-9411 Fax: (619) 234-9433

PREPARED BY: *Charles R. Spinks* 8/18/05  
CHARLES R. SPINKS R.C.E. 30894 DATE

**SEWER CERTIFICATION BLOCK**  
I certify that the design of the Sewer System in Tract No. 30857 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.

*Charles R. Spinks* 8/18/05  
CIVIL ENGINEER R.C.E. 46212 DATE

MARK	REVISIONS	APPR. DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:

*Charles R. Spinks* 8/18/05  
CIVIL ENGINEER R.C.E. 46212 DATE  
VOID AFTER ONE YEAR FROM THIS DATE

BENCH MARK: WALL W/ RFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. 27981 RCFCD NGVD 29. ELEVATION = 1568.64

WESTERN MUNICIPAL WATER DISTRICT  
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450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508  
(909) 789-5000 (BUS) (909) 780-3837 (FAX) Rev# 2/28/00

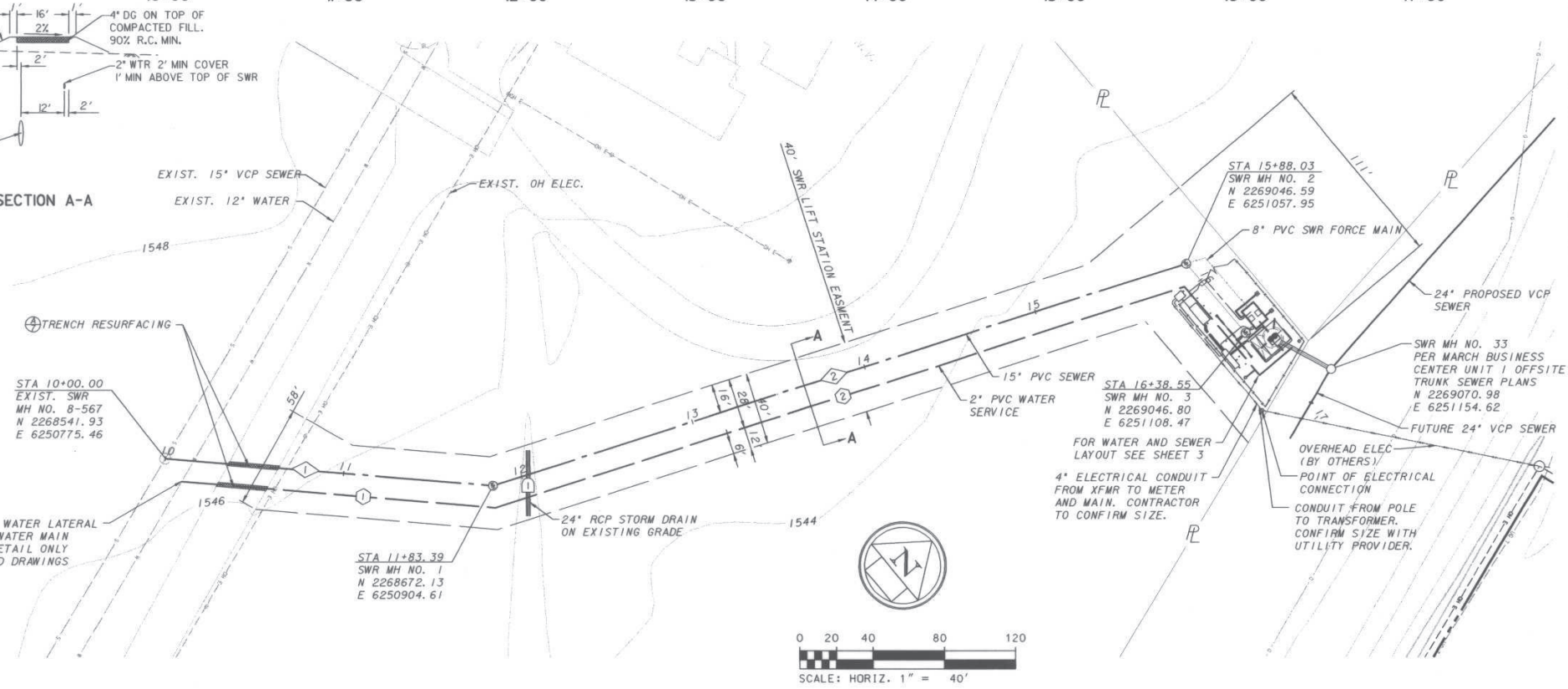
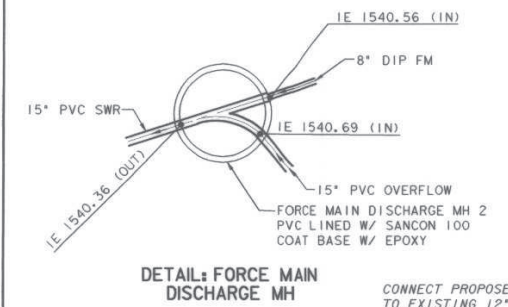
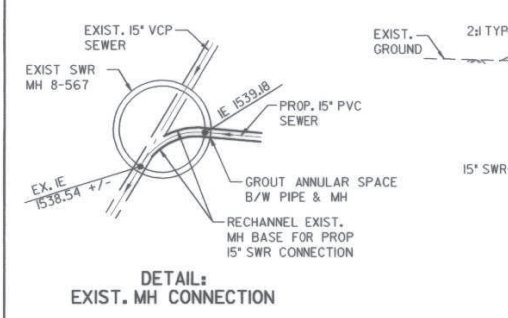
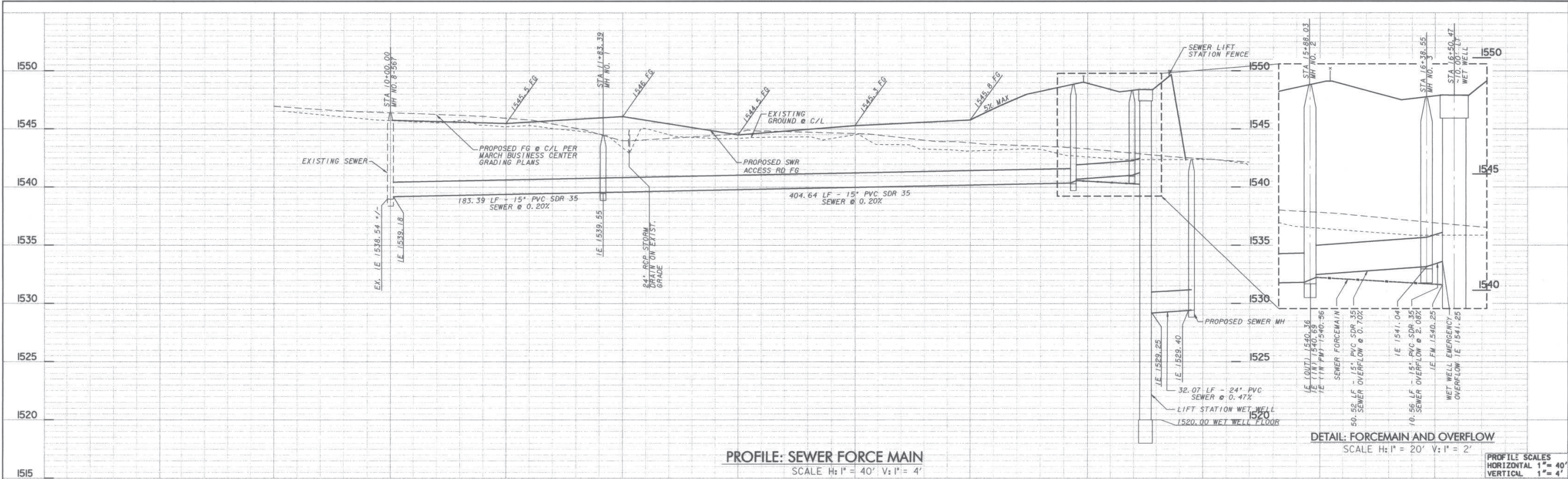
MARCH BUSINESS CENTER TRACT NO. 30857-UNIT 1  
VAN BUREN SEWER LIFT STATION  
TITLE SHEET

SHEET NO. 1 OF 13 SHEETS  
DWG. NO. 1

W.M.W.D. EXT 1-3422-004



FILE NO. 3070 5000/51/01 400 20' - 44' - 11" - 1100'



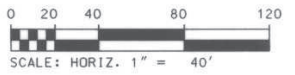
SEWER DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N44°46'06"E		183.39'	15" SDR-35
2	N22°16'06"E		404.64'	15" SDR-35

WATER DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N44°46'06"E		175.58'	2" PVC SCH. 40
2	N22°16'06"E		401.17'	2" PVC SCH. 40

STORM DRAIN DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N50°26'45"W		40.00'	24" ~ 2000-D



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PREPARED BY:  
*Charles R. Spinks*  
CHARLES R. SPINKS R.C.E. 30894 DATE

**SEWER CERTIFICATION BLOCK**  
I certify that the design of the Sewer System in Tract No. 30857 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.

CIVIL ENGINEER R.C.E. 46212 DATE MARK REVISIONS APPR. DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*[Signature]* 8/31/15  
CIVIL ENGINEER R.C.E. 46212 DATE  
VOID AFTER ONE YEAR FROM THIS DATE

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PLAN AND PROFILE  
SCALE: HORIZ: 1" = 40' VERT: 1" = 4'

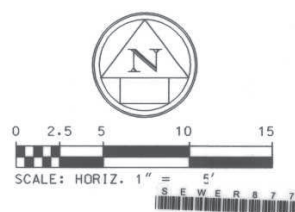
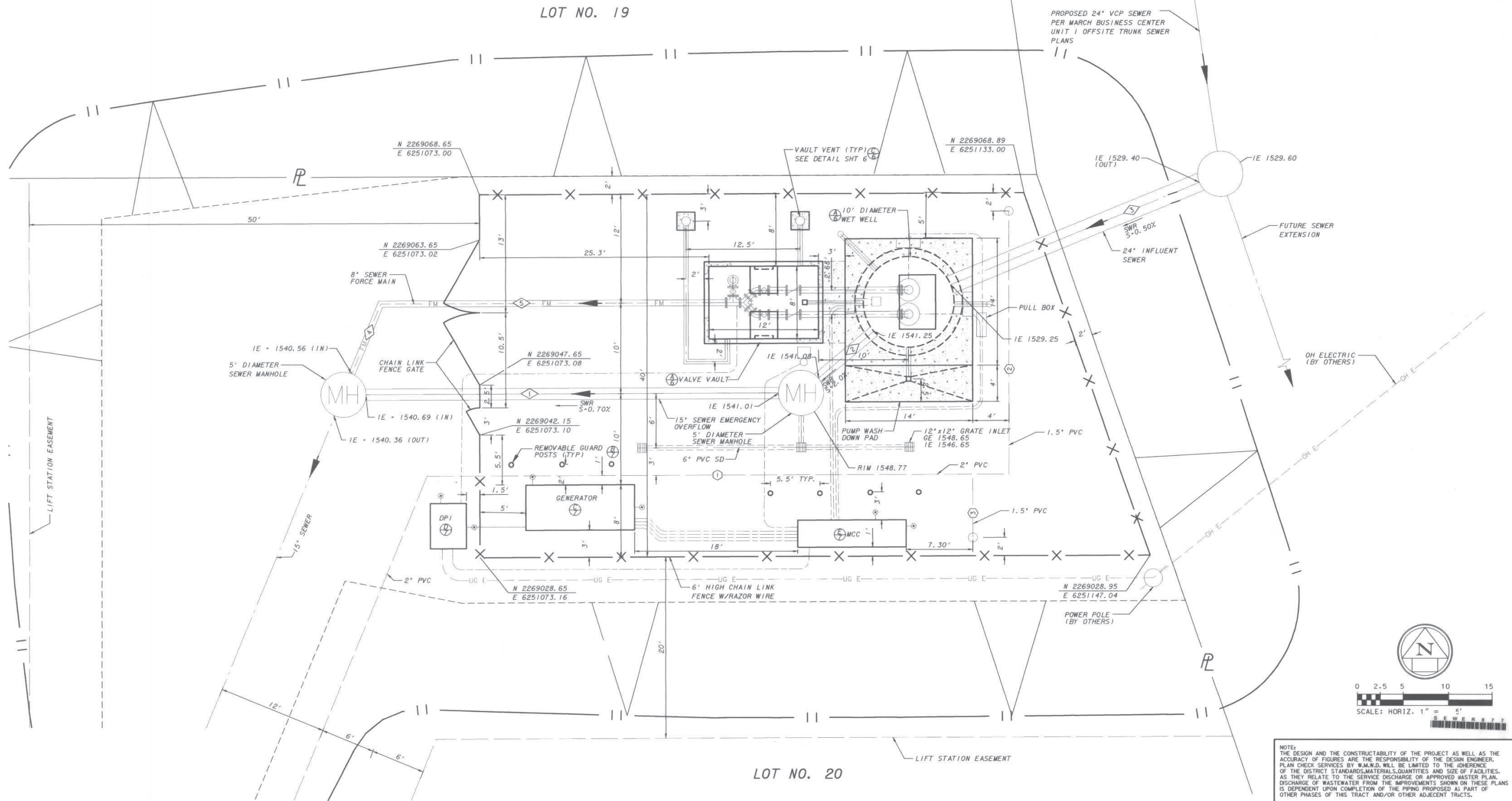
SHEET NO. 2 OF 13 SHTS  
DWG. NO.:

FILED: 10/16/2005 8:00pm 095520000\unit1-3\plan\plan-sewer-02.dgn



SEWER DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N89°46'06"E		50.52'	15" PVC SDR-35
2	N49°46'07"E		10.56'	15" PVC SDR-35
3	N67°34'47"E		32.07'	24" PVC CL-200
4	N22°16'06"E		10.82'	8" DIP
5	N89°46'07"E		38.16'	8" DIP

WATER DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N89°46'06"E		64.18'	2" PVC SCH 40
2	N0°13'54"W		29.00'	1.5" PVC SCH 40
3	N0°13'54"W		7.00'	1.5" PVC SCH 40



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 Engineering, Planning and Environmental Consultants  
 517 Fourth Avenue - Suite 301 - San Diego, Ca. - 92101  
 Tel: (619) 234-9411 Fax: (619) 234-9433

PREPARED BY:  
*Charles R. Spinks*  
 CHARLES R. SPINKS R.C.E. 30894 DATE

SEWER CERTIFICATION BLOCK  
 I certify that the design of the Sewer System in Tract No. 30857 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.

CIVIL ENGINEER R.C.E. 46212 DATE MARK REVISIONS APPR. DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*[Signature]* 8/30/15 DATE  
 CIVIL ENGINEER R.C.E. 46212  
 VOID AFTER ONE YEAR FROM THIS DATE

BENCH MARK:  
 NAIL W/ RCF TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. Z7981 RCFD NGVD 29. ELEVATION - 1568.64

WESTERN MUNICIPAL WATER DISTRICT  
 P.O. BOX 5286  
 RIVERSIDE, CA. 92517-5286  
 450 ALESSANDRO BLVD  
 RIVERSIDE, CA. 92508  
 (909) 789-5000 (BUS) (909) 780-3837 (FAX) Rev: 2/28/00

MARCH BUSINESS CENTER  
 TRACT NO. 30857-UNIT 1  
 VAN BUREN SEWER LIFT STATION  
 SITE PLAN  
 SCALE: HORIZ: 1" = 5' VERT: 1" = N/A

SHEET NO. 3 OF 13 SHTS  
 DWG. NO. 1

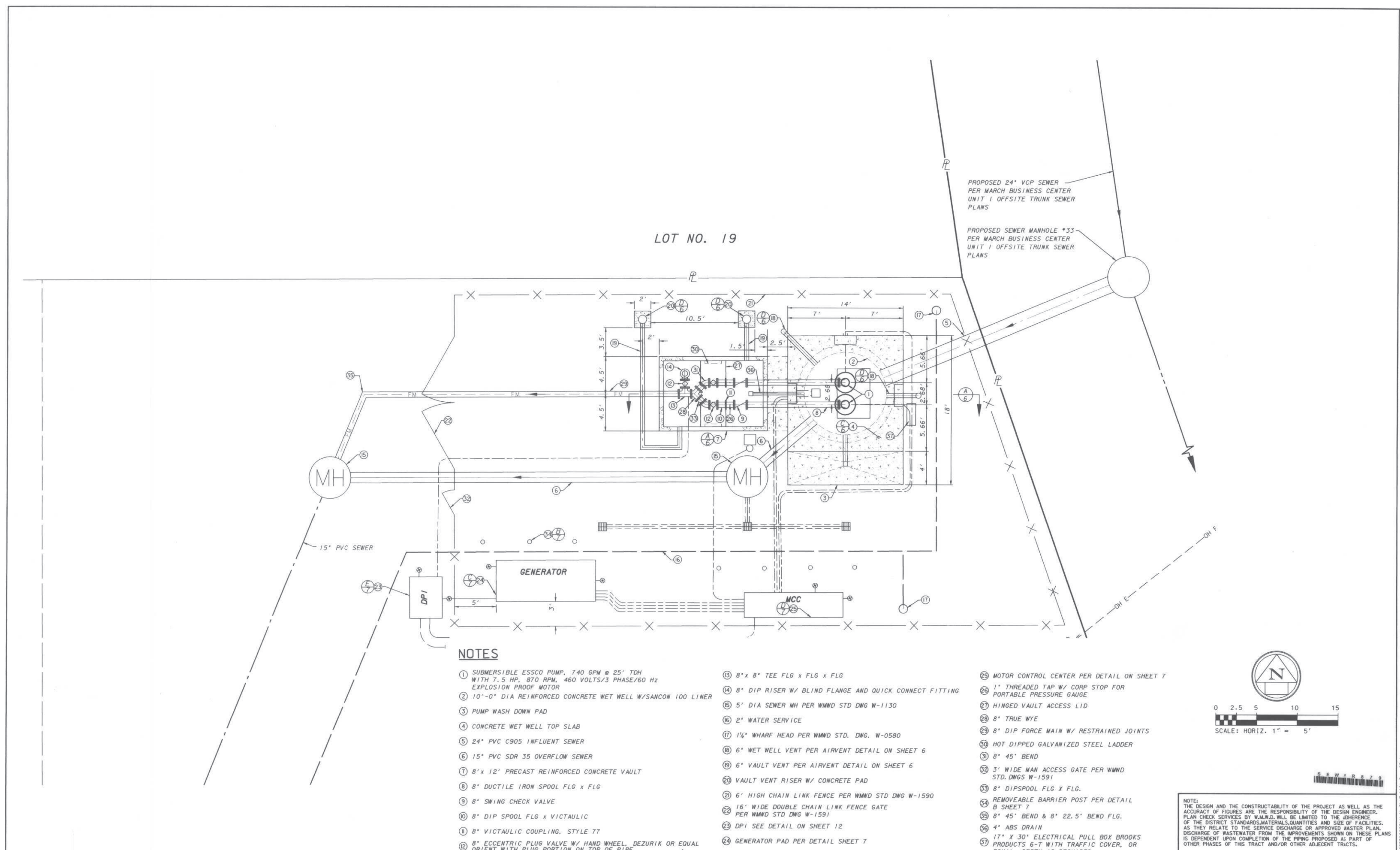
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DATE PLOTTED: 8/17/2005 10:50:53 AM



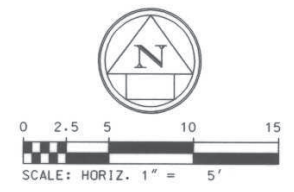
LOT NO. 19

PROPOSED 24" VCP SEWER  
PER MARCH BUSINESS CENTER  
UNIT 1 OFFSITE TRUNK SEWER  
PLANS

PROPOSED SEWER MANHOLE \*33  
PER MARCH BUSINESS CENTER  
UNIT 1 OFFSITE TRUNK SEWER  
PLANS

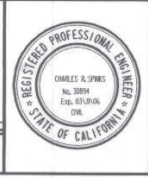
**NOTES**

- ① SUBMERSIBLE ESSCO PUMP, 740 GPM @ 25' TDH WITH 7.5 HP, 870 RPM, 460 VOLTS/3 PHASE/60 Hz EXPLOSION PROOF MOTOR
- ② 10'-0" DIA REINFORCED CONCRETE WET WELL W/SANCON 100 LINER
- ③ PUMP WASH DOWN PAD
- ④ CONCRETE WET WELL TOP SLAB
- ⑤ 24" PVC C905 INFLUENT SEWER
- ⑥ 15" PVC SDR 35 OVERFLOW SEWER
- ⑦ 8' x 12' PRECAST REINFORCED CONCRETE VAULT
- ⑧ 8" DUCTILE IRON SPOOL FLG x FLG
- ⑨ 8" SWING CHECK VALVE
- ⑩ 8" DIP SPOOL FLG x VICTAULIC
- ⑪ 8" VICTAULIC COUPLING, STYLE 77
- ⑫ 8" ECCENTRIC PLUG VALVE W/ HAND WHEEL, DEZURIK OR EQUAL ORIENT WITH PLUG PORTION ON TOP OF PIPE
- ⑬ 8' x 8' TEE FLG x FLG x FLG
- ⑭ 8" DIP RISER W/ BLIND FLANGE AND QUICK CONNECT FITTING
- ⑮ 5" DIA SEWER MH PER WWD STD DWG W-1130
- ⑯ 2" WATER SERVICE
- ⑰ 1/4" WHARF HEAD PER WWD STD. DWG. W-0580
- ⑱ 6" WET WELL VENT PER AIRVENT DETAIL ON SHEET 6
- ⑲ 6" VAULT VENT PER AIRVENT DETAIL ON SHEET 6
- ⑳ VAULT VENT RISER W/ CONCRETE PAD
- ㉑ 6" HIGH CHAIN LINK FENCE PER WWD STD DWG W-1590
- ㉒ 16" WIDE DOUBLE CHAIN LINK FENCE GATE PER WWD STD DWG W-1591
- ㉓ DPI SEE DETAIL ON SHEET 12
- ㉔ GENERATOR PAD PER DETAIL SHEET 7
- ㉕ MOTOR CONTROL CENTER PER DETAIL ON SHEET 7
- ㉖ 1" THREADED TAP W/ CORP STOP FOR PORTABLE PRESSURE GAUGE
- ㉗ HINGED VAULT ACCESS LID
- ㉘ 8" TRUE WYE
- ㉙ 8" DIP FORCE MAIN W/ RESTRAINED JOINTS
- ㉚ HOT DIPPED GALVANIZED STEEL LADDER
- ㉛ 8' 45' BEND
- ㉜ 3' WIDE MAN ACCESS GATE PER WWD STD. DWGS W-1591
- ㉝ 8" DIP SPOOL FLG x FLG.
- ㉞ REMOVEABLE BARRIER POST PER DETAIL B SHEET 7
- ㉟ 8' 45' BEND & 8' 22.5' BEND FLG.
- ㊱ 4" ABS DRAIN
- ㊲ 17' x 30" ELECTRICAL PULL BOX BROOKS PRODUCTS 6-T WITH TRAFFIC COVER, OR EQUAL, DEPTH AS REQUIRED.



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PREPARED BY:  
*Charles R. Spinks*  
CHARLES R. SPINKS R.C.E. 30894 DATE: 8/15/05

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NO.	REVISIONS	DATE	APPR.

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*[Signature]* 8/16/05  
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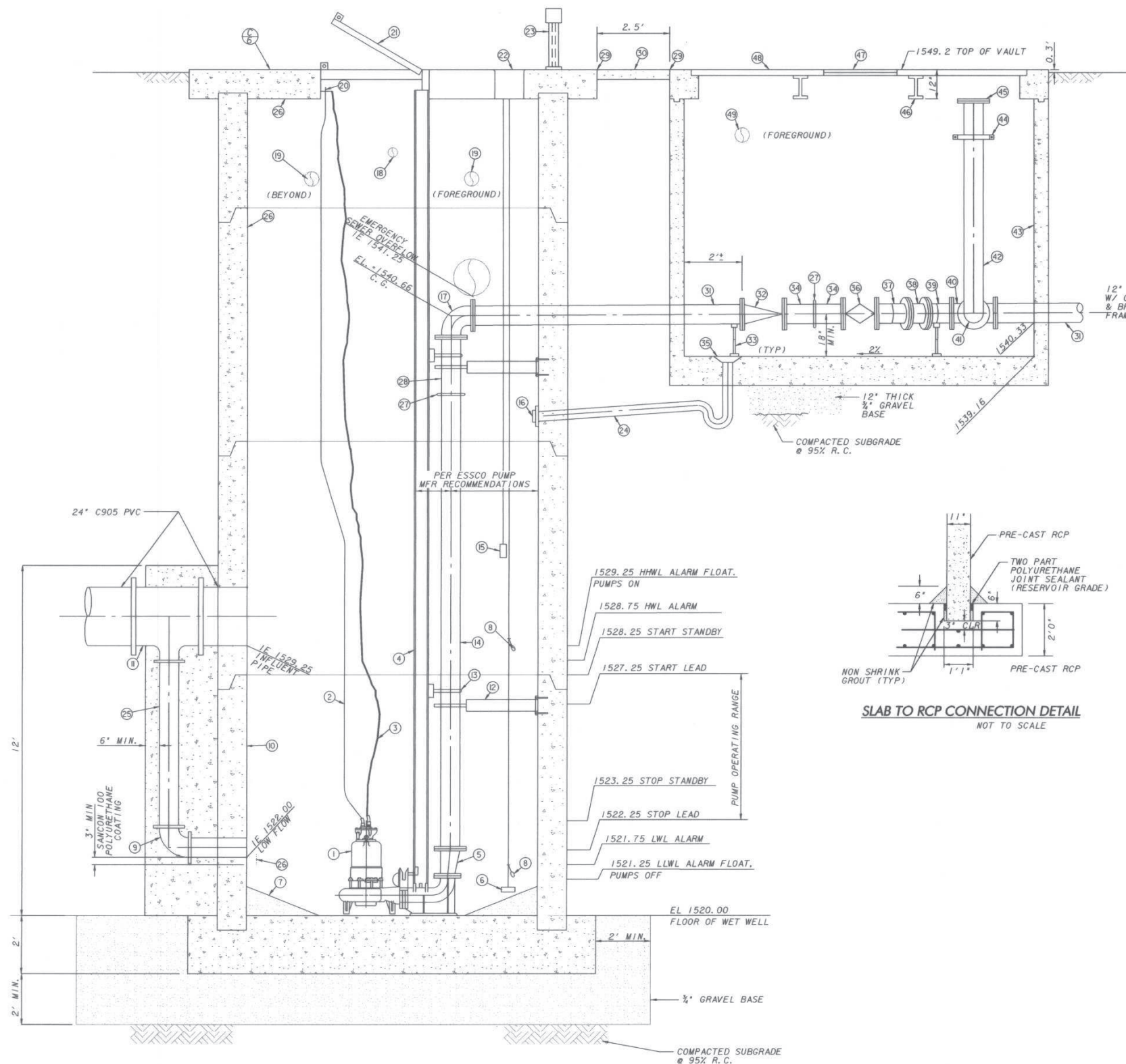
WESTERN MUNICIPAL WATER DISTRICT  
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RIVERSIDE, CA. 92517-5286  
450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508  
(909) 789-5000 (BUS) (909) 789-3637 (FAX) Rev 1/28/00

MARCH BUSINESS CENTER  
TRACT NO. 30857-UNIT 1  
VAN BUREN SEWER LIFT STATION  
MECHANICAL PLAN  
SCALE: HORIZ: 1" = 5' VERT: N/A

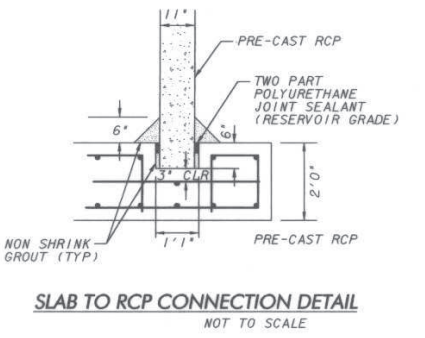
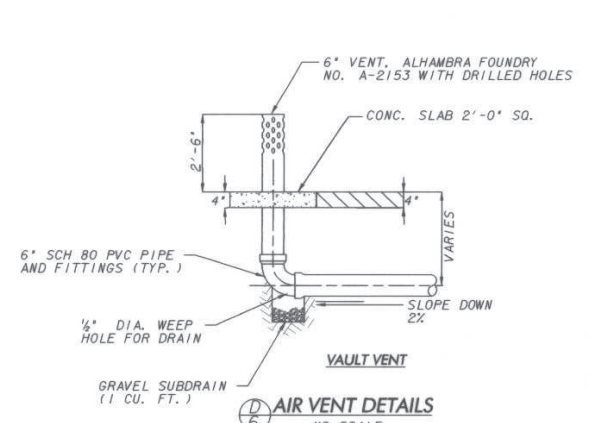
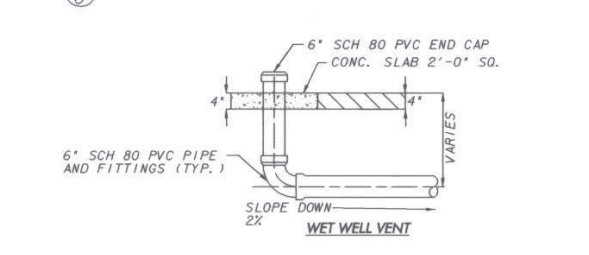
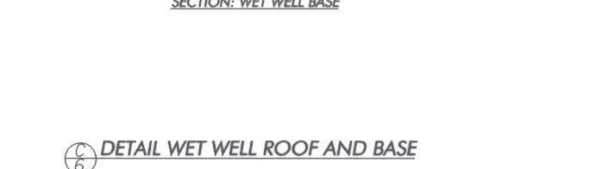
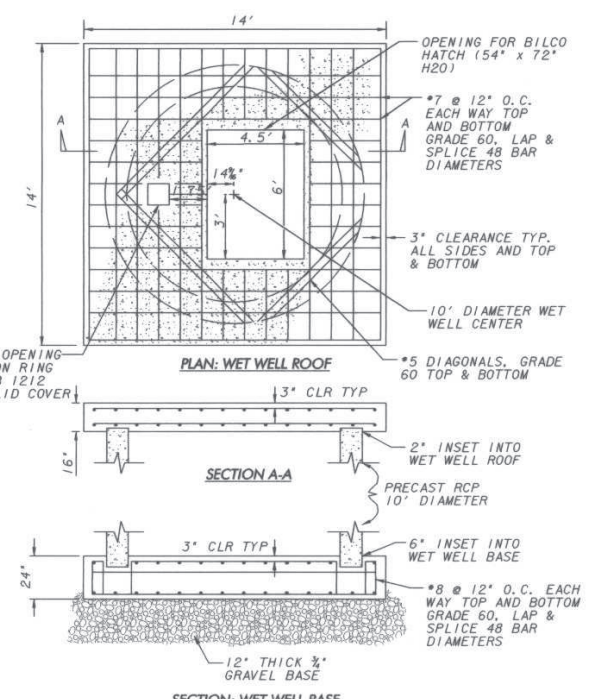
SHEET NO. 5 OF 13 SHTS  
DWG. NO. 7

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**A** SEWER LIFT STATION ELEVATION SECTION  
SCALE 1"=20"



SLAB TO RCP CONNECTION DETAIL  
NOT TO SCALE

- NOTES**
- ESSCO PUMP C 6x6x14x3 6' NON CLOG SUBMERSIBLE SEWAGE PUMP WITH 7.5 HP, 870 RPM, 460 V, 3 PHASE, 60 HZ MOTOR (2 REQUIRED) 740 GPM @ 25' TDH
  - POWER AND CONTROL CABLE TO PUMP, HANG ON SUPPORT WITH STAINLESS STEEL KELLUM GRIPS AND LOOP CABLE OVER SUPPORT
  - LIFTING CABLE - TO BE 0.375" x 0.4375" x 40' STAINLESS STEEL NYLON COVERED CABLE WITH 2" EYELETS AT EACH END. USE A 0.5" x 6" STAINLESS STEEL EYEBOLTS ANCHORED TO THE TOP OPENING.
  - GUIDE RAIL
  - 6' x 8' FLG x FLG ECCENTRIC REDUCER
  - SS WEIGHT ATTACHED TO SS CABLE ATTACHED TO 3/4" CABLE SUPPORT. ATTACH FLOATS TO SS CABLE WITH NYLON TIES.
  - GROUT FILET - SLOPES VARIES, 1.5' MAX HEIGHT, 1.0' MIN HEIGHT
  - MERCURY FLOAT SWITCH
  - 8" LONG RADIUS BEND - DUCTILE IRON MJ x MJ
  - 10' DIAMETER RCP WITH 125 ml/l OF SANCON 100 POLYURETHANE COATING APPLY FROM TOP OF WET WELL TO 3" BELOW LOW FLOW OUTLET
  - 24" x 24" x 8" DUCTILE IRON TEE MJ x MJ
  - SS SUPPORT FOR FORCE MAIN
  - INTERMEDIATE GUIDE RAIL SUPPORT
  - 8" DUCTILE IRON FORCE MAIN FLG x VICTAULIC
  - ULTRASONIC LEVEL TRANSDUCER
  - 4" FLAP VALVE
  - 8" 90° DI BEND FLG x FLG
  - 4" ABS DRAIN PIPING OPENING FROM PUMP WASH DOWN PAD WITH 4" FLAP VALVE
  - 6" PVC SCH 80 WET WELL VENT
  - SS CONTROL CABLE MOUNTING BRACKET PER DETAIL ON SHEET 13
  - ACCESS HATCH, SINGLE LEAF, ALUMINUM FRAME, ALUMINUM LOCKING COVER (CHECKERED PLATE), LIFTING MECHANISMS, AND SS HARDWARE BILCO H20 (300\*/SF LOADING) SPECIAL ORDER HATCH SIZE 4.5' x 6'.
  - 12" SQUARE OPENING IN CONCRETE TOP WITH CAST IRON RING AND BROOKS CB1212 FRAME AND SOLID COVER
  - ELECTRIC JUNCTION BOX AND STANCHION FOR PUMP POWER/CONTROL CABLES, FLOATS, AND TRANSDUCER. SEE DETAIL ON SHT 13
  - 4" ABS DRAIN - 2% MIN. SLOPE
  - 8" C900 PVC, CL 200, PE x PE
  - PROVIDE 125 ml/l OF SANCON 100 ON CONCRETE SURFACE TO 3" BELOW LOW FLOW LEVEL
  - VICTAULIC COUPLING
  - 8" DIP SPOOL - 2' MIN. LENGTH
  - EXPANSION JOINT
  - 6" CONCRETE - 560-C-3250
  - 8" DIP FORCE MAIN
  - 8" SWING CHECK VALVE, MUELLER OR EQUAL
  - ADJUSTABLE PIPE SUPPORT
  - 8" DIP SPOOL FLG x VICTAULIC
  - 4" FLOOR DRAIN WITH P TRAP
  - 8" ECCENTRIC PLUG VALVE WITH HAND WHEEL, DEZURIK (2 REQUIRED) OR EQUAL
  - 8" 45° BEND (2 REQUIRED) FLG x FLG
  - 8" DIP SPOOL FLG x FLG
  - 8" TRUE WYE
  - 8" x 8" TEE FLG x FLG x FLG
  - 8" 90° BEND
  - 8" DIP FLG BYPASS
  - 12" x 8" PRECAST CONCRETE VAULT
  - 8" PIPE CLAMP - ATTACH TO WALL WITH ANCHOR BOLTS
  - 8" BLIND FLANGE
  - HATCH SUPPORT BEAMS - LOCATE BEAMS TO PROVIDE CLEARANCE TO ACCESS VALVES AND PERMIT DISCHARGE PIPING REMOVAL
  - 30" x 30" BILCO HATCH MODEL (J-2 H20) (2 REQUIRED)
  - ALUMINUM CHECKERED PLATE BOLT DOWN PARKWAY COVER, MIN. 1/4" THICK, SUPPLIED AND DESIGNED BY VAULT MANUFACTURER FOR H20 LOADING
  - 6" PVC SCH 80 VAULT VENT

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REGISTERED PROFESSIONAL ENGINEER  
CHARLES R. SPINKS  
No. 30894  
Exp. 12/31/05  
STATE OF CALIFORNIA

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Engineering, Planning and Environmental Consultants  
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PREPARED BY:  
*Charles R. Spinks*  
CHARLES R. SPINKS R.C.E. 30894 DATE 8/15/05

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CIVIL ENGINEER R.C.E. 46212 DATE MARK REVISIONS APPR. DATE

MARK	REVISIONS	APPR. DATE

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*[Signature]* 8/30/05  
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MARCH BUSINESS CENTER  
TRACT NO. 30857-UNIT 1

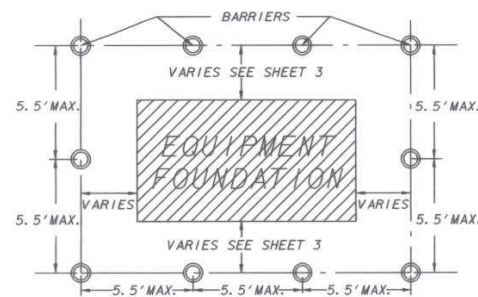
VAN BUREN SEWER LIFT STATION  
WET WELL  
SECTIONS AND DETAILS

SHEET NO. 6 of 13 SHTS  
DWG. NO.:

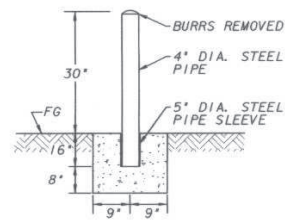
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10-11-05 10:00 AM 10/11/05 10:00 AM 10/11/05 10:00 AM



**EQUIPMENT FOUNDATION PLAN**  
N.T.S.

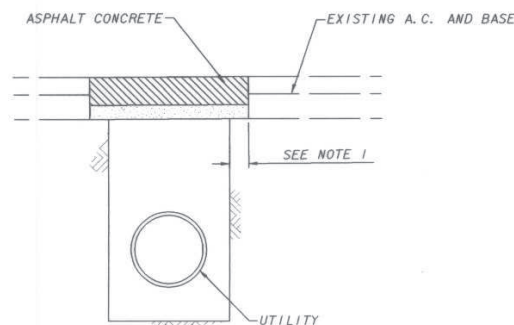


**BARRIER DETAIL**  
N.T.S.

**NOTES:**

- BARRIER TO BE ONE OF THE FOLLOWING:  
A. GALVANIZED STEEL PIPE (1/4" MIN. WALL).  
B. SPECIAL BARRIERS BY PRIOR S.C.E. CO. APPROVAL.
- STRUCTURES WILL NORMALLY BE INSTALLED ONLY IN NON-TRAFFIC AREAS. BARRIERS TO BE USED WHERE CONSTRUCTION HAS EXPOSED EQUIPMENT TO TRAFFIC.
- ADEQUATE CLEARANCE MUST BE PROVIDED FOR DOORS, COOLING COILS, ETC.
- BARRICADES, AS SHOWN, INDICATE TYPICAL REQUIREMENTS. FIELD CONDITIONS WILL NECESSITATE CHANGES FOR ADEQUATE EQUIPMENT PROTECTION. APPROVAL IN THE FIELD FROM UNDERGROUND INSPECTOR IS REQUIRED FOR ALL BARRICADE INSTALLATIONS.
- WHEN SPECIFIED ON WORKING DRAWINGS, A 6" (MINIMUM HEIGHT) CURB MAY BE INSTALLED IN PLACE OF BARRIERS. THIS CURB MUST BE AT LEAST 6" THICK AND IT'S FRONT FACE (LOCATED 36" MINIMUM OR SPECIFIED ON DRAWING) FROM THE EQUIPMENT FOUNDATION.
- INCREASE TO 36" MINIMUM WHEN ANY PAD IS BEING INSTALLED (DOOR SIDE ONLY).

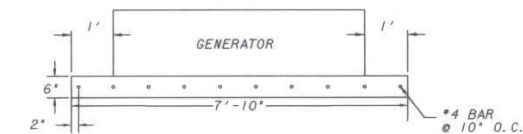
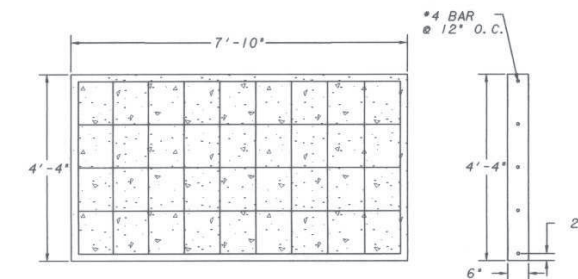
**B REMOVABLE BARRIER FOR ABOVE GROUND STRUCTURES**  
N.T.S.



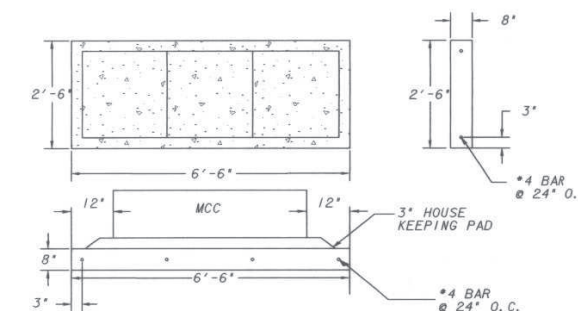
**NOTES:**

- TRENCH EDGES TO BE CUT A MINIMUM OF 6" WIDER THAN TRENCH FOR 3" WIDE OR LESS, AND 12" WIDER FOR TRENCHES OVER 3" WIDE.
- EXISTING A.C. SHALL BE CUT AND REMOVED IN SUCH A MANNER SO AS NOT TO TEAR, BULGE OR DISPLACE ADJACENT PAVEMENT. EDGES SHALL BE CLEAN AND VERTICAL. ALL CUTS SHALL BE PARALLEL OR PERPENDICULAR TO STREET CENTERLINE, WHEN PRACTICAL.
- BASE MATERIAL SHALL BE REPLACED TO DEPTH OF EXISTING BASE. A.C. MAY BE SUBSTITUTED FOR BASE MATERIAL.
- A TACK COAT OF ASPHALTIC EMULSION OR PAVING ASPHALT SHALL BE APPLIED TO EXISTING A.C. OR P.C.C. CONTACT SURFACES, PRIOR TO RESURFACING.
- ASPHALT CONCRETE RESURFACING:  
A) MINIMUM TOTAL THICKNESS SHALL BE 1" GREATER THAN EXISTING A.C.  
B) A.C. SHALL BE HOT PLANT MIX
- ALL A.C. RESURFACING SHALL BE SEAL COATED WITH AN EMULSIFIED ASPHALT AND COVERED WITH SAND. CHIP SEALING SHALL BE APPLIED AS REQUIRED BY AGENCY.
- SLOUGHING OF TRENCH UNDER PAVEMENT SHALL BE CAUSE FOR REQUIRING ADDITIONAL PAVEMENT AND BASE.

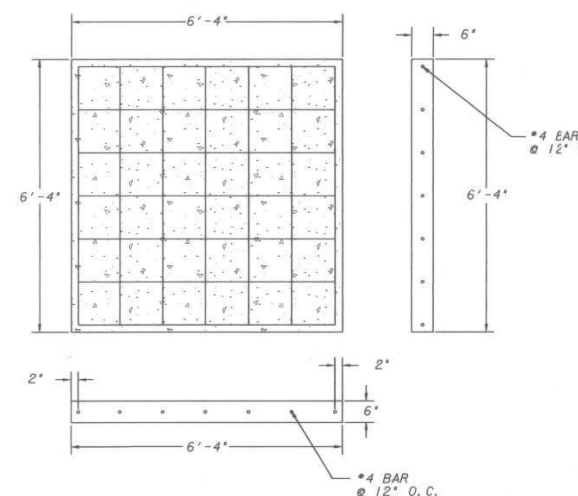
**A TRENCH RESURFACING**  
N.T.S.



**C CONCRETE GENERATOR PAD**  
N.T.S.



**D CONCRETE MCC PAD**  
N.T.S.



**E GENERIC TRANSFORMER PAD**  
(ACTUAL DIMENSIONS ARE 6" BEYOND FOOTPRINT OF EQUIPMENT AS A MINIMUM)  
N.T.S.

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VAN BUREN SEWER LIFT STATION  
DETAILS  
SCALE: HORIZ: 1" = 10' VERT: N/A

SHEET NO. 7  
OF 13 SHTS  
DWG. NO. 1

PLOTTED 1:08:52/2005 e:\p\05\0530000\unit-1\3\0-114-bas-01.dgn



# ELECTRICAL SYMBOL LIST

# LIGHTING FIXTURE SCHEDULE

# GENERAL NOTES

SYMBOL	DESCRIPTION
	CONDUIT HOMERUN TO PANELBOARD. LETTER AND NUMERALS INDICATE PANEL AND CIRCUIT NUMBER(S).
	CONDUIT RUN, CONCEALED IN CEILING, WALLS OR UNDER FLOOR.
	CONDUIT RUN, UNDERGROUND (P.V.C. SCHED. 40)
	CROSS LINES ON CONDUIT INDICATE NUMBER OF #12 AWG, 600V. CONTAINED THEREIN. TWO #12'S ARE INDICATED WHEN CROSS LINES ARE NOT SHOWN. NUMERAL AT CROSS LINES INDICATES THE SIZE OF CONDUCTOR(S) IN LIEU OF #12 CODE SIZE CONDUIT. CROSS LINE IN ELLIPSE INDICATES GROUND, #12 UNLESS NOTED OTHERWISE.
	CONDUIT RUN, EXPOSED, RIGID GALVANIZED STEEL.
	CONDUIT STUB WITH CAP (THREADED FOR RIGID.)
	1/2" C. 3/82
	3/4" C. 4/82
	3/4" C. 5/82
	3/4" C. 6/82
	3/4" C. 7/82
	1" C. 8/82
	1" C. 9/82
	PANEL DESIGNATION: FIRST LETTER INDICATES PANEL IDENTIFICATION; SECOND NUMERAL INDICATES VOLTAGE: 1=120/200V, 3A, 4W; 2=240V, 3A, 3W; 3=120/240V, 1A, 3W; 4=277/480V, 3A, 4W; 5=120/240V, 3A, 4W.
	BRANCH CIRCUIT PANEL, SURFACE MOUNTED, MOUNT AT +6"-0" TO TOP.
	JUNCTION BOX
	JUNCTION BOX WITH PICTAL INDICATING CONNECTION TO EQUIPMENT. SIZES OF CONDUIT AND CONDUCTORS SHALL BE SAME SIZE AS BRANCH CIRCUIT WIRING.
	DUPLEX GROUNDING TYPE RECEPTACLE (+18" ABOVE FLOOR UNLESS NOTED OTHERWISE), D=DEDICATED CIRCUIT.
	DOUBLE DUPLEX GROUNDING TYPE RECEPTACLE (+18" ABOVE FLOOR UNLESS NOTED OTHERWISE), D=DEDICATED CIRCUIT.
	SINGLE POLE 20A SWITCH. LOWER CASE LETTER AT BOTTOM INDICATES OUTLETS CONTROLLED. SYMBOL AT TOP INDICATES TYPE: K=KEY CONTROLLED; P=PILOT LIGHT; 2=TWO POLE; 3=THREE WAY; 4=FOUR WAY, MOUNT AT +48" TO TOP UNLESS NOTED OTHERWISE.
	SINGLE POLE MANUAL MOTOR STARTER SWITCH WITH OVERLOAD ELEMENT(S), 2=TWO POLE, 3=THREE POLE.
	DISCONNECT SWITCH, F=FUSED, RATING AS NOTED, MOUNT AT +4'-6" TO HANDLE UNLESS NOTED OTHERWISE.
	PUSHBUTTON STATION: LOS=LOCK OUT STOP; ST=START; H=HIGH; L=LOW; PL=PILOT LIGHT; S=STOP.
	SWITCH FUNCTION AS NOTED: MAS=MECHANICAL ALTERNATOR SWITCH; DS=DOOR SWITCH; FL=FLOAT SWITCH; PES=PRESSURE SWITCH; PS=PRESSURE SWITCH; MC=MOVEMENT CONTACT SWITCH; M=MOVING; S=SURFACE; R=RECESSED; P=PLATE.
	THREE PHASE FRACTIONAL OR INTEGRAL HORSEPOWER MOTOR, NUMBER IN LIEU OF "M" INDICATES HORSEPOWER RATING.
	SINGLE PHASE, FRACTIONAL OR INTEGRAL HORSEPOWER MOTOR.
	TELEPHONE CONDUIT RUN, 3/4" C.O.: T1=1" C.O.; T2=1-1/4" C.O.; T3=1-1/2" C.O.; T4=2" C.O.
	TELEPHONE OUTLET, (+18" ABOVE FLOOR UNLESS NOTED OTHERWISE.) LETTER(S) INDICATE TYPE: P=PAY STATION; W=WALL MOUNTED (+54" ABOVE FLOOR UNLESS NOTED OTHERWISE); H=HOUSE PHONE.
	MOLDED CASE, ENCLOSED, FLUSH MOUNTED CIRCUIT BREAKER, AMPERES & POLES AS NOTED.
	EXISTING EQUIPMENT TO REMAIN.
	NEW EQUIPMENT.

SYMBOL	DESCRIPTION
	GROUND
	CONDUCTORS CONNECTED.
	CURRENT TRANSFORMERS
	TRANSFORMER, DESCRIPTION AS NOTED.
	DELTA-WYE TRANSFORMER CONNECTION.
	UTILITY COMPANY SERVICE METER
	VARIABLE FREQUENCY DRIVE
	AUTOMATIC TRANSFER SWITCH
	SOLENOID VALVE
	CIRCUIT BREAKER, AMPERE RATING AND NUMBER OF POLES AS NOTED.
	MOLDED CASE CIRCUIT BREAKER PLUG-IN TYPE, AMPERE RATING AND NUMBER OF POLES AS NOTED.
	COMBINATION MAGNETIC MOTOR STARTER WITH MOLDED CASE CIRCUIT BREAKER: FVNR=FULL VOLTAGE NON-REVERSING (L.L.O.) 2S=TWO SPEED; R=REVERSING; RV=REDUCED VOLTAGE AUTO TRANSFORMER; PW=PART WINDING. ROMAN NUMERAL INDICATES SIZE.
	SOLID STATE RAMP-UP, RAMP-DOWN, COMBINATION CIRCUIT BREAKER, STARTER, AND CONTACTOR
	MAGNETIC MOTOR STARTER: FVNR=FULL VOLTAGE NON-REVERSING (L.L.O.) 2S=TWO SPEED; R=REVERSING; RV=REDUCED VOLTAGE AUTO TRANSFORMER; PW=PART WINDING. ROMAN NUMERAL INDICATES SIZE.
	FUSED SWITCH, AMPERE RATING AND NUMBER OF POLES AS NOTED.
	CURRENT LIMITING FUSE, AMPERE RATING AND NUMBER OF POLES AS NOTED.
	COPPERWELD GROUND ROD AND WELL, 3/4" x 10'
	ELECTRICAL EQUIPMENT: CONTROL PANEL, DIST. PANEL MOTOR CONTROL CENTER, MIN ZONE POWER UNIT, ETC. SEE PLANS FOR EQUIPMENT TYPE AND SPECIFICATIONS.
	SYMBOL INDICATES CONDUIT SIZE & TYPE AND CONDUCTOR SIZE & AMOUNT. SEE CONDUIT AND CONDUCTOR CHART.
	SPECIAL PURPOSE RECEPTACLE NOTE: THE FOLLOWING SUBSCRIPTS ARE USED TO INDICATE VARIOUS TYPES OF SPECIAL RECEPTACLES: A 20A, 250V, 2 POLE, 3 WIRE, 1 PHASE, GROUNDING SINGLE RECEPTACLE, IVORY, NEMA 6-20R B 20A, 250V, 3 POLE, 4 WIRE, 3 PHASE, GROUNDING SINGLE RECEPTACLE, IVORY, NEMA 15-20R C 20A, 125/250V, 3 POLE, 4 WIRE, 1 PHASE, GROUNDING SINGLE RECEPTACLE, IVORY, NEMA 14-20R D 30A, 125V, 2 POLE, 3 WIRE, GROUNDING SINGLE RECEPTACLE, IVORY, NEMA 5-30R E 30A, 250V, 2 POLE, 3 WIRE, 1 PHASE, GROUNDING SINGLE RECEPTACLE, IVORY, NEMA 6-30R F 30A, 250V, 3 POLE, 4 WIRE, 3 PHASE, GROUNDING SINGLE RECEPTACLE, IVORY, NEMA 15-30R G 30A, 125/250V, 3 POLE, 4 WIRE, 1 PHASE, GROUNDING SINGLE RECEPTACLE, BLACK, NEMA 14-30R H 30A, 250V, 2 POLE, 3 WIRE, 1 PHASE, GROUNDING SINGLE RECEPTACLE, TWIST LOCK TYPE, IVORY, NEMA L6-30R I 30A, 250V, 3 POLE, 4 WIRE, 3 PHASE, GROUNDING SINGLE RECEPTACLE, TWIST LOCK TYPE, IVORY, NEMA L15-30R

TYPE	DESCRIPTION	FINISH	LAMP(S)	REMARKS	MFR. & NO.
	12" SQUARE BY 5" DEEP POLE TOP MOUNTED ADJUSTABLE FLOOD LIGHT FIXTURE WITH CAST ALUMINUM HOUSING, SEALED AND GASKETED, WITH CLEAR TEMPERED GLASS HINGED LENS WITH CAPTIVE FASTENERS.	FACTORY FINISHED DARK BRONZE POWDER COAT	(1) 70W. METAL HALIDE MEDIUM BASE	HIGH POWER FACTOR, REACTOR -20°F, DUAL VOLT BALLAST, FIXTURE COMPLETE WITH 2" ADJUSTABLE FITTER MOUNTING AND SINGLE FUSE PROTECTION, AND PHOTOCELL. SEE DETAIL ON SHEET E-6 FOR ADDITIONAL REQUIREMENTS.	RUUD LIGHTING #MFS3407-D
	19" TALL - 4" STRAIGHT SQUARE (.0120" WALL) STEEL POLE. 10" DIA. BOLT CIRCLE PROVIDE (4) 1" x 3/8" ANCHOR BOLTS.	FACTORY FINISHED DARK BRONZE		PROVIDE ALL MOUNTING HARDWARE FOR BASE AND 2" ADJUSTABLE FITTER MOUNT. POLE COMPLETE WITH WEATHERPROOF G.F.C.I. RECEPTACLE AND MANUAL TOGGLE SWITCH.	RUUD LIGHTING #PS4319C1BZ

## ABBREVIATIONS

A	AMPERE	FVR	FULL VOLTAGE REVERSING	OFO	OWNER FURNISHED OWNER INSTALLED
AC	ALTERNATING CURRENT	GFT	GROUND FAULT TRIP	OL'S	OVERLOADS
AF	AMPERE FRAME	GALV	GALVANIZED	P	POLE, PHASE
AFF	ABOVE FINISHED FLOOR	GEN	GENERATOR	PA	PUBLIC ADDRESS
AHU	AIR HANDLING UNIT	GT	GROUND FAULT INTERRUPTER	PB	PULL BOX, PUSH BUTTON
AC	AMPERE INTERRUPTING CAPACITY	GND	GROUND	PCL	PHOTOCELL CONTROLLED FIXTURE
AL	ALUMINUM	GRD	GROUND	PC	PANEL
AR	ALARM RELAY	GRS	GALVANIZED RIGID STEEL	PP	POWER PANEL
AT	AMPERE TRIP	HAZ	HAZARDOUS LOCATION - EXPLOSION PROOF	PR	PRIMARY
ATS	AUTOMATIC TRANSFER SWITCH	HH	HAND HOLE	PROVIDE	FURNISH, INSTALL AND CONNECT
AC	AMPERE INTERRUPTING CAPACITY	HP	HORSEPOWER	PVC	POLYVINYLCHLORIDE
AUTO	AUTOMATIC	HT	HEIGHT	PW	PART WINDING
AUX	AUXILIARY	HTR	HEATER	PWR	POWER
AWG	AMERICAN WIRE GAUGE	HV	HIGH VOLTAGE	RECEP	RECEPTACLE
BC	BARE COPPER CONDUCTOR	HZ	HERTZ (CYCLES PER SECOND)	REQD	REQUIRED
BKR	BREAKER	IL	INDICATING LAMP	RCS	RIGID GALVANIZED STEEL
C	CONDUIT	INCAND	INCANDESCENT	RM	ROOM
C/B	CIRCUIT BREAKER	INST	INSTANTANEOUS	RMS	ROOT MEAN SQUARE
CKT	CIRCUIT	INSTR	INSTRUMENT	RS	RAPID START
CLS	CEILING	INTLK	INTERLOCK	RVAR	REDUCED VOLTAGE NON REVERSING
CND	CONDUIT	JB	JUNCTION BOX	SCH	SCHEDULE
C.O.	CONDUIT ONLY	KVA	KILOVOLT AMPERES	SEC	SECONDARY, SECONDS
CMPT	COMPRESSOR	KW	KILOWATTS	SEL	SELECTOR
COMP	COMPARTMENT	KWH	KILOWATT HOUR	SEL	SELECTOR
CONT	CONTROL	LOC	LOCATION	SH	SHIELDED
CONTD	CONTINUED	LP	LIGHTING PANEL	SPEC	SPECIFICATIONS
CR	CONTROL RELAY	LTG	LIGHTING	SPDT	SINGLE POLE DOUBLE THROW
CT	CURRENT TRANSFORMER	LV	LOW VOLTAGE (GENERALLY BELOW 600V)	SPST	SINGLE POLE SINGLE THROW
CU	COPPER	MA	MILLIAMPERE	SS	SOFT START, STAINLESS STEEL
CW	COOL WHITE	MAX	MAXIMUM	S/S	SELECTOR SWITCH
DB	DIRECT BURIAL	MCC	MOTOR CONTROL CENTER	SUB	SUBSTATION
DC	DIRECT CURRENT	MCM	THOUSAND CIRCULAR MILLS	SUB	SOLENOID VALVE
DET	DETAIL	MCP	MOTOR CIRCUIT PROTECTOR	SW	SWITCH
DIAG	DIAGRAM	MH	MANHOLE	SWBD	SWITCHBOARD
DISC	DISCONNECT	MIN	MINIMUM	TB	TERMINAL BLOCK
DISTR	DISTRIBUTION	MOV	MOTOR OPERATED VALVE	TC	TIME CLOCK
DP	DISTRIBUTION PANEL	MR	MOTOR CONTACTOR RELAY	TEL	TELEPHONE
DS	DISCONNECT SWITCH	MS	MANUAL STARTER	TEMP	TEMPERATURE
ELEV	ELEVATION	MSB	MAIN SWITCH BOARD	TS	TIME SWITCH, TEMPERATURE SWITCH
EMER	EMERGENCY	MSG	MAIN SWITCHGEAR	TYP	TYPICAL
ENCL	ENCLOSURE/ENCLOSED	MSP	MOTOR STARTER PANEL	UG	UNDERGROUND
EQUIP	EQUIPMENT	MTD	MOUNTED	UNSW	UNSWITCHED
ES	ENERGY SAVING	MTG HT	MOUNTING HEIGHT	UNO	UNLESS NOTED OTHERWISE
EXIST	EXISTING	MY	MILLIVOLTS	UPS	UNINTERRUPTIBLE POWER SUPPLY
EXP	EXPLOSION PROOF	N/A	NOT APPLICABLE	US	UNIT SUBSTATION
F	FREQUENCY	NC	NORMALLY CLOSED	V	VOLT
FA	FIRE ALARM	NF	NON FUSED	VA	VOLT-AMPS
FDR	FEEDER	NC	NOT IN CONTRACT	VFD	VARIABLE FREQUENCY DRIVE
FIN	FINISHED	NO	NORMALLY OPEN	VJ	VERIFY ON JOB
FLEX	FLEXIBLE	NP	NAMEPLATE	VSD	VARIABLE SPEED DRIVE
FP	FIELD PANEL	NTS	NOT TO SCALE	W	WATTS
FS	FLOW SWITCH	OC	OVER CURRENT	W	WITH
FUT	FUTURE	OFC	OIL FUSED CUTOFF	W/O	WITHOUT
FVNR	FULL VOLTAGE NON REVERSING	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED	WP	WEATHERPROOF
		OFCI		TRNSFR	TRANSFORMER

- THE CONTRACTOR SHALL SUPPLY POWER TO AND MAKE CONNECTIONS TO ALL MOTORS AND EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS AS SHOWN ON THE SINGLE LINE DIAGRAM, ELECTRICAL PLANS, AND THE MECHANICAL AND PLUMBING DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW THE DRAWINGS OF THE MECHANICAL AND PLUMBING SECTIONS FOR CONTROL DIAGRAMS, SIZE OF EQUIPMENT AND LOCATION. ALL CONDUIT, WIRING, CONTROL ITEMS, ETC. FOR MECHANICAL AND PLUMBING OPERATION SHALL BE PROVIDED.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSTALL CONDUIT AND/OR ELECTRICAL EQUIPMENT IN A LOCATION WHICH WILL CAUSE AS LITTLE INTERFERENCE AS POSSIBLE WITH THE INSTALLATION AND MAINTENANCE OF ANY OF THE MECHANICAL AND/OR PLUMBING DUCTS, LINES AND EQUIPMENT.
- ALL FINAL CONNECTIONS TO OWNER-FURNISHED EQUIPMENT SHALL BE MADE BY THE CONTRACTOR UNLESS NOTED OTHERWISE.
- THE NUMERALS(S) SHOWN AT TOP OF LIGHT FIXTURE IDENTIFICATION SYMBOL WHICH INDICATE NUMBER OF LIGHT FIXTURES REQUIRED SHALL NOT BE USED BY THE CONTRACTOR FOR DETERMINATION OF HOW MANY FIXTURES WILL BE INSTALLED. THE CONTRACTOR SHALL COUNT ALL LIGHT FIXTURES WHEREVER A FIXTURE OUTLET IS SHOWN ON DRAWINGS.
- CONTRACTOR SHALL VISIT THE SITE AND THOROUGHLY FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND ACCEPT THE CONDITIONS UNDER WHICH HE WILL BE REQUIRED TO WORK.
- WHenever a discrepancy in size of conduit, wire or equipment arises on the drawings, the contractor shall be responsible for installing the largest size of the items in question.
- SEE SINGLE LINE DIAGRAM FOR CONDUIT AND CONDUCTOR SIZES TO PANELS, TRANSFORMERS, MOTOR CONTROL CENTERS, MECHANICAL EQUIPMENT, ETC. FEEDERS TO PANELS MAY NOT BE SHOWN ON PLAN DRAWINGS, BUT IS A PART OF THIS CONTRACT.
- ALL ITEMS RELATED TO THE ELECTRICAL POWER SERVICE SUCH AS SERVICE CONDUIT, CONDUCTORS, DUCTS, PAD MOUNT, RISERS, PULL BOXES, PERMITS, FEES, AND PROTECTIVE COVERING FROM SERVICE POLE LOCATION SHALL BE PROVIDED AND/OR INSTALLED AND SHALL BE VERIFIED WITH SERVING UTILITY. CONTRACTOR SHALL INSTALL SERVICE IN COMPLIANCE WITH THE SERVING UTILITY AND ENGINEER AND TO PAY ALL CHARGES LEVIED BY THE SERVING UTILITY FOR THIS SERVICE, EXCEPTING FIRST BILLING PERIOD.
- CONTRACTOR SHALL BE RESPONSIBLE TO SUBMIT CONTROL DRAWINGS FOR THE PUMP CONTROL PANEL/SYSTEM TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
- BY ACCEPTING THE CONTRACT, CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THE PROJECT EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.
- ALL CIRCUITS SHALL BE INSTALLED IN AN APPROVED RACEWAY.
- ANY FLEXIBLE CONDUIT USED SHALL BE LESS THAN 6'-0" IN LENGTH AND MUST CARRY AN APPROVED SIZE GROUND WIRE.
- THE CONTRACTOR SHALL SECURE AND PAY FOR PERMITS AND FEES FOR EXECUTION AND COMPLETION OF ELECTRICAL WORK, INCLUDING ALL CHARGES BY THE LOCAL GOVERNMENT AGENCIES.
- ALL CONDUIT STUB OUTS AND RUNS EXTERIOR TO THE NEMA ENCLOSURES SHALL BE A MINIMUM OF 24" BELOW GRADE. PROVIDE WEATHERPROOF J-BOX FOR ALL STUB OUTS.
- PROVIDE ENGRAVED LAMACORD NAME PLATES FOR ALL CIRCUIT BREAKERS, TRANSFORMERS, STARTERS, SWITCHES, PANELS, ETC. LETTERS SHALL BE 3/8" HIGH.
- THERE ARE WATER LINES AND OTHER UNDERGROUND UTILITIES IN THE AREAS WHERE TRENCHING FOR THE ELECTRICAL DUCT LINES ARE LOCATED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE ALL REPAIRS TO ANY UNDERGROUND UTILITY DAMAGED WHILE DIGGING ON THE SITE.
- ALL CONDUCTORS IN MANHOLES, TRENCHES, AND IN SWITCHGEAR SHALL BE ARC AND FIRE PROOFED BY WRAPPED CABLE AND JOINTS WITH 3M #770 TAPE ONE LAYER HALF WRAPPED THE FULL LENGTH.
- TERMINATE AND SPICE CONDUCTORS, IN MANHOLE OR WHERE INDICATED WITH TAPE TYPE TERMINATION KIT, SCOTCH 3M OR EQUAL.
- ALL CONDUCTORS IN MANHOLES, CABINETS, SWITCHES, ETC. SHALL BE IDENTIFIED WITH ENGRAVED, 2" DIAMETER, FIBER TAGS. INDICATE LOAD, VOLTAGE, AND PHASE.
- COIL CONDUCTORS IN MANHOLE, AT LEAST ONE TIME AROUND PERIMETER FOR ALL NEW CONDUCTORS SPLICED OR EXTENDED THROUGH MANHOLE OR U.G. PULL SECTIONS.

## NOTICE

RELEASE OF THESE PLANS CONTEMPLATES FURTHER COOPERATION AMONG THE OWNER, HIS CONTRACTOR, AND THE ENGINEER. DESIGN AND CONSTRUCTION ARE COMPLEX. ALTHOUGH THE ENGINEER HAS PERFORMED HIS SERVICES WITH DUE CARE AND DILIGENCE, HE CANNOT GUARANTEE PERFECTION. COMMUNICATION IS IMPERFECT, AND EVERY CONTINGENCY CANNOT BE ANTICIPATED. ANY AMBIGUITY OR DISCREPANCY DISCOVERED BY THE USE OF THESE PLANS SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER. FAILURE TO NOTIFY THE ENGINEER COMPOUNDS MISUNDERSTANDING AND INCREASES CONSTRUCTION COSTS. A FAILURE TO COOPERATE BY A SIMPLE NOTICE TO THE ENGINEER SHALL RELIEVE THE ENGINEER FROM RESPONSIBILITY FOR ALL CONSEQUENCES. CHANGES MADE FROM THE PLANS WITHOUT THE CONSENT OF THE ENGINEER ARE UNAUTHORIZED, AND SHALL RELIEVE THE ENGINEER OF RESPONSIBILITY FOR ALL CONSEQUENCES ARISING OUT OF SUCH CHANGES.

IT IS ALSO UNDERSTOOD AND AGREED THAT THE DESIGN PROFESSIONAL HAS NO CONSTRUCTIVE USE OF OWNER'S SITE; HAS NO CONTROL OR AUTHORITY OVER THE MEANS, METHODS, AND SEQUENCES OF CONSTRUCTION; AND THEREFORE HAS NO ONGOING RESPONSIBILITY WHATSOEVER FOR CONSTRUCTION SITE SAFETY; A RESPONSIBILITY THAT HAS BEEN WHOLLY VESTED IN THE GENERAL CONTRACTOR.

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Engineering, Planning and Environmental Consultants  
517 Fourth Avenue - Suite 301 - San Diego, Ca. - 92011  
Tel: (619) 234-9441 Fax: (619) 234-9433

PREPARED BY: *Steve M. Chan* RCE 15107

SEWER CERTIFICATION BLOCK

I certify that the design of the Sewer System in Tract No. 30857 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.

CIVIL ENGINEER R.C.E. 46212 DATE: 8/30/05

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:

*M. B. ...* 8/30/05  
CIVIL ENGINEER R.C.E. 46212 DATE: 8/30/05  
VOID AFTER ONE YEAR FROM THIS DATE

BENCH MARK: NAIL W/ R/C TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE, Z7981 RCFCO NGVD 29. ELEVATION - 1568.64

WESTERN MUNICIPAL WATER DISTRICT

P.O. BOX 5286  
RIVERSIDE, CA. 92517-5286

450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508

(909) 789-5000 (BUS) (909) 780-3837 (FAX)

MARCH BUSINESS CENTER  
TRACT NO. 30857-UNIT 1

VAN BUREN SEWER LIFT STATION

ELECTRICAL ABBREVIATIONS, SCHEDULES AND SYMBOLS

SCALE: HOR: 12" = 1" VERT: 1" = 4"

SHEET NO. 8

OF 13 SHTS

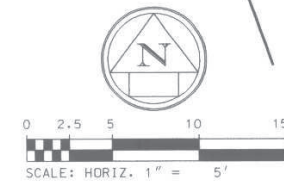
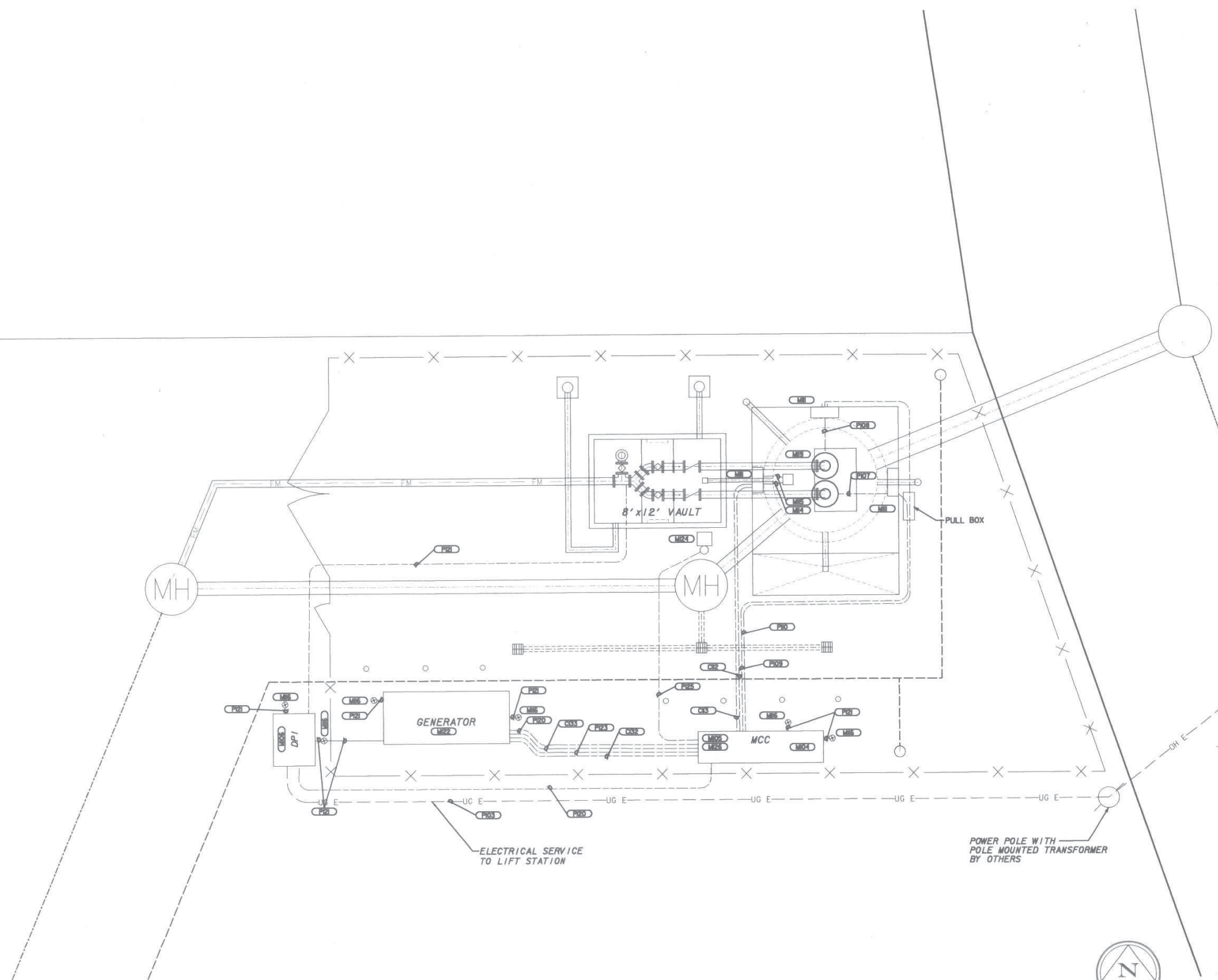
DWG. NO.: E-1

PLotted: 08/16/2005 W:\05\095\050500\UPRT-STUD-114-597-08.dwg



**VAN BUREN SEWER LIFT STATION  
ELECTRIC NOTES**

- (P103) 4" CONDUIT ONLY -- CONDUCTORS BY UTILITY CO.
- (P104) PUMP CONTROL PANEL "MCC" -- SEE ELEVATION ON SHEET E-5, & CONTROL DIAGRAM ON SHEET E-4
- (P105) 100A, 3P, AUTO TRANSFER SWITCH "ATS" FURNISHED BY PUMP CONTROL PANEL SUPPLIER.
- (P106) S.C.E. APPROVED SERVICE METER MAIN PEDISTOL SEE SHEET E-5 FOR ELEVATION. 100A, 3PH, 4W, 277/480V, COOPER-BEELINE #CMP411MCH1/M042K
- (P107) 3-1/2" C., (1) 4/C-#10 & (1) 5/C-#14 CABLES. (CABLES SHALL BE CONTINUOUS AND UNSPLICED BETWEEN SUBMERSIBLE PUMP AND WET WELL JUNCTION BOX)
- (P108) 3-1/2" C., (1) 4/C-#10 & (1) 5/C-#14 CABLES. (CABLES SHALL BE CONTINUOUS AND UNSPLICED BETWEEN SUBMERSIBLE PUMP AND WET WELL JUNCTION BOX)
- (P109) 2" C., 3 #10 (PUMP POWER) AND 1 #10 BARE GROUND; AND 2" C., 4 #14 (PUMP CONTROL) AND 1 #14 BARE GROUND
- (P110) 2" C., 3 #10 (PUMP POWER) AND 1 #10 BARE GROUND; AND 2" C., 4 #14 (PUMP CONTROL) AND 1 #14 BARE GROUND
- (M101) JUNCTION BOX SIZE. SEE DETAIL SHEET E-6
- (C112) 3/4" C. WITH MILTRONICS TRANSDUCER CABLE
- (C113) 1-1/2" C., (2) 2/C-#14 SUBMERSIBLE (FLOAT) CABLES.
- (M114) FLOAT SWITCHES -- HIGH LEVEL ALARM AND LOW LEVEL PUMP SHUT DOWN CONTROL.
- (M115) MILTRONICS ULTRASONIC LEVEL TRANSDUCER SEE DETAIL SHEET E-6.
- (M116) GROUND ROD & WELL. SEE DETAIL SHEET E-6.
- (M117) ALL ELECTRICAL WORK IN THE WET WELL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NEC ARTICLE 500, CLASS 1, DIVISION 1.
- (P120) (1) 2" C., (4) #4 & (1) #4 GRD., THWN, CU.
- (P121) 3/4" C. W/ (1) #2 AWG CU GROUND BOND
- (P122) STAND-BY DIESEL ENGINE DRIVEN GENERATOR SET. CUMMINS ONAN DGCA, RATED 45KW/56KVA, 0.8PF, 480/277V, 3 PHASE, 4W, COMPLETE W/ SOUND ATTENUATED WEATHERPROOF HOUSING, BASE FUEL TANK (24HR FUEL CAPACITY AT FULL LOAD), BATTERY CHARGER AND 1000W COOLANT HEATER
- (P123) 1-1/2" C., (6) #12 & (1) #12 GRD., THWN, CU TO PANEL "B". 120WAC POWER FOR BATTERY CHARGER, GENERATOR PANEL & (1) 240V COOLANT HEATER
- (M124) PROVIDE & INSTALL FLOODLIGHT AS SHOWN. SEE DETAIL ON SHEET E-6.
- (P125) 3/4" C., (3) #12 & (1) #12 GRD., THWN, CU, HOMERUN TO PANEL "B". (LIGHTING & RECEPTACLE)
- (P126) PROVIDE PANEL "B" IN "MCC" ASSEMBLY. PANEL "B" SHALL HAVE 12 CKTS WITH BKRS AS SHOWN IN SCHEDULE.
- (C130) 1" C., (8) #14 AND (1) #14 GRD. (GENERATOR CONTROL)
- (C131) 3/4" C., (2) #14 AND (1) #14 GRD. (GENERATOR START)



NOTE:  
THE DESIGN AND THE CONSTRUCTABILITY OF THE PROJECT AS WELL AS THE ACCURACY OF FIGURES ARE THE RESPONSIBILITY OF THE DESIGN ENGINEER. PLAN CHECK SERVICES BY W.M.W.D. WILL BE LIMITED TO THE ADHERENCE OF THE DISTRICT STANDARDS, MATERIALS, QUANTITIES AND SIZE OF FACILITIES, AS THEY RELATE TO THE SERVICE DISCHARGE OR APPROVED MASTER PLAN. DISCHARGE OF WASTEWATER FROM THE IMPROVEMENTS SHOWN ON THESE PLANS IS DEPENDENT UPON COMPLETION OF THE PIPING PROPOSED AS PART OF OTHER PHASES OF THIS TRACT AND/OR OTHER ADJACENT TRACTS.

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TWO WORKING DAYS BEFORE YOU DIG.



**Kimley-Horn and Associates, Inc.**  
Engineering, Planning and Environmental Consultants  
517 Fourth Avenue - Suite 301 - San Diego, Ca. - 92101  
Tel: (619) 234-9411 Fax: (619) 234-9433  
PREPARED BY: *San M. Chan* RCE 15107  
DATE: 8/17/05

**SEWER CERTIFICATION BLOCK**  
I certify that the design of the Sewer System in Tract No. 30857 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.

MARK	REVISIONS	APPR. DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*R. E. 46212* 8/30/05  
CIVIL ENGINEER R.C.E. 46212 DATE  
VOID AFTER ONE YEAR FROM THIS DATE  
BENCH MARK:  
NAIL W/ RCFD TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE, 27981 RCFD NGVD, 29. ELEVATION= 1566.64

WESTERN MUNICIPAL WATER DISTRICT  
P.O. BOX 5286  
RIVERSIDE, CA. 92517-5286  
450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508  
(909) 789-5000 (BUS) (909) 780-3857 (FAX) Rev: 2/28/06

MARCH BUSINESS CENTER  
TRACT NO. 30857-UNIT 1  
VAN BUREN SEWER LIFT STATION  
ELECTRICAL PLAN  
SCALE: HORIZ: 1" = 5' VERT: N/A

SHEET NO. 9  
OF 13 SHTS  
DWG. NO. E-2

PLOTED: 08/16/2005 8:02AM \\S:\30857\UNIT 1\30857-ELECTRICAL.dwg

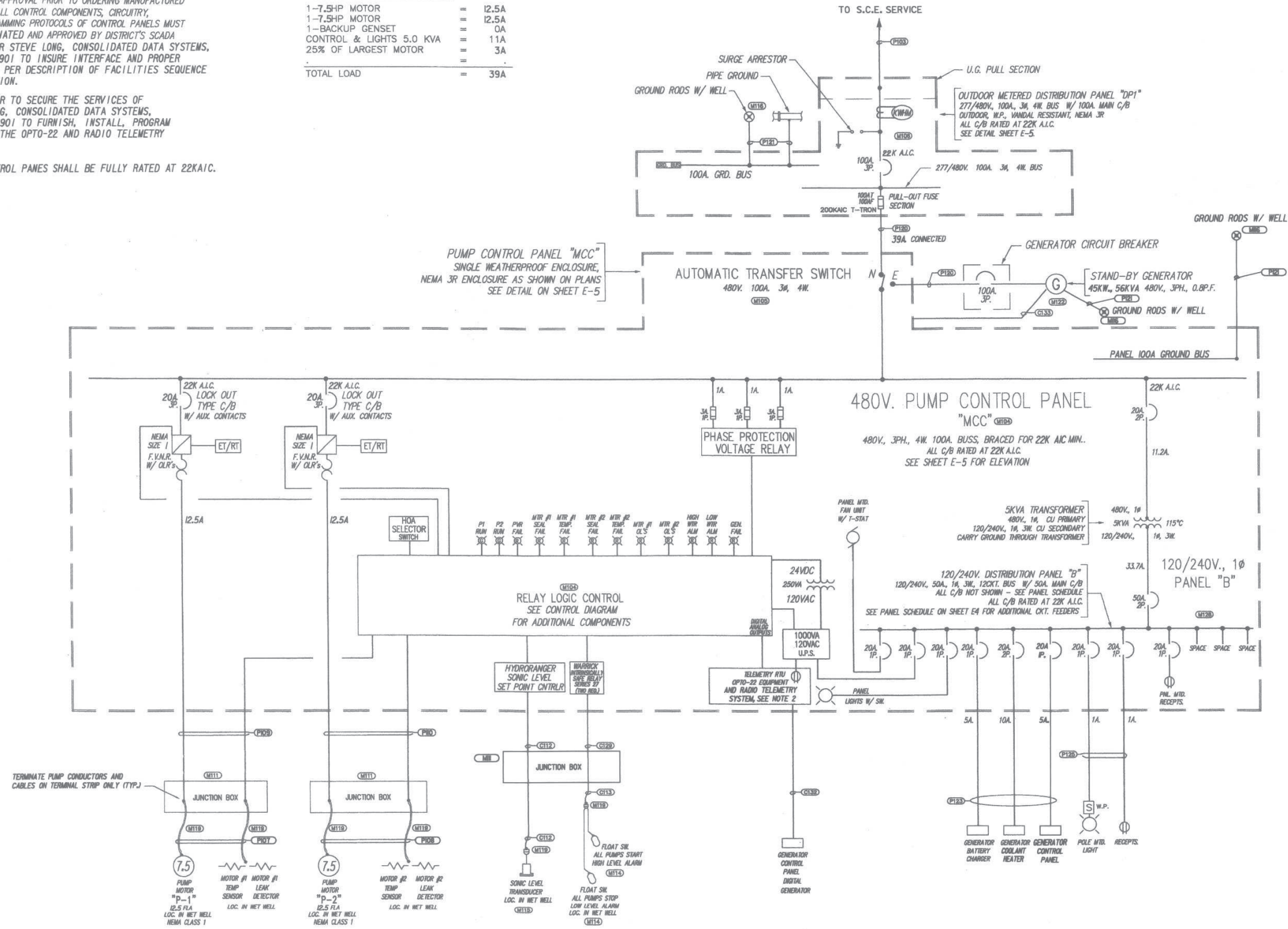


**NOTES:**

- PUMP CONTROL PANEL SHALL BE PRE-MANUFACTURED. MANUFACTURERS SHALL SUBMIT DETAILED SHOP DRAWINGS OF PANEL CIRCUITRY FOR W.M.W.D. REVIEW AND ENGINEER'S APPROVAL PRIOR TO ORDERING MANUFACTURED PANELS. ALL CONTROL COMPONENTS, CIRCUITRY, AND PROGRAMMING PROTOCOLS OF CONTROL PANELS MUST BE COORDINATED AND APPROVED BY DISTRICT'S SCADA PROGRAMMER STEVE LONG, CONSOLIDATED DATA SYSTEMS, 714-505-5901 TO INSURE INTERFACE AND PROPER OPERATION PER DESCRIPTION OF FACILITIES SEQUENCE OF OPERATION.
- CONTRACTOR TO SECURE THE SERVICES OF STEVE LONG, CONSOLIDATED DATA SYSTEMS, 714-505-5901 TO FURNISH, INSTALL, PROGRAM AND TEST THE OPTO-22 AND RADIO TELEMETRY SYSTEMS.
- PUMP CONTROL PANES SHALL BE FULLY RATED AT 22KAIC.

**LOAD CALCULATIONS**

1-7.5HP MOTOR	=	12.5A
1-7.5HP MOTOR	=	12.5A
1-BACKUP GENSET	=	0A
CONTROL & LIGHTS 5.0 KVA	=	11A
25% OF LARGEST MOTOR	=	3A
<b>TOTAL LOAD</b>	=	<b>39A</b>



**SINGLE LINE DIAGRAM VAN BUREN SEWER LIFT STATION**

**VAN BUREN SEWER LIFT STATION  
ELECTRIC NOTES**

- (P103) 4" CONDUIT ONLY - CONDUCTORS BY UTILITY CO.
- (M104) PUMP CONTROL PANEL "MCC" - SEE ELEVATION ON SHEET E-5, & CONTROL DIAGRAM ON SHEET E-4
- (M105) 100A, 3P, AUTO TRANSFER SWITCH "ATS" FURNISHED BY PUMP CONTROL PANEL SUPPLIER.
- (M106) S.C.E. APPROVED SERVICE METER MAIN PEDISTOL SEE SHEET E-5 FOR ELEVATION. 100A, 3PH., 4W. 277/480V., COOPER-BEELINE #CMP4111CH1/M042K
- (P107) 3-1/2" C., (1) 4/C-#10 & (1) 5/C-#14 CABLES. (CABLES SHALL BE CONTINUOUS AND UNSPLICED BETWEEN SUBMERSIBLE PUMP AND WET WELL JUNCTION BOX)
- (P108) 3-1/2" C., (1) 4/C-#10 & (1) 5/C-#14 CABLES. (CABLES SHALL BE CONTINUOUS AND UNSPLICED BETWEEN SUBMERSIBLE PUMP AND WET WELL JUNCTION BOX)
- (P109) 2"C, 3 #10 (PUMP POWER) AND 1 #10 BARE GROUND; AND 2"C, 4 #14 (PUMP CONTROL) AND 1 #14 BARE GROUND
- (P110) 2"C, 3 #10 (PUMP POWER) AND 1 #10 BARE GROUND; AND 2"C, 4 #14 (PUMP CONTROL) AND 1 #14 BARE GROUND
- (M111) JUNCTION BOX SIZE. SEE DETAIL SHEET E-6
- (C112) 3/4"C, WITH MILTRONICS TRANSDUCER CABLE
- (C113) 1-1/2"C., (2) 2/C-#14 SUBMERSIBLE (FLOAT) CABLES.
- (M114) FLOAT SWITCHES - HIGH LEVEL ALARM AND LOW LEVEL PUMP SHUT DOWN CONTROL.
- (M115) MILTRONICS ULTRASONIC LEVEL TRANSDUCER SEE DETAIL SHEET E-6.
- (M116) GROUND ROD & WELL SEE DETAIL SHEET E-6.
- (M118) ALL ELECTRICAL WORK IN THE WET WELL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NEC ARTICLE 500, CLASS 1, DIVISION 1.
- (P120) (1) 2"C., (4) #4 & (1) #4 GRD., THWN, CU.
- (P121) 3/4"C. W/ (1) #2 AWG CU GROUND BOND
- (M122) STAND-BY DIESEL ENGINE DRIVEN GENERATOR SET. CUMMINS ONAN DGCA, RATED 45KW/56KVA, 0.8PF, 480/277V, 3 PHASE, 4W, COMPLETE W/ SOUND ATTENUATED WEATHERPROOF HOUSING, BASE FUEL TANK (24HR FUEL CAPACITY AT FULL LOAD), BATTERY CHARGER AND 1000W COOLANT HEATER
- (P123) 1-1/2"C., (4) #12 & (1) #12 GRD., THWN, CU TO PANEL "B". 120VAC POWER FOR BATTERY CHARGER, CONTROL PANEL & 0.240V COOLANT HEATER
- (M124) PROVIDE & INSTALL FLOODLIGHT AS SHOWN. SEE DETAIL ON SHEET E-6.
- (P125) 3/4"C., (3) #12 & (1) #12 GRD., THWN, CU, HOMERUN TO PANEL "B". (LIGHTING & RECEPTACLE)
- (M126) PROVIDE PANEL "B" IN "MCC" ASSEMBLY. PANEL "B" SHALL HAVE 12 CKTS WITH BKRS AS SHOWN IN SCHEDULE.
- (C130) 1"C., (2) #14 AND (1) #14 GRD. (GENERATOR CONTROL)
- (C133) 3/4"C., (2) #14 AND (1) #14 GRD. (GENERATOR START)

NOTE: THE DESIGN AND THE CONSTRUCTIBILITY OF THE PROJECT AS WELL AS THE ACCURACY OF FIGURES ARE THE RESPONSIBILITY OF THE DESIGN ENGINEER. PLAN CHECK SERVICES BY W.M.W.D. WILL BE LIMITED TO THE ADHERENCE OF THE DISTRICT STANDARDS, MATERIALS, QUANTITIES AND SIZE OF FACILITIES, AS THEY RELATE TO THE SERVICE DISCHARGE OR APPROVED MASTER PLAN. DISCHARGE OF WASTEWATER FROM THE IMPROVEMENTS SHOWN ON THESE PLANS IS DEPENDENT UPON COMPLETION OF THE PIPING PROPOSED AS PART OF OTHER PHASES OF THIS TRACT AND/OR OTHER ADJACENT TRACTS.

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**Kimley-Horn and Associates, Inc.**  
Engineering, Planning and Environmental Consultants  
517 Fourth Avenue - Suite 301 - San Diego, Ca. - 92101  
Tel: (619) 234-9411 Fax: (619) 234-9433  
PREPARED BY: *[Signature]* 8/17/05  
CIVIL ENGINEER R.C.E. 46212

SEWER CERTIFICATION BLOCK

I certify that the design of the Sewer System in Tract No. 30857 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.

CIVIL ENGINEER R.C.E. 46212	DATE	MARK	REVISIONS	APPR. DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*[Signature]* 8/30/05  
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CIVIL ENGINEER R.C.E. 46212  
VOID AFTER ONE YEAR FROM THIS DATE  
BENCH MARK: NAIL W/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. Z7981 RCFCD NGVD 29. ELEVATION = 1568.64

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MARCH BUSINESS CENTER  
TRACT NO. 30857-UNIT 1  
VAN BUREN SEWER LIFT STATION  
ELECTRICAL  
SINGLE LINE DIAGRAM

SHEET NO.  
10  
OF 13 SHTS  
DWG. NO.: E-3

SCALE: NO SCALE AS SHOWN

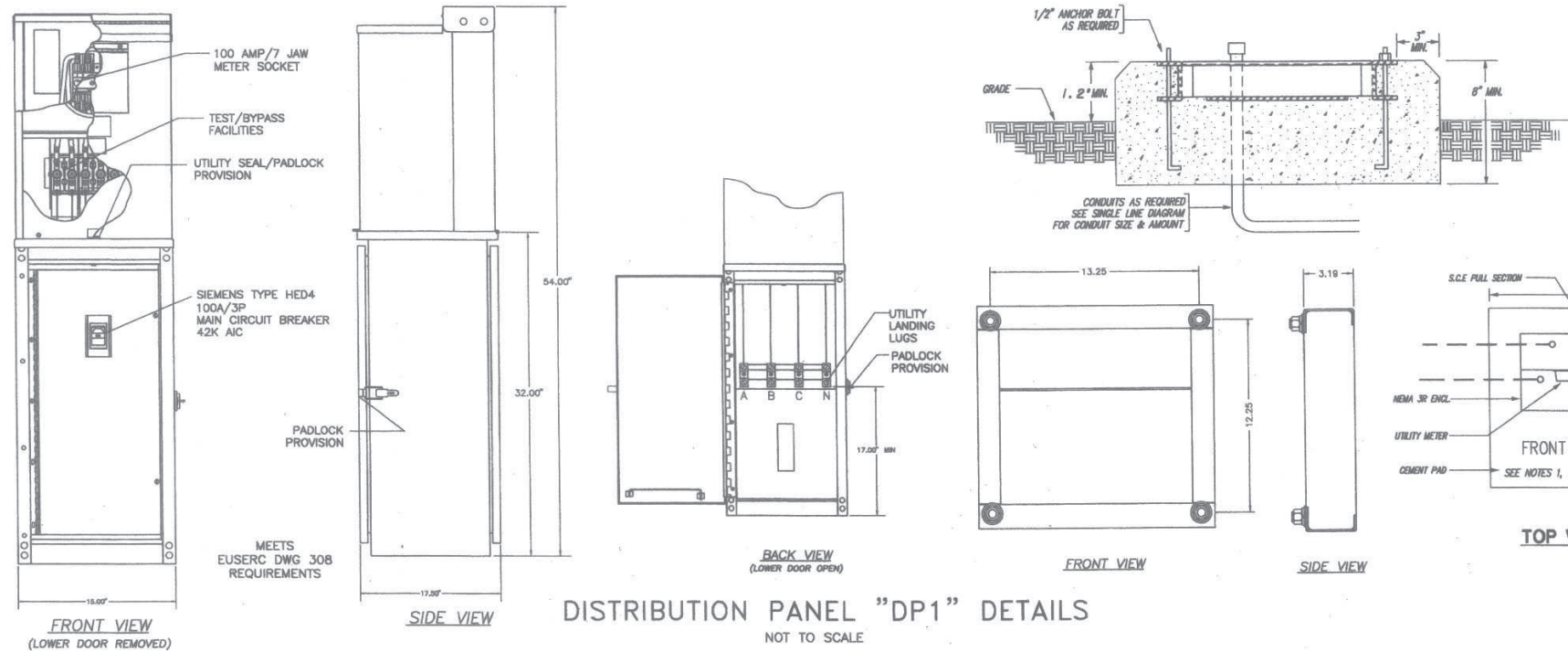






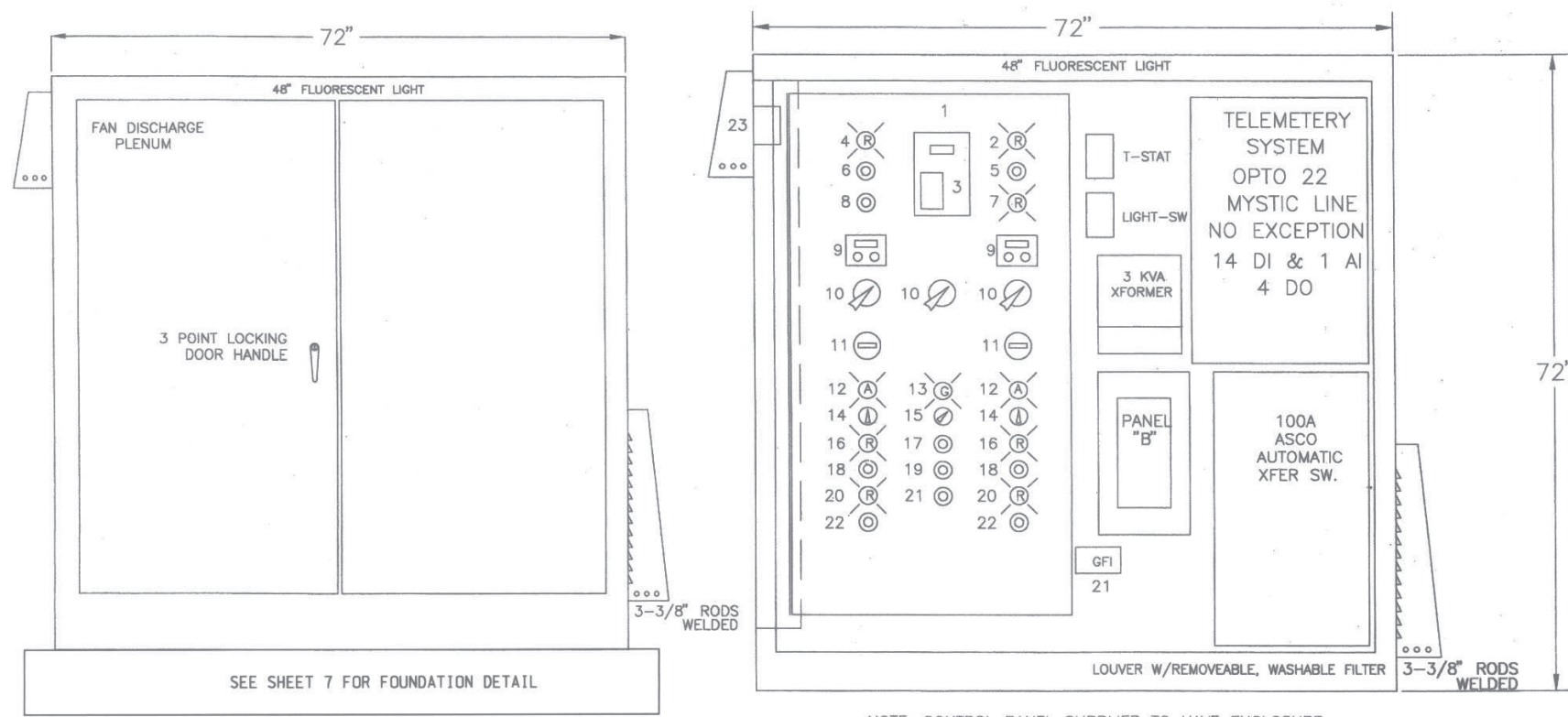
**NOTES:**

- ALL DIMENSIONS FOR DISTRIBUTION PANEL TAKEN FROM MANUFACTURER'S SPECIFICATIONS. EQUIPMENT SHOWN IS MYERS #MEGUD AUXILIARY CONTROL CABINET.
- PANEL SHALL BE LOCATED SO THAT THERE IS A MINIMUM OF 36" CLEARANCE FRONT AND BACK PER NEC 110-16. (RECOMMENDED SIDE CLEARANCE 10").
- CONCRETE PAD SHALL EXTEND 18" PAST FRONT DOOR(S) OF PANEL.
- DISTRIBUTION PANEL TO BE NEMA 3R RATED FOR 100A. AT 277/480V. 3Ø, 4W. COMPLETE WITH 100A. 3Ø. MAIN C/B. COOPER-BEELINE #CMP4111MCH1/MO42K
- MAIN C/B SHALL BE RATED FOR 22,000 A.I.C. SYMMETRICAL MINIMUM.
- PANEL SHALL BE LOW PROFILE, VANDAL RESISTANT ENCLOSURE, COMPLETE WITH HINGED LOCKING DOORS, ADJUSTABLE MOUNTING PANS, REAR ACCESS DOOR, AND PLYWOOD BACKBOARD IN AUXILIARY SECTION.
- ALL CONDUITS TO BE INSTALLED BEFORE FOUNDATION IS POURED.
- SEE SINGLE LINE DIAGRAM FOR SIZE & AMOUNT OF CONDUITS TO BE TERMINATED IN EACH SECTION.
- FINISH TO BE LIGHT GREEN BAKED ENAMEL.



**INSTALLATION INSTRUCTIONS**  
CMP-4000 SERIES

- METER PEDESTALS ARE DESIGNED FOR PAD-MOUNT INSTALLATION. TWO METHODS CAN BE USED TO INSTALL PEDESTALS ON A CONCRETE PAD.
- METHOD 1.** USE PRE-FABRICATED MOUNTING BASE ASSEMBLY A - CAT. NO. MB1515 - SUITABLE FOR 15"W x 14"D AND 15"W x 15"D PEDESTALS.
- INSTALL MOUNTING BASE ASSEMBLY FLUSH WITH TOP SURFACE OF CONCRETE PAD, ALLOWING STUDS TO REACH ABOVE PAD. LOCATE LINE AND LOAD CONDUITS IN THE DESIGNATED AREAS, AS SHOWN ON DRAWING BELOW.
- 
- MB1515 (FRONT)**
- Labels include: LINE SIDE 5.000 X 12.000, LOAD SIDE 7.000 X 12.000, THIS SIDE MUST FACE NORTH, 12.250, 13.250, 30", 17.5", 18.5", 42", NEMA 3R ENCL., UTILITY METER, CEMENT PAD, SEE NOTES 1, 7, 9.
- METHOD 2.** USE ANCHOR BOLTS (.625 DIA.) PRE-CAST IN CONCRETE PAD. MOUNTING HOLE DIMENSIONS ARE SHOWN ABOVE. LOCATE LINE AND LOAD CONDUITS THE SAME AS IN METHOD ONE.



- INNER DOOR (PAINTED STEEL)
  - LOW LEVEL ALARM LIGHT
  - SONIC CONTROLLER \*
  - HIGH LEVEL ALARM LIGHT
  - LOW LEVEL RESET PB
  - HIGH LEVEL RESET PB
  - EMERGENCY HIGH LEVEL LIGH
  - EMERGENCY H L RESET PB
  - PHASE-POWER DIGITAL INDICATOR
  - INTERLOCKED CB HANDLE(S)
  - ELAPSED TIME METER(S)
  - MOTOR RUN LIGHT(S)
  - CONTROL POWER ON LIGHT
  - HAND OF AUTO SWITCH(S)
  - LEAD PUMP SELECTOR SWITCH(S)
  - MOTOR THERMAL SHUT DOWN PL
  - PILOT LIGHT TEST
  - MOTOR THERMAL RESET PB
  - PILOT LIGHT TEST
  - SEAL FAIL LIGHT(S)
  - SEAL FAIL TEST
  - OVERLOAD RESET PB
  - 110 CFM EXHAUST FAN
- \* MILLTRONICS MULTIRANGER PLUS ONLY (TO MAINTAIN DISTRICT STANDARD)

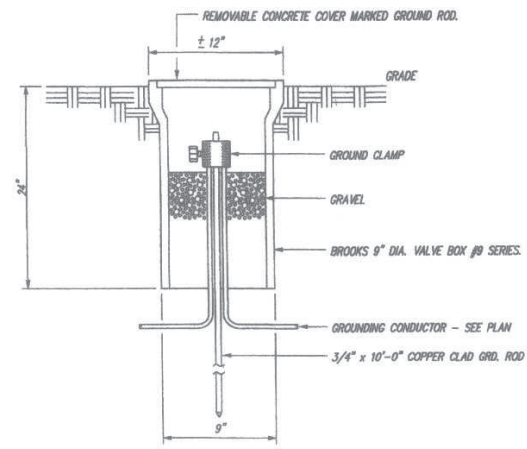
NOTE: CONTROL PANEL SUPPLIER TO HAVE ENCLOSURE CERTIFIED BY A SEISMIC ENGINEER TO PROVIDE ADEQUATE ANCHORAGE FOR WIND/SEISMIC LOADING.

ENAMEL COATED GALV. STEEL ENCLOSURE  
ASA61 NEMA 3R GASKETED, NO BOTTOM  
W/2" ANGLE FOR ANCHORING.  
LIFTING EYES STEEL MOUNTING PANEL (WHITE)

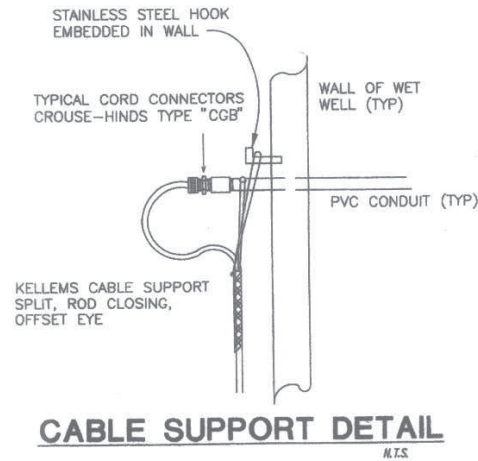
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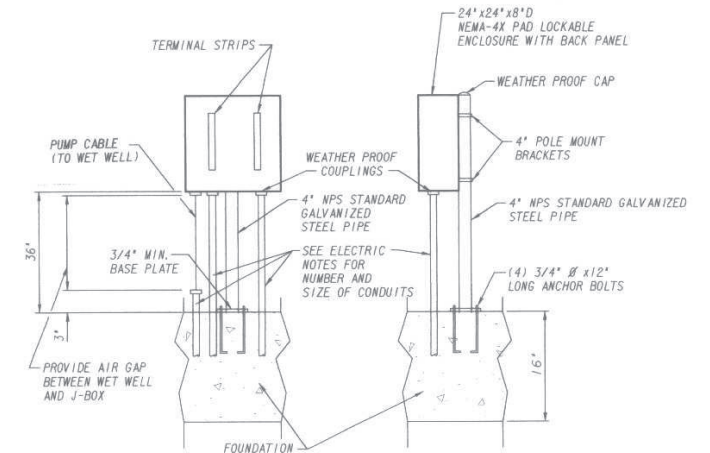




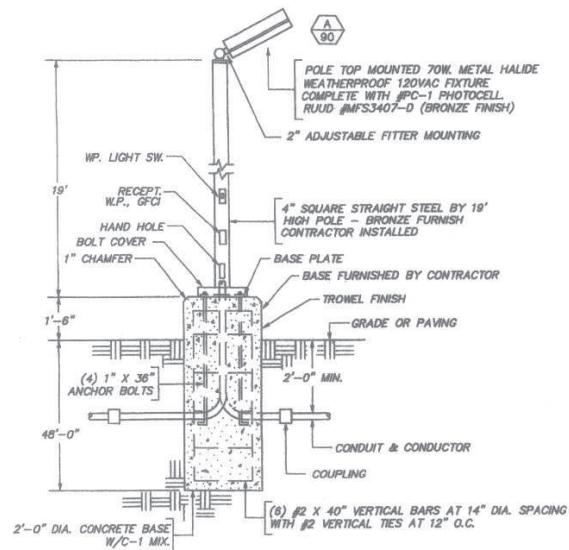
**GROUND ROD DETAIL**  
N.T.S.



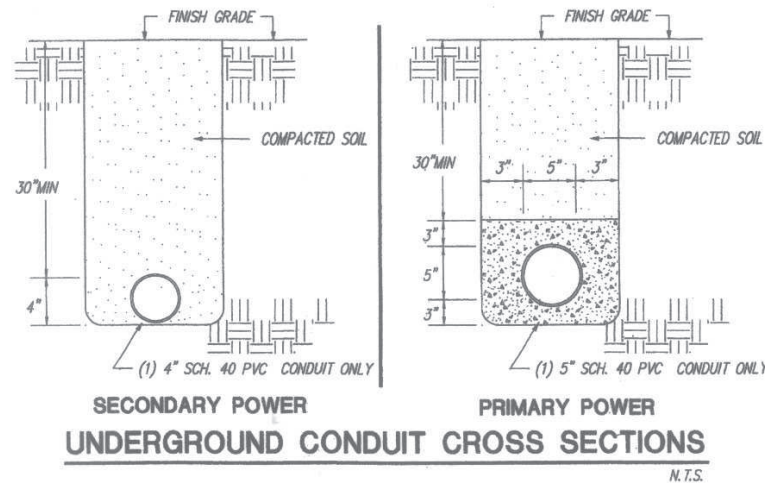
**CABLE SUPPORT DETAIL**  
N.T.S.



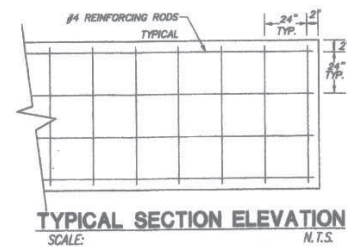
**FRONT VIEW SIDE VIEW**  
**WET WELL JUNCTION BOX DETAIL**  
N.T.S.



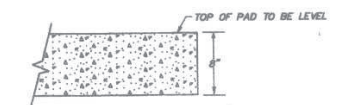
**POLE MOUNTED FIXTURE**  
N.T.S.



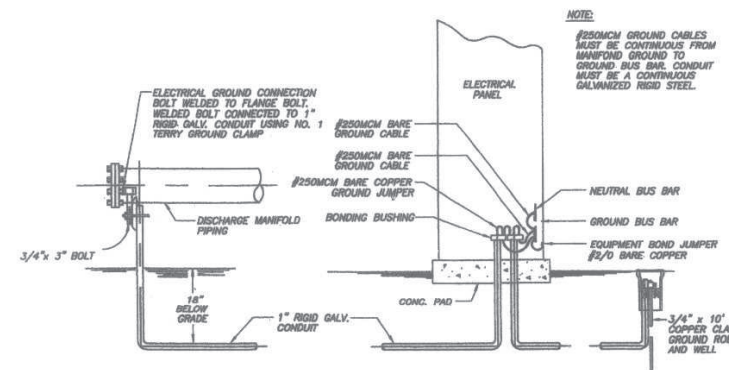
**SECONDARY POWER PRIMARY POWER**  
**UNDERGROUND CONDUIT CROSS SECTIONS**  
N.T.S.



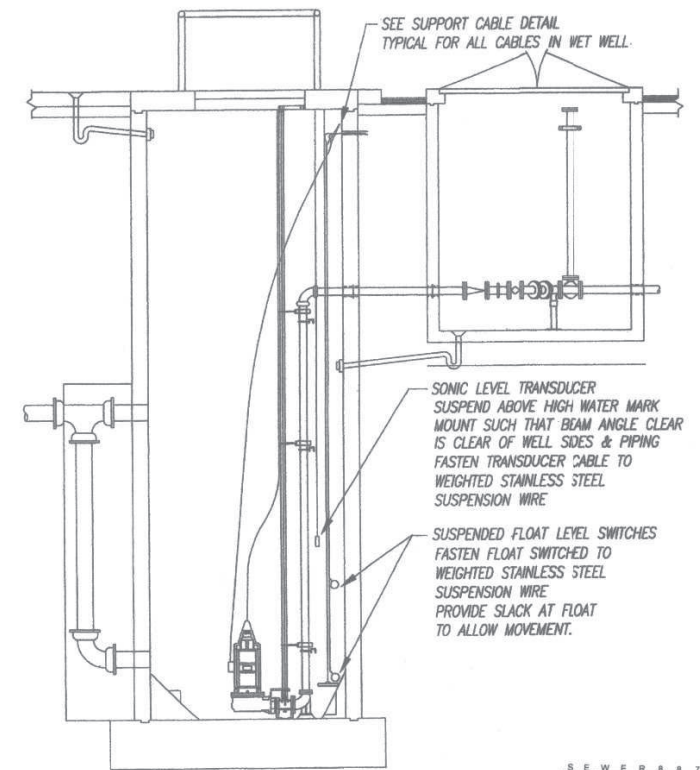
**TYPICAL SECTION ELEVATION**  
SCALE: N.T.S.



**MOTOR CONTROL CENTER PAD**  
N.T.S.



**DISCHARGE MANIFOLD - GROUND DETAIL**  
N.T.S.



**WET WELL - LEVEL SENSOR DETAIL**  
N.T.S.

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PREPARED BY:  
*Steve M. Chan* 8/17/05  
RCE 15107

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Revi 2/28/00

MARCH BUSINESS CENTER  
TRACT NO. 30857-UNIT 1  
VAN BUREN SEWER LIFT STATION  
ELECTRICAL PANEL DETAILS  
SCALE:

SHEET NO.  
13  
OF 13 SHEETS  
DWG. NO.:  
E-6



# WESTERN MUNICIPAL WATER DISTRICT MERIDIAN - UNIT 2 SEWER LIFT STATION PLANS TRACT NO. 30857-2

**GENERAL NOTES:**

- SEWER SYSTEM IMPROVEMENTS SHALL BE CONSTRUCTED BY THE DEVELOPER FOR DEDICATION TO WESTERN MUNICIPAL WATER DISTRICT. CONSTRUCTION, MATERIALS, TESTING AND INSPECTION SHALL COMPLY WITH WESTERN MUNICIPAL WATER DISTRICT'S STANDARDS. THE INSTALLATION SHALL MEET OR EXCEED THE REQUIREMENTS OF ALL PUBLIC AGENCIES HAVING JURISDICTION AND THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION ('GREEN BOOK'), AND THE AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS. FAILURE TO MEET THESE REQUIREMENTS WILL BE CAUSE FOR REJECTION. SEWER PIPE 18" AND LARGER SHALL BE EXTRA STRENGTH VITRIFIED CLAY PIPE (VCP) UNLESS OTHERWISE NOTED. SEWER PIPE 15" AND SMALLER SHALL BE PVC (SDR-35) UNLESS OTHERWISE NOTED.
- CONSTRUCTION OF THE SEWER SYSTEM IMPROVEMENTS SHALL NOT COMMENCE UNTIL A FINAL MAP HAS BEEN RECORDED BY RIVERSIDE COUNTY AND THE DEVELOPER'S ENGINEER HAS CERTIFIED THAT ALL STREETS ARE CONSTRUCTED TO FINAL GRADE.
- CONTRACTOR SHALL PROVIDE TRENCH PROTECTION AND CONDUCT ALL CONSTRUCTION IN ACCORDANCE WITH CAL-OSHA REQUIREMENTS AND SHALL DETERMINE DEPTH AND LOCATION OF EXISTING UNDERGROUND FACILITIES PRIOR TO TRENCHING. OPEN TRENCH AT ANY ONE TIME SHALL BE LIMITED TO 500' ALONG ROAD RIGHT-OF-WAY AND SHALL BE BACKFILLED AND COMPACTED AT THE CONCLUSION OF EACH DAY. (CONTACT UNDERGROUND SERVICE ALERT 1-800-227-2600 PRIOR TO EXCAVATION.)
- PIPE SHALL BE HANDLED SO AS TO PROTECT PIPE AT ALL TIMES AND SHALL BE CAREFULLY BEDDED TO PROVIDE CONTINUOUS BEARING AND TO PREVENT UNEVEN SETTLEMENT. PIPE SHALL BE PROTECTED AGAINST FLOATATION AT ALL TIMES. OPEN ENDS OF INSTALLED SEWER PIPE SHALL BE SEALED AT ALL TIMES WHEN CONSTRUCTION IS NOT IN PROGRESS.
- PIPE JOINTS SHALL NOT BE DEFLECTED AT ANY ANGLE GREATER THAN THE MAXIMUM ANGLE RECOMMENDED BY THE PIPE MANUFACTURER.
- CONNECTIONS TO EXISTING WESTERN SEWER PIPELINES SHALL NOT BE ACCOMPLISHED UNLESS WESTERN MUNICIPAL WATER DISTRICT'S INSPECTOR IS PRESENT. WESTERN MAY ELECT TO MAKE THE CONNECTION AT THE DEVELOPER'S EXPENSE. CONTRACTOR SHALL FIELD VERIFY BOTH HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING SEWER PIPELINES PRIOR TO CONSTRUCTION.
- BACKFILL SHALL BE COMPACTED TO EITHER 90% RELATIVE DENSITY, EQUIVALENT TO THE SURROUNDING GROUND, OR IN ACCORDANCE WITH THE REQUIREMENTS OF THE AGENCY HAVING JURISDICTION, WHICHEVER IS MORE STRINGENT.
- SEWER LATERALS SHALL BE 4" P.V.C. UNLESS OTHERWISE INDICATED. EXACT LOCATIONS OF WYES AND LATERALS SHALL BE ESTABLISHED IN THE FIELD PRIOR TO INSTALLATION. AN "S" SHALL BE IMPRINTED ON THE CURB FACE AT EACH SERVICE LATERAL LOCATION AND A STEEL ROD OR STAKE SHALL BE INSTALLED AT THE END OF EACH SEWER LATERAL TO ASSIST IN LOCATING AT A LATER DATE.
- UNLESS WAIVED BY WESTERN MUNICIPAL WATER DISTRICT, 2" WIDE METALLIC LOCATOR TAPE SHALL BE PLACED WITH EACH SEWER AND SERVICE LATERAL TO ASSIST WITH FUTURE LOCATION. TAPE SHALL BE PLACED AT LEAST 6" ABOVE THE PIPE BUT NOT DEEPER THAN 4" FROM THE PROPOSED FINISHED GRADE.
- ALL SEWERS SHALL BE BALLED, AIR TESTED AND VIDEO INSPECTED PRIOR TO ACCEPTANCE BY WESTERN.
- SURFACE IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE RECONSTRUCTED BY THE CONTRACTOR TO THE REQUIREMENTS OF THE AGENCY (DISTRICT) HAVING JURISDICTION.
- THE DEVELOPER SHALL PROVIDE ONE SET OF PRINTS SHOWING ALL 'AS-BUILT' CONDITIONS INCLUDING THE STATIONING OF SEWER LATERAL CONNECTIONS AND PAD ELEVATIONS, AS A CONDITION OF FINAL APPROVAL.
- ANY REVISIONS TO THESE DRAWINGS MUST BE APPROVED IN WRITING BY WESTERN.
- THE DEVELOPER SHALL INSTALL BACKWATER VALVES, WHERE REQUIRED, PER THE 1997 EDITION OF THE UNIFORM PLUMBING CODE (CHAPTER 7, SECTION 710.0), AND PER WESTERN'S STANDARDS.
- THE CONTRACTOR IS ADVISED THAT THE WORK ON THIS PROJECT MAY INVOLVE WORKING IN A CONFINED AIR SPACE. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH 'CONFINED AIR SPACE' ARTICLE 108, TITLE 8 CALIFORNIA ADMINISTRATIVE CODE.
- PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL POTHOLE ALL UTILITY CROSSINGS AND CONNECTIONS AND VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES AFFECTED. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BEFORE CONSTRUCTION BEGINS.
- PRIOR TO CONSTRUCTING SEWERS, CONTRACTOR SHALL CONSTRUCT STREETS 7'-FEET (MINIMUM) ABOVE PROPOSED SEWER FLOWLINE ELEVATIONS. THEREAFTER, CONTRACTOR SHALL CONSTRUCT SEWERS IN A TRENCH CONDITION.
- CONTRACTOR SHALL WARRANTY ALL WORK FOR 12 MONTHS AFTER DATE OF FINAL INSPECTION.

**EXISTING UNDERGROUND STRUCTURES:**

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPE STRUCTURES OR CONDUITS SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THESE PLANS. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE OWNERS OF THE UTILITIES OR STRUCTURES CONCERNED BEFORE STARTING WORK. CONTRACTOR FURTHER ASSUMES ALL LIABILITY AND RESPONSIBILITY FOR THE UNDERGROUND UTILITY PIPES, CONDUITS OR STRUCTURES SHOWN OR NOT SHOWN ON THESE PLANS.

**NOTICE TO CONTRACTORS:**

CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND SHALL REPORT ALL DISCREPANCIES TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.

**QUANTITY DISCLAIMER:**

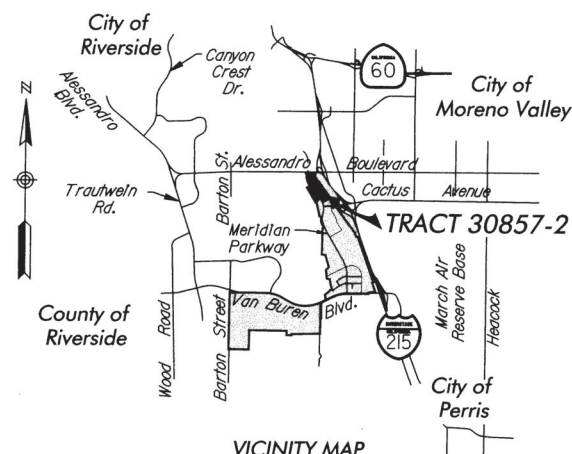
QUANTITIES SHOWN HEREON ARE PROVIDED FOR BONDING PURPOSES ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES PRIOR TO CONSTRUCTION.

**BASIS OF BEARINGS AND COORDINATES NOTE:**

THE BASIS OF BEARINGS SHOWN HEREON FOR THIS PLAN IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, C. C. S. 83, ZONE 6, BASED LOCALLY ON GPS CONTROL RCFC STATIONS AS SHOWN ON RECORD OF SURVEY MAP RS110/30.

**DESIGN DATA:**

- OCCUPANCY GROUP - TYPE U
- CONSTRUCTION TYPE - 5B
- APPLICABLE CODE YEARS:
  - 2007 CBC (2006 IBC)
  - 2007 CPC (2006 UPC)
  - 2007 CMC (2006 UMC)
  - 2005 ENERGY STANDARD
- BUILDING SQUARE FOOTAGE: 580
- SPECIAL INSPECTIONS REQUIRED FOR CONCRETE OVER 2500 PSI



VICINITY MAP  
NOT TO SCALE  
PORTION OF SECTIONS 15 & 22,  
RANGE 4 WEST, TOWNSHIP 3 SOUTH,  
SAN BERNARDINO MERIDIAN

**INDEX OF SHEETS**

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	PLAN & PROFILE
3	SITE PLAN
4	GRADING PLAN
5	MECHANICAL PLAN
6	WET WELL SECTIONS AND DETAILS
7	DETAILS
8	DETAILS
9	ELECTRICAL NOTES
10	ELECTRICAL PLAN
11	ELECTRICAL SINGLE LINE DIAGRAM
12	ELECTRICAL CONTROL DIAGRAMS & SCHEDULES
13	ELECTRICAL PANEL DETAILS
14	ELECTRICAL PANEL DETAILS
15	ARCHITECTURAL PLAN, SHEET A-1
16	ARCHITECTURAL PLAN, SHEET A-2
17	ARCHITECTURAL PLAN, SHEET A-3
18	ARCHITECTURAL PLAN, SHEET A-4
19	ARCHITECTURAL PLAN, SHEET A-5
20	ARCHITECTURAL PLAN, SHEET A-6
21	MECHANICAL PLAN, SHEET MP-1
22	MECHANICAL PLAN, SHEET MP-2

**LEGEND:**

- TRACT BOUNDARY
- SEWER FORCE MAIN
- SEWER LINE & MANHOLE
- WATER LATERAL
- ELECTRICAL LINES
- RIGHT OF WAY
- LOT LINES

**WORK TO BE DONE:**

THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE ACCORDING TO THESE PLANS AND THE FOLLOWING SPECIFICATIONS AND STANDARD DRAWINGS:

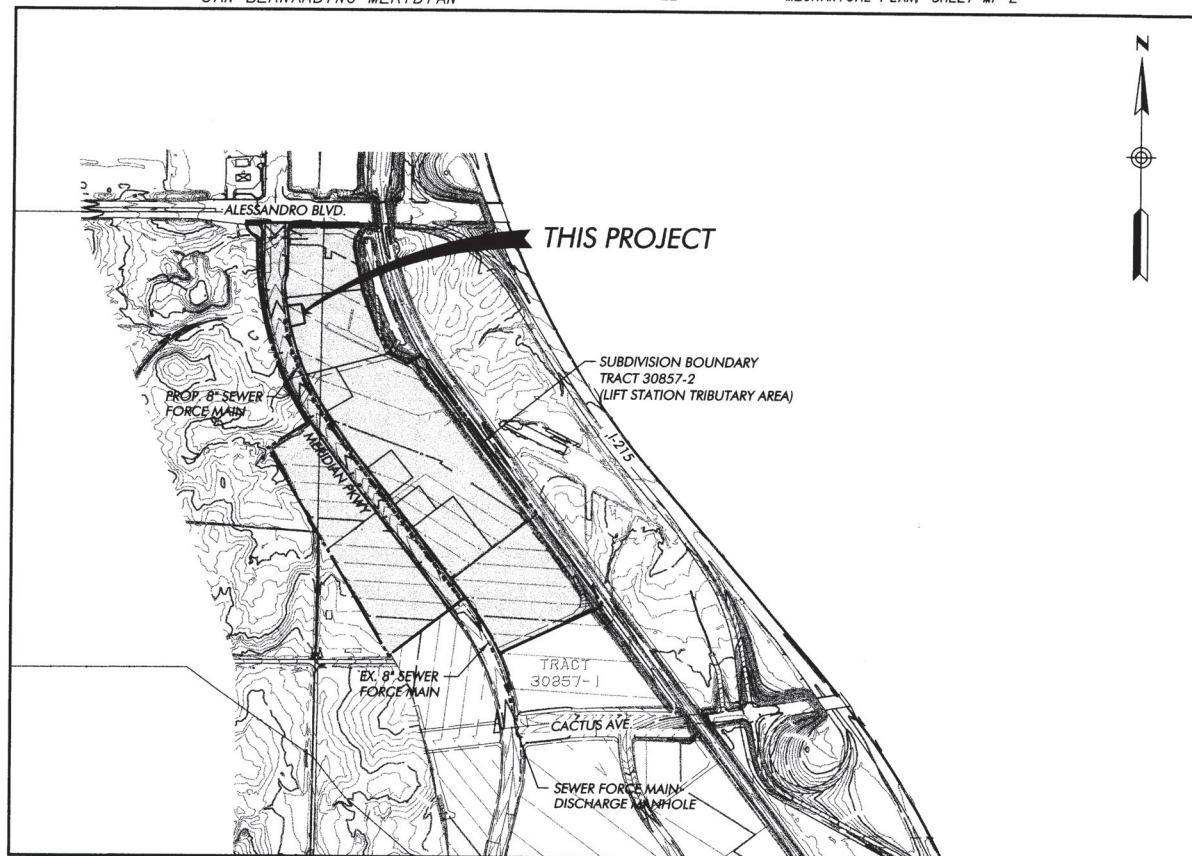
- STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (2003 EDITION).
- CALIFORNIA DEPARTMENT OF TRANSPORTATION 'MANUAL OF TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE WORK ZONE', (1996 ED.), DOCUMENT NO. 769843, FILED JANUARY 24, 2000.
- STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS (JULY 2002), DOCUMENT NO. 769894 FILED JUNE 5, 2003.
- STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, STANDARD PLANS (JULY 2002), DOCUMENT NO. 769894, FILED JUNE 5, 2003
- WESTERN MUNICIPAL WATER DISTRICT 'DEVELOPER HANDBOOK & STANDARD DRAWINGS FOR WATER & SEWER FACILITIES', 2004.
- W.M.W.D. 'SUBMERSIBLE SEWAGE LIFT STATION STANDARD SPECIFICATIONS', 2005 INCLUDING SUPPLEMENTS
- UNIFORM PLUMBING CODE (UPC), LATEST EDITION
- NATIONAL ELECTRIC CODE (NEC), LATEST EDITION

**NOTE:**

WORK CONTAINED WITHIN THE SET OF PLANS SHALL NOT COMMENCE UNTIL AN ENCROACHMENT PERMIT AND/OR GRADING PERMIT HAS BEEN ISSUED.

**ABBREVIATIONS:**

A.C.	ASPHALT CONCRETE PAVEMENT
APPX	APPROXIMATE
BFP	BACKFLOW PREVENTER
BRG.	BEARING
C/L	CENTERLINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DWG	DRAWING
DWY	DRIVEWAY
EL	ELEVATION
EX.	EXISTING
FIG.	FIGURE
FLG	FLANGE
FL	FLOW LINE
GPM	GALLONS PER MINUTE
HDPE	HIGH DENSITY POLYETHYLENE
HP	HORSEPOWER
HWL	HIGH WATER LEVEL
HWHL	HIGHER HIGH WATER LEVEL
HZ	HERTZ
I.D.	INNER DIAMETER
IE	INVERT ELEVATION
IPS	IRON PIPE SIZE
LF	LINEAR FEET
LWL	LOW WATER LEVEL
LWL	LOWER LOW WATER LEVEL
M.H./MH	MANHOLE
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MFR	MANUFACTURERS
MIN	MINIMUM
MJ	MECHANICAL JOINT
NPT	STANDARD PIPE THREAD
N.T.S.	NOT TO SCALE
NO.	NUMBER
O.C.	ON CENTER
P.C.C	PORTLAND CEMENT CONCRETE
P/L	PROPERTY LINE
PROP.	PROPOSED
PSF	POUNDS PER SQUARE FOOT
PVC	POLYVINYL CHLORIDE
R.C.	RELATIVE COMPACTION
RCW	RECLAIMED WATER
R/W	RIGHT OF WAY
RCPP	REINFORCED CONCRETE PRESSURE PIPE
RPM	REVOLUTION PER MINUTE
SCE	SOUTHERN CALIFORNIA EDISON
SCH	SCHEDULE
SF	SQUARE FEET
SHT	SHEET
SPECS.	SPECIFICATIONS
ST. STL./SS	STAINLESS STEEL
STA	STATION
STD	STANDARD
SWR	SEWER
TDH	TOTAL DYNAMIC HEAD
TYP	TYPICAL
VCP	VITRIFIED CLAY PIPE
WMWD	WESTERN MUNICIPAL WATER DISTRICT
WTR	WATER



**LOCATION MAP**  
N. T. S.

NOTE:  
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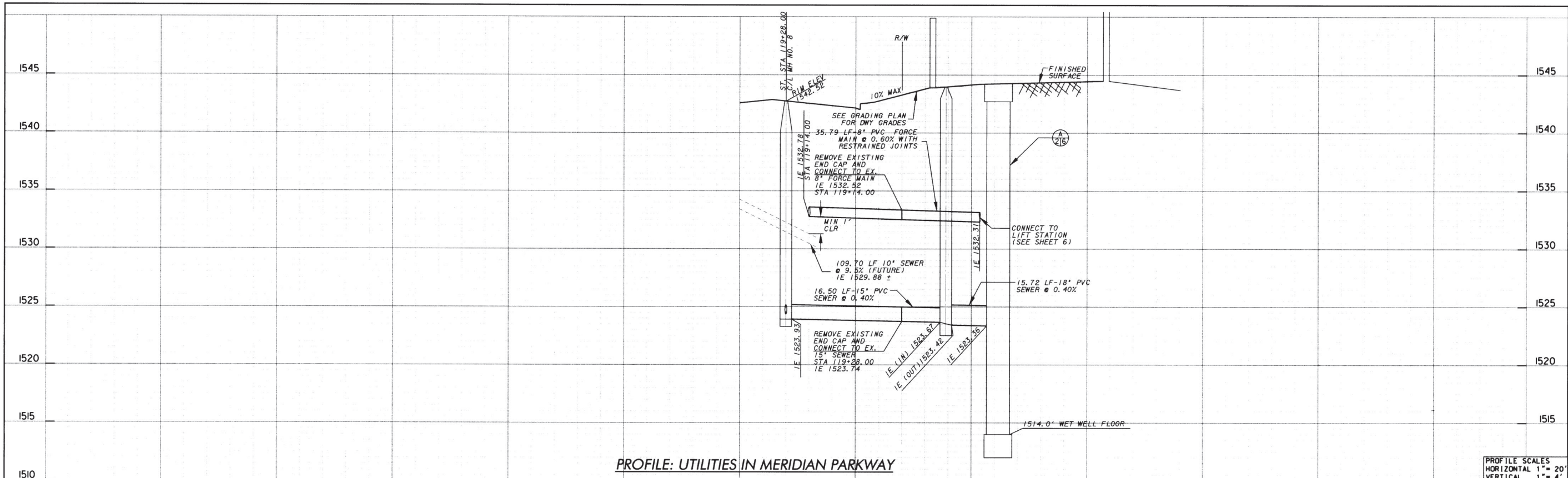
<p>Don't Dig Until You Call U.S.A. Toll Free 1-800-227-2600</p> <p>FOR THE LOCATION OF UTILITIES, DON'T DISRUPT VITAL SERVICES.</p> <p>TWO WORKING DAYS BEFORE YOU DIG</p>		<p><b>Kimley-Horn and Associates, Inc.</b> Engineering, Planning and Environmental Consultants 517 Fourth Avenue - Suite 301 - San Diego, Ca. - 92101 Tel: (619) 234-9441 Fax: (619) 234-9433</p> <p>PREPARED BY: <i>Samuel Lake McWhorter</i> 3/10/08 SAMUEL LAKE MCWHORTER R. C. E. 61788 DATE</p>	<p>SEWER CERTIFICATION BLOCK</p> <p>I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.</p> <p><i>Samuel Lake McWhorter</i> 3/10/08 MECHANICAL ENGINEER N-26589 DATE</p>	<p>APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:</p> <p><i>Samuel Lake McWhorter</i> 3/10/08 MECHANICAL ENGINEER N-26589 DATE VOID AFTER ONE YEAR FROM THIS DATE</p> <p>BENCH MARK: NAIL W/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE, 27981 RCFCD NGVD 29. ELEVATION = 1568.64</p>	<p>WESTERN MUNICIPAL WATER DISTRICT</p> <p>P.O. BOX 5286 RIVERSIDE, CA. 92517-5286</p> <p>450 ALESSANDRO BLVD RIVERSIDE, CA. 92508</p> <p>(951) 789-5000 (BUS) (951) 789-3837 (FAX) Rev: 2/28/00</p>	<p>MERIDIAN-UNIT 2 TRACT NO. 30857-2</p> <p>UNIT 2 SEWER LIFT STATION</p> <p>TITLE SHEET</p> <p>SHEET NO. 1 OF 22 SHTS</p> <p>DWG. NO. 1</p>
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CALIFORNIA REGISTERED PROFESSIONAL ENGINEER  
 TR 30857-2 1/22  
 SEWER LIFT STATION  
 MERIDIAN - UNIT 2  
 DR 24

K:\merid\095\300505\des\gpa\pumps\pumpsta\02-111-f-wr-01.dwg  
 PLOTTED: 3/5/2008



11/17/08 9:43:19 AM



TR 30857-2 2/22  
 SEWER LIFT STATION

WATER DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N80°0'23"E		45.85'	2" PVC SCH. 40
2	N10°27'52"W		38.81'	2" PVC SCH. 40
3	N80°0'0"E		14.59'	1/2" PVC SCH. 40
4	N78°29'18"E		30.26'	2" PVC SCH. 40
5	VARIES		2.81'	2" PVC SCH. 40

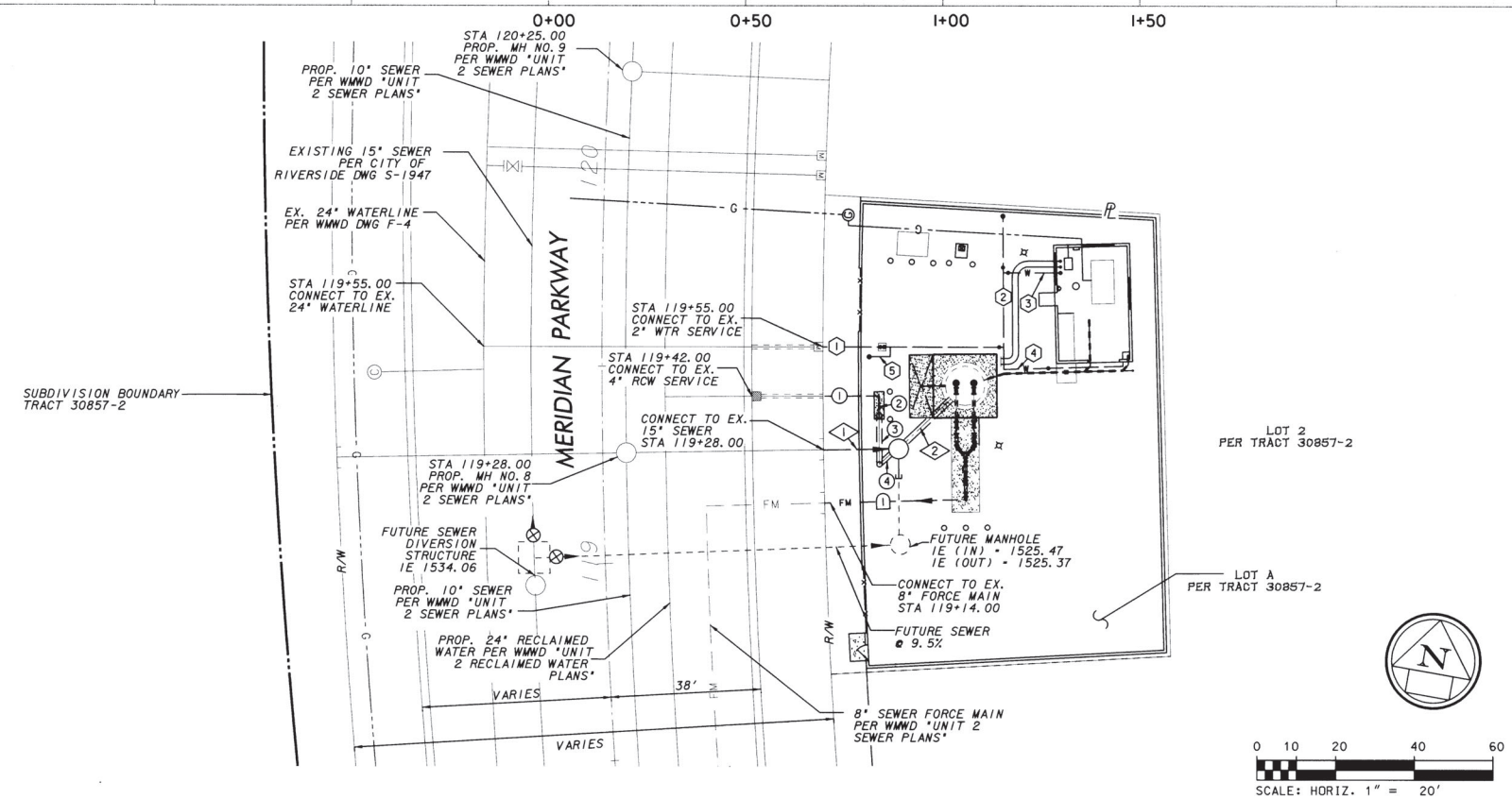
RECLAIMED WATER DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N10°10'39"W		29.93'	4" PVC SCH. 40
2	N79°39'23"E		4.87'	4" PVC SCH. 40
3	N79°39'23"E		12.39'	16" DIP
4	N51°56'20"W		3.72'	16" DIP

\* ALL RECLAIMED WATER SHALL BE INSTALLED WITH RESTRAINED JOINTS  
 \* HORIZONTAL LENGTH MEASURED ONLY, CONTRACTOR TO DETERMINE VERTICAL LENGTH FROM DETAILS IN DRAWINGS

SEWER DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N10°57'37"W		16.50'	15" PVC (SDR-35)
2	N53°28'52"W		15.72'	18" PVC (SDR-35)

FORCE MAIN DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N11°33'04"W		35.79'	8" PVC (CL-150)

\*C-900  
 \*\* ALL FORCE MAIN SHALL BE INSTALLED WITH RESTRAINED JOINTS



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 Tel: (619) 234-9411 Fax: (619) 234-9433

PREPARED BY:  
 Samuel Lake McWhorter 9/5/08  
 SAMUEL LAKE MCWHORTER R. C. E. 61788 DATE

**SEWER CERTIFICATION BLOCK**  
 I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.

Joseph J. Seewald 9/26/08  
 MECHANICAL ENGINEER M-26589 DATE

MARK	REVISIONS	APPR.	DATE
AS-BUILT PLANS			12/10/08

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
 MECHANICAL ENGINEER M-26589 9/26/08 DATE  
 VOID AFTER ONE YEAR FROM THIS DATE

BENCH MARK:  
 NAIL w/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. 27981 RCFCD NGVD 29. ELEVATION - 1568.64

**WESTERN MUNICIPAL WATER DISTRICT**  
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 450 ALESSANDRO BLVD  
 RIVERSIDE, CA. 92508  
 (951) 789-5000 (BUS) (951) 780-3837 (FAX) Rev: 2/28/00

**MERIDIAN-UNIT 2**  
 TRACT NO. 30857-2  
**UNIT 2 SEWER LIFT STATION**  
**PLAN AND PROFILE**  
 SCALE: HORIZ: 1" = 20' VERT: 1" = 4'

SHEET NO. 2 OF 22 SHTS  
 DRG. NO.: 1" = 4'

PLOT 1103 - 11/19/2008 K:\New\0805\08050209\08050209\Drawings\Water\Plan\Profile\Profile.dwg User: JLF Date: 09/26/08







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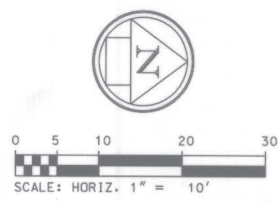


LOT 1 PER TRACT  
30857-2

NOTE:  
 TP - TOP OF CONCRETE PAD GRADE  
 FG - FINISHED GRADE AC PAVT OR GRADED SURFACE  
 TF - TOP OF WALL FOOTING  
 TW - TOP OF WALL  
 FL - FLOW LINE  
 FF - FINISHED FLOOR  
 WF - WELL ROOF TO BE LEVEL AND SET AT 1544.35

LOT 2 PER TRACT  
30857-2

LOT A  
PER TRACT  
30857-2



SEWER1242

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 PREPARED BY:  
 Samuel Lake McWhorter 9/15/04  
 SAMUEL LAKE MCWHORTER R.C.E. 61788 DATE

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 I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.  
 [Signature] 9.24.04  
 MECHANICAL ENGINEER M-28589 DATE

MARK	AS-BUILT PLANS	REVISIONS	APPR. DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
 [Signature] 9.24.04  
 MECHANICAL ENGINEER M-28589 DATE  
 VOID AFTER ONE YEAR FROM THIS DATE  
 BENCH MARK:  
 NAIL w/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. Z7981 RCFCD NGVD 29. ELEVATION= 1568.64

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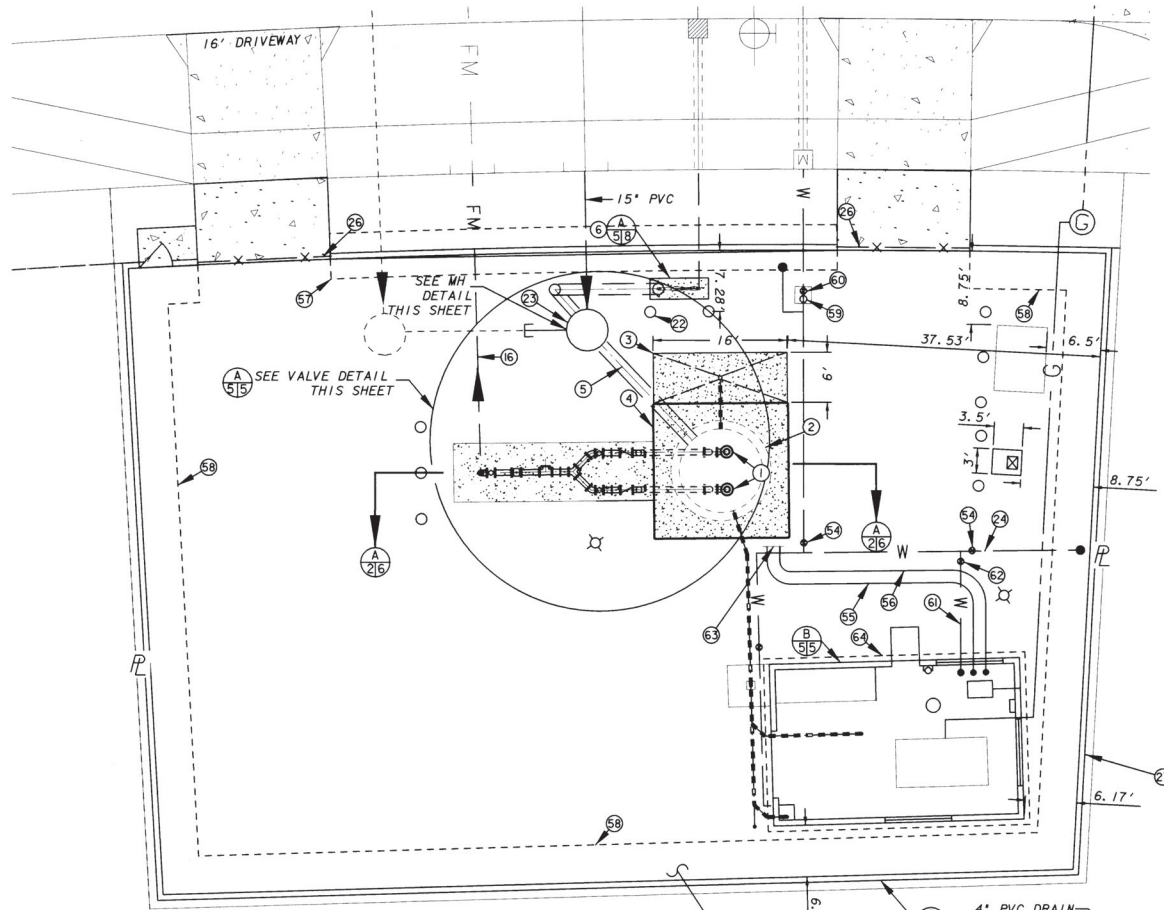
MERIDIAN-UNIT 2  
 TRACT NO. 30857-2  
 UNIT 2 SEWER LIFT STATION  
 GRADING PLAN  
 SCALE: HORIZ: 1" = 10'

SHEET NO.  
 4  
 OF 22 SHTS  
 DWG. NO. 1

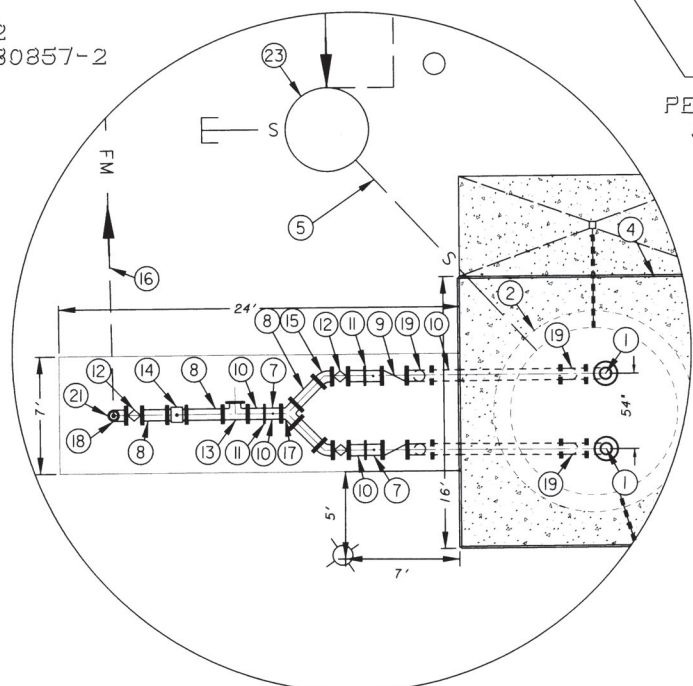
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 SEWER LIFT STATION  
 DWG. NO. 1



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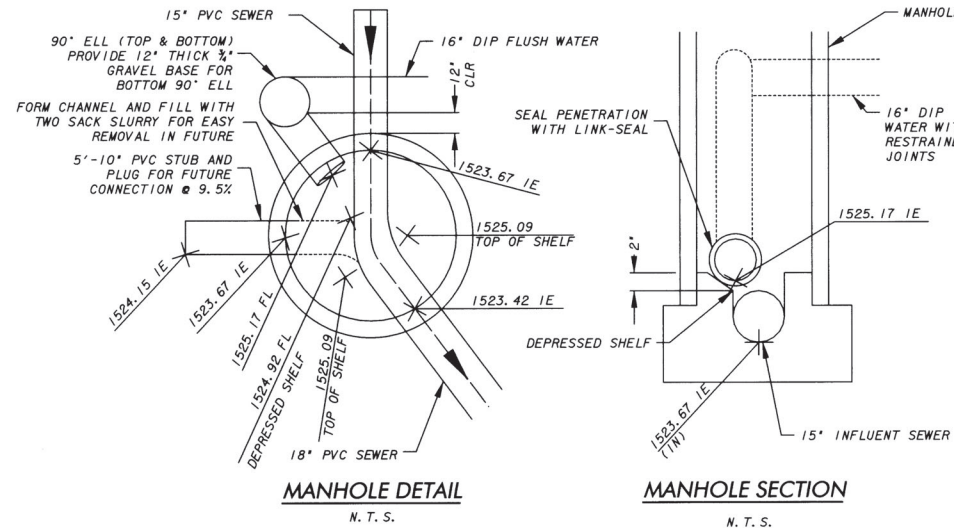


LOT 2 PER TRACT 30857-2

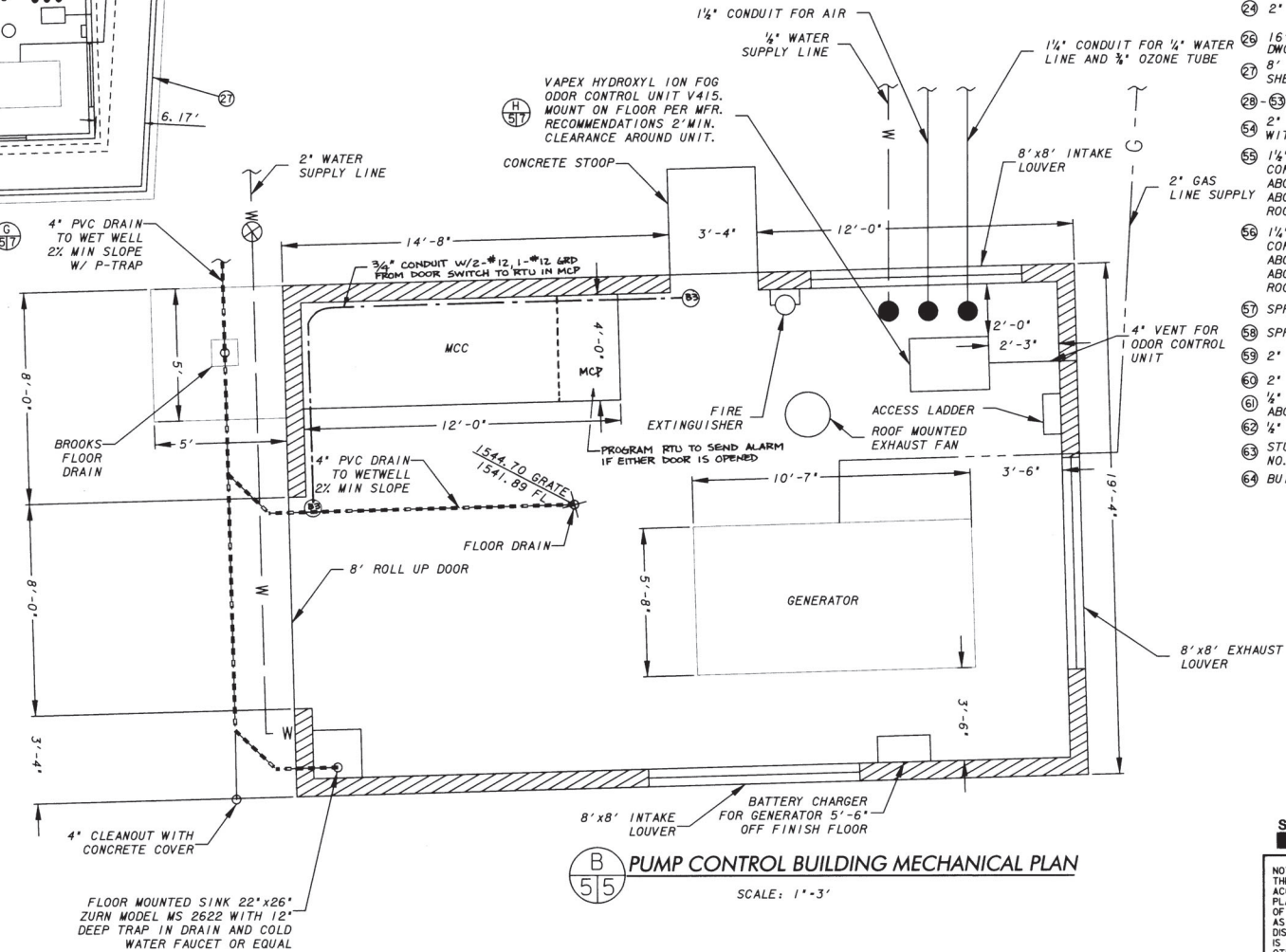


**A** FORCE MAIN & VALVE DETAIL

SCALE: 1" = 5'



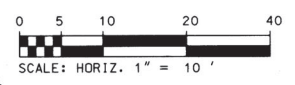
**MANHOLE DETAIL**  
N.T.S.  
**MANHOLE SECTION**  
N.T.S.



**B** PUMP CONTROL BUILDING MECHANICAL PLAN

SCALE: 1" = 3'

- NOTES**
- SUBMERSIBLE FLYGT PUMP OR APPROVED EQUAL, 470 GPM @ 53' TDH WITH 10 HP, 1735 RPM, 460 VOLTS/3 PHASE/ 60 HZ EXPLOSION PROOF MOTOR.
  - 10'-0" DIA REINFORCED CONCRETE WET WELL WITH FIELD APPLIED LINING SYSTEM AS MANUFACTURED BY SANCON OR APPROVED EQUAL.
  - PUMP WASH DOWN PAD
  - CONCRETE WET WELL TOP SLAB
  - 18" PVC SDR-35 INFLUENT SEWER
  - 4' X 2.5' CONCRETE VALVE PAD
  - 1" THREADED TAP W/ CORP STOP FOR PORTABLE PRESSURE GAUGE, CENTERED ON THE TOP OF THE PIPE EXTEND 3" ABOVE PIPE
  - 8" DUCTILE IRON SPOOL FLG X FLG
  - 8" SWING CHECK VALVE
  - 8" DIP SPOOL FLG X VICTAULIC
  - 8" VICTAULIC COUPLING, STYLE 77
  - 8" ECCENTRIC PLUG VALVE W/ HAND WHEEL, DEZURIK OR EQUAL.
  - 8" X 8" TEE FLG X FLG X FLG W/BLIND FLG FOR TEMPORARY BYPASS CONNECTION
  - 8" SPARKING MAGNETIC FLOW METER FM656 OR APPROVED EQUIVALENT
  - 8" 45° BEND
  - 8" PVC C900 SEWER FORCE MAIN
  - 8" TRUE WYE
  - 2" COMBINATION SEWAGE AIR AND VACUUM VALVE
  - 8" 90° BEND
  - 8" X 8" TEE FLG X FLG X FLG
  - REMOVABLE BARRIER POST PER DETAIL A SHEET 7, TYPICAL
  - 5" DIA SEWER MH PER WMWD STD DWG W-1130
  - 2" PVC WATER SERVICE
  - 15' WIDE DOUBLE CHAIN LINK FENCE GATE PER WMWD STD. DWG W-1591
  - 8" MIN HEIGHT CONCRETE BLOCK WALL PER DETAIL G SHEET 7
  - NOT USED ON THIS SHEET
  - 2" BALL VALVE IN VALVE BOX BROOKS \*1-RT FLUSH WITH FG
  - 1/4" ELEC. CONDUIT W/ LONG SWEEPS FOR ODOR CONTROL WATER TUBE. STUB UP INSIDE BLDG. 3" ABOVE F.F. AND 12" AWAY FROM WALL. STUB UP 6" ABOVE FINISHED PVMT. 6" AWAY FROM WET WELL ROOF SLAB. MINIMUM DEPTH OF 18".
  - 1/4" ELEC. CONDUIT W/ LONG SWEEPS FOR ODOR CONTROL AIR. STUB UP INSIDE BLDG. 3" ABOVE F.F. AND 12" AWAY FROM WALL. STUB UP 6" ABOVE FINISHED PVMT. 6" AWAY FROM WET WELL ROOF SLAB. MINIMUM DEPTH OF 18"
  - SPREAD FOOTING (T) PER DETAIL G ON SHEET 7
  - SPREAD FOOTING (L) PER DETAIL G ON SHEET 7
  - 2" CLA-VAL MODEL NO. 690-01 PRESSURE REDUCING VALVE
  - 2" BALL VALVE IN VAULT BOX 722 FLUSH WITH FG
  - 1/4" PVC WATER SERVICE, STUB UP INSIDE BLDG. 3" ABOVE F.F. AND 12" AWAY FROM WALL.
  - 1/4" BALL VALVE IN VALVE BOX \*1-RT FLUSH WITH FG STUB UP FOR ODOR CONTROL CONDUIT IN BROOKS (MODEL NO. \*1-RT VALVE BOX FLUSH WITH FG. (BY CONTRACTOR))
  - BUILDING SPREAD FOOTING PER DETAIL I ON SHEET 15



SEWER 1243

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PREPARED BY: Samuel Lake McWhorter 9/5/08  
SAMUEL LAKE MCWHORTER R.C.E. 61788 DATE

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I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.  
MECHANICAL ENGINEER M-26589 DATE 9.26.08

MARK	AS-BUILT PLANS	REVISIONS	APPR. DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
MECHANICAL ENGINEER M-26589 DATE 9.26.08  
VOID AFTER ONE YEAR FROM THIS DATE  
BENCH MARK: NAIL W/ RCF TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE, Z7981 RCFCD NGVD 29. ELEVATION= 1568.64

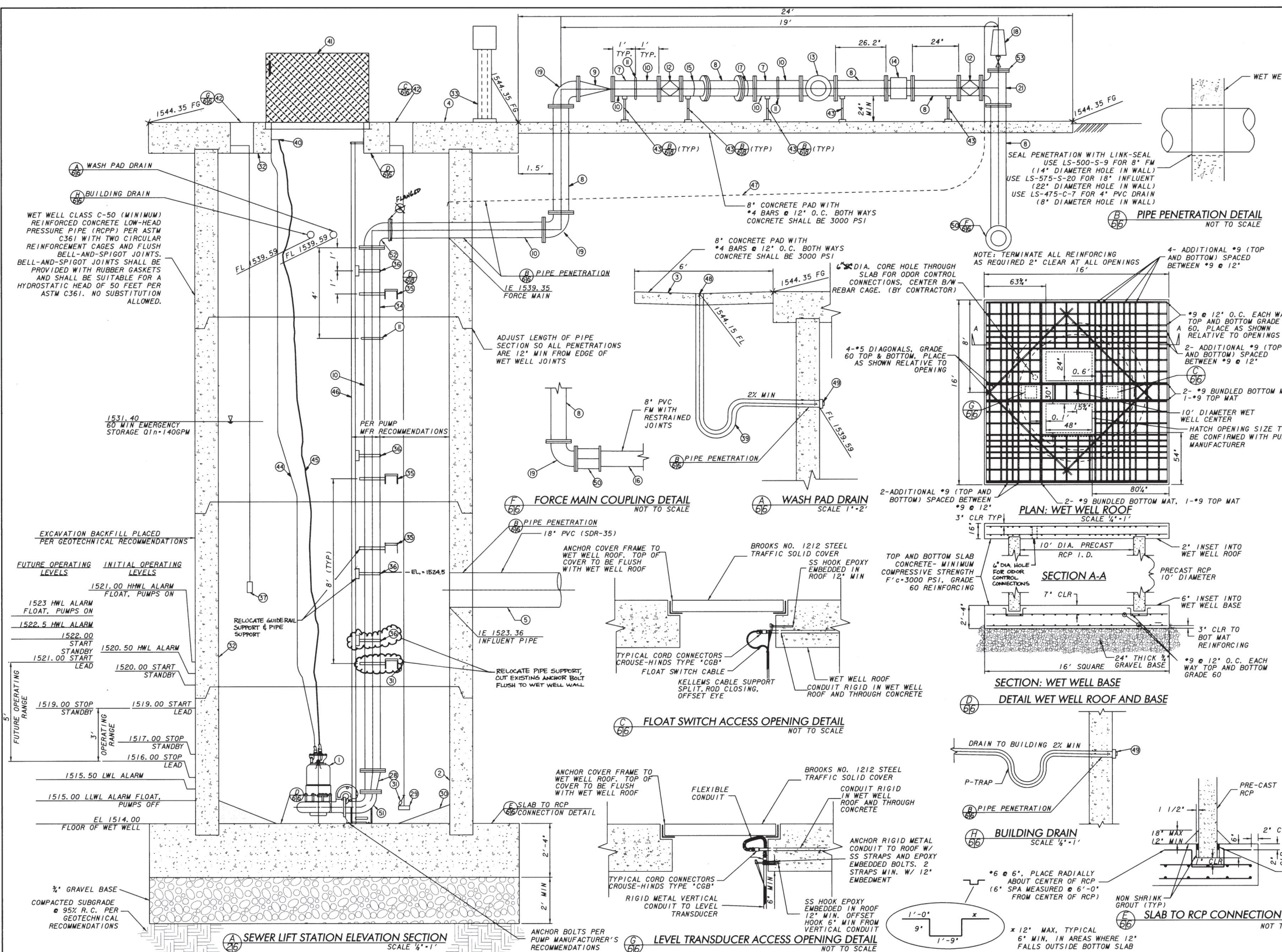
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**MERIDIAN-UNIT 2**  
TRACT NO. 30857-2  
**UNIT 2 SEWER LIFT STATION**  
**MECHANICAL PLAN**  
SCALE: HORIZ: 1" = 10' VERT: N/A  
SHEET NO. 5 OF 22 SHTS  
DWG. NO.:

TR 30857-2 5/22  
SEWER LIFT STATION



NY 98 22 11 8002/22/98 480 90-485-1117-201



- NOTES**
- SUBMERSIBLE FLYGT PUMP OR APPROVED EQUAL, 470 GPM @ 53' TDH WITH 10 HP, 1735 RPM, 460 VOLTS/3 PHASE/60 HZ EXPLOSION PROOF MOTOR.
  - 10'-0" DIA REINFORCED CONCRETE WET WELL WITH FIELD APPLIED LINING SYSTEM AS MANUFACTURED BY SANCON OR APPROVED EQUAL.
  - PUMP WASH DOWN PAD
  - CONCRETE WET WELL TOP SLAB
  - 18" PVC SDR-35 INFLUENT SEWER
  - 1" THREADED TAP W/ CORP STOP FOR PORTABLE PRESSURE GAUGE, CENTERED ON THE TOP OF THE PIPE EXTEND 3" ABOVE PIPE
  - 8" DUCTILE IRON SPOOL FLG x FLG
  - 8" SWING CHECK VALVE
  - 8" DIP SPOOL FLG x VICTAULIC
  - 8" VICTAULIC COUPLING, STYLE 77
  - 8" ECCENTRIC PLUG VALVE W/ HAND WHEEL, DEZURIK OR EQUAL.
  - 8" x 8" TEE FLG x FLG x FLG W/BLIND FLG FOR TEMPORARY BYPASS CONNECTION
  - 8" SPARKING MAGNETIC FLOW METER FM656 OR APPROVED EQUIVALENT
  - 8" 45° BEND
  - 8" PVC C900 SEWER FORCE MAIN
  - 8" TRUE WYE
  - 2" COMBINATION SEWAGE AIR AND VACUUM VALVE
  - 8" 90° BEND
  - 2" x 8" TEE FLG x FLG x FLG
  - NOT USED ON THIS SHEET
  - 4" x 8" FLG x FLG ECCENTRIC REDUCER
  - SS WEIGHT ATTACHED TO SS CABLE ATTACHED TO 12" EMBEDDED HOOK, ATTACH FLOATS AND WEIGHT TO SS CABLE WITH NYLON TIES PER MANUFACTURERS RECOMMENDATIONS
  - GROUT FILL - SLOPES VARIES, 1.5' MAX HEIGHT, 1.0' MIN HEIGHT
  - MERCURY FLOAT SWITCH
  - FIELD APPLY 125 ml of SANCON 100 ON CONCRETE INTERIOR SURFACE
  - ELECTRIC JUNCTION BOX AND STANCHION FOR PUMP POWER/ CONTROL CABLES, FLOATS, AND TRANSDUCER, SEE DETAIL ON SHEET 14. SEE SHEET 10 FOR EXACT LOCATION OF WET WELL ROOF.
  - 8" DIP SPOOL FLG x VICTAULIC - 4' MIN LENGTH
  - SS SUPPORT FOR FORCE MAIN, DETAIL D SHT 8
  - 8" INTERMEDIATE GUIDE RAIL SUPPORT BRACKET PER FLYGT PART NUMBER 14-58 44 46
  - MILLITRONICS ECHOMAX XRS-5 ULTRASONIC LEVEL TRANSDUCER, SET ELEVATION 1524.00 INITIALLY FOR CALIBRATION, INSTALL W/ RIGID CONDUIT AND SUBMERGENCE SHIELD.
  - NOT USED ON THIS SHEET
  - 4" ABS DRAIN PIPING OPENING FROM PUMP WASH DOWN PAD TO WET WELL WITH P-TRAP
  - SS CONTROL CABLE MOUNTING BRACKET PER DETAIL ON SHEET 14
  - FLYGT ACCESS COVER MODEL FLOT-6A05H-RS-RPC, SINGLE LEAF ALUMINUM COVER WITH DOUBLE GASKET WITH STAINLESS STEEL HARDWARE, ODOOR SUPPRESSIVE RIMSAL GASKET AND DEBRIS GASKET, CLEAR OPENING 30" x 48" CONFIRM HATCH OPENING SIZE WITH MANUFACTURER (300 #/SF LOADING)
  - 12" SQUARE OPENING IN CONCRETE TOP WITH CAST IRON RING AND BROOKS CB12/2 FRAME AND SOLID COVER FOR FLOAT SWITCH AND LEVEL TRANSDUCER
  - ADJUSTABLE PIPE SUPPORT, DETAIL B SHT 8
  - SYNTHETIC RUBBER POWER AND CONTROL CABLE TO PUMP, HANG ON SUPPORT WITH STAINLESS STEEL KELLUM GRIPS AND LOOP CABLE OVER SUPPORT
  - LIFTING CABLE - TO FOLLOW THE SPECIFICATIONS FROM FLYGT LIFTING CABLE PART NUMBER 14-58 75 15, MIN LENGTH 50'
  - GUIDE RAIL PER FLYGT'S SPECIFICATIONS.
  - 2" AIR VALVE DRAIN (AVD) PIPING, SLOPES AT 2% TO WET WELL, PIPE AND FITTINGS SHALL BE SCH 40, 3/16 ST. STL.
  - 4" DROP INLET WITH GRATE
  - 4" FLAP VALVE
  - 8" FLANGED COUPLING ADAPTER FULLY RESTRAINED
  - 4" DIA STD CLASS 125 C. I. PUMP DISCHARGE ELBOW PER PUMP MFR SPECS.
  - 8" 90° BEND FL X VICTAULIC
  - BLIND FLANGE WITH 2" THREADED OUTLET AND 2" BALL VALVE

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**Kimley-Horn and Associates, Inc.**  
 Engineering, Planning and Environmental Consultants  
 517 Fourth Avenue - Suite 301 - San Diego, Ca. - 92101  
 Tel: (619) 234-9411 Fax: (619) 234-9433  
 PREPARED BY: Samuel Lake McWhorter 9/22/08  
 SAMUEL LAKE MCWHORTER R. C. E. 61788 DATE

**SEWER CERTIFICATION BLOCK**  
 I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.  
 Prepared by: *Samuel Lake McWhorter* 9/22/08  
 Mechanical Engineer M-28589 DATE

MARK	REVISIONS	APPR. DATE
AS-BUILT PLANS		12/10

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*Mark Buckley* 9.29.08  
 MECHANICAL ENGINEER M-28589 DATE  
 VOID AFTER ONE YEAR FROM THIS DATE  
 BENCH MARK: NAIL w/ RCF TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. 27981 RCFCD NGVD 29. ELEVATION - 1568.64

WESTERN MUNICIPAL WATER DISTRICT  
 P.O. BOX 5286  
 RIVERSIDE, CA. 92517-5286  
 450 ALESSANDRO BLVD  
 RIVERSIDE, CA. 92508  
 (951) 789-5000 (BUS) (951) 780-3837 (FAX)  
 Rev: 2/28/00

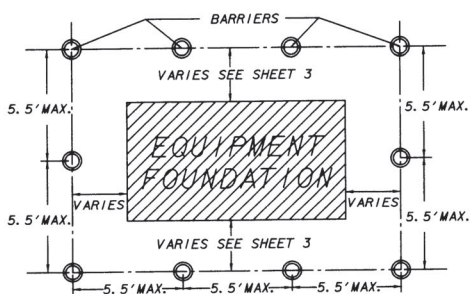
MERIDIAN-UNIT 2  
 TRACT NO. 30857-2  
 UNIT 2 SEWER LIFT STATION  
 WET WELL  
 SECTIONS AND DETAILS

SHEET NO. 6  
 OF 22 SHTS  
 DWG. NO.:

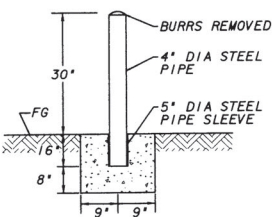
T12 30857-2 6/22  
 SEWER LIFT STATION

THE DESIGN AND THE CONSTRUCTABILITY OF THE PROJECT AS WELL AS THE ACCURACY OF FIGURES ARE THE RESPONSIBILITY OF THE DESIGN ENGINEER. PLAN CHECK SERVICES BY WWD WILL BE LIMITED TO THE ADHERENCE OF THE DISTRICT STANDARDS, MATERIALS, QUANTITIES AND SIZE OF FACILITIES, AS THEY RELATE TO THE SERVICE DISCHARGE OR APPROVED MASTER PLAN. DISCHARGE OF WASTEWATER FROM THE IMPROVEMENTS SHOWN ON THESE PLANS IS DEPENDENT UPON COMPLETION OF THE PIPING PROPOSED AS PART OF OTHER PHASES OF THIS TRACT AND/OR OTHER ADJACENT TRACTS.





EQUIPMENT FOUNDATION PLAN  
N.T.S.

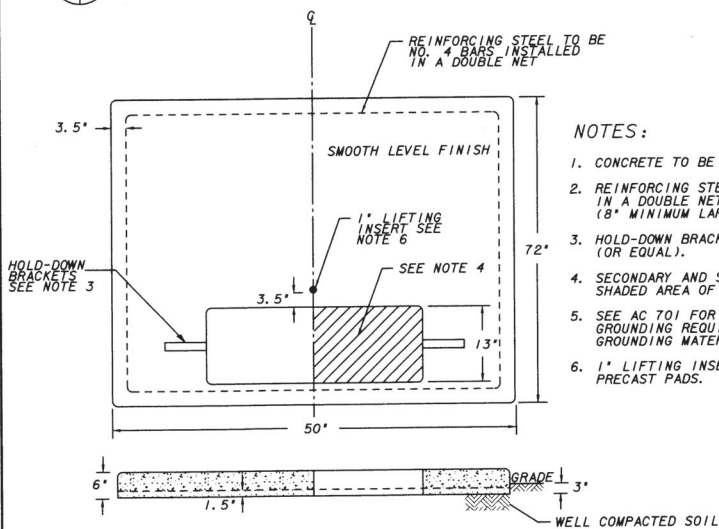


BARRIER DETAIL  
N.T.S.

NOTES:

- BARRIER TO BE ONE OF THE FOLLOWING:  
A. GALVANIZED STEEL PIPE (1/4" MIN WALL).  
B. SPECIAL BARRIERS BY PRIOR SCE CO. APPROVAL.
- STRUCTURES WILL NORMALLY BE INSTALLED ONLY IN NON-TRAFFIC AREAS. BARRIERS TO BE USED WHERE CONSTRUCTION HAS EXPOSED EQUIPMENT TO TRAFFIC.
- ADEQUATE CLEARANCE MUST BE PROVIDED FOR DOORS, COOLING COILS, ETC.
- BARRICADES, AS SHOWN, INDICATE TYPICAL REQUIREMENTS. FIELD CONDITIONS WILL NECESSITATE CHANGES FOR ADEQUATE EQUIPMENT PROTECTION. APPROVAL IN THE FIELD FROM UNDERGROUND INSPECTOR IS REQUIRED FOR ALL BARRICADE INSTALLATIONS.
- WHEN SPECIFIED ON WORKING DRAWINGS, A 6" (MINIMUM HEIGHT) CURB MAY BE INSTALLED IN PLACE OF BARRIERS. THIS CURB MUST BE AT LEAST 6" THICK AT ITS FRONT FACE (LOCATED 36" MINIMUM OR SPECIFIED ON DRAWING) FROM THE EQUIPMENT FOUNDATION.
- INCREASE TO 36" MINIMUM WHEN ANY PAD IS BEING INSTALLED (DOOR SIDE ONLY).

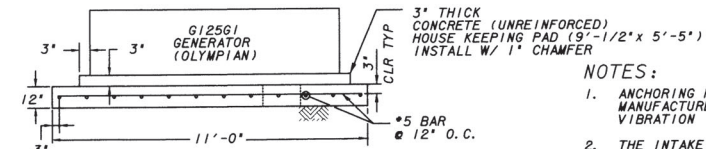
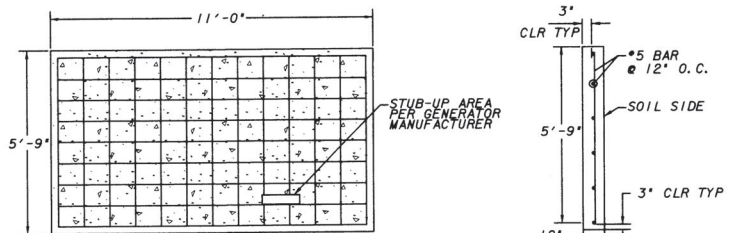
A 3/7 REMOVABLE BARRIER FOR ABOVE GROUND STRUCTURES  
N.T.S.



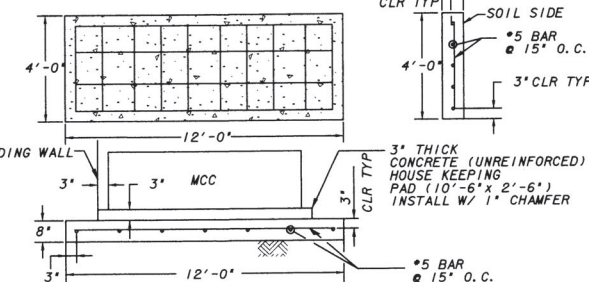
E 3/7 CONCRETE PAD FOR SURFACE-MOUNTED TRANSFORMER  
SCE DWG NO. 1212  
N.T.S.

NOTES:

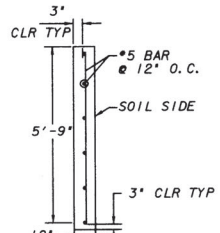
- CONCRETE TO BE 3,000 PSI (MINIMUM AT 28 DAYS).
- REINFORCING STEEL TO BE NO. 4 BARS INSTALLED IN A DOUBLE NET. PERIMETER BARS TO BE CONTINUOUS (8" MINIMUM LAP OR WELD).
- HOLD-DOWN BRACKETS TO BE P-3200 SERIES UNISTRUT (OR EQUAL).
- SECONDARY AND SERVICE CABLES MUST BE INSTALLED IN SHADED AREA OF DRAWING AS FAR TO THE RIGHT AS POSSIBLE.
- SEE AC 701 FOR PAD-MOUNTED TRANSFORMER/CAPACITOR GROUNDING REQUIREMENTS AND AC 703 FOR APPROVED GROUNDING MATERIALS.
- 1" LIFTING INSERT TO BE LOCATED AT CENTER OF GRAVITY ON PRECAST PADS.



B 3/7 CONCRETE GENERATOR PAD  
N.T.S.



C 3/7 CONCRETE MCC PAD  
N.T.S.



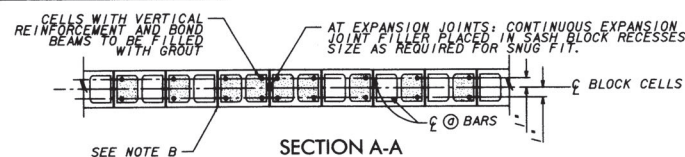
TYPICAL SECTION  
@ FULL MORTAR BED AT BOTTOM OF WALL

NOTES:

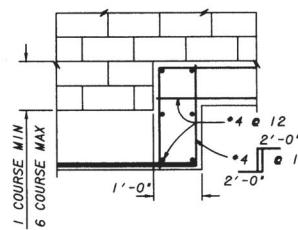
- ANCHORING FOR GENERATOR SHALL BE PER MANUFACTURER RECOMMENDATION USING VIBRATION ISOLATORS.
- THE INTAKE AIR DUCT FOR THE GENERATOR SHALL BE INSTALLED USING A FLEXIBLE CONNECTOR.
- EXHAUST PIPING OFF GENERATOR SHALL BE INSTALLED WITH A FLEXIBLE PIPE SECTION.
- GENERATOR PAD & MCC PAD CONCRETE MINIMUM COMPRESSIVE STRENGTH F'c = 5000 PSI GRADE 60 REINFORCING

GENERATOR & MCC PAD WATER-CEMENT RATIO AND COMPRESSIVE STRENGTH

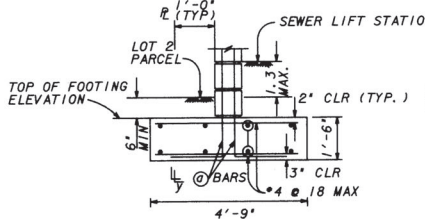
MIN. 28-DAY COMPRESSIVE STRENGTH (PSI)	MAX. SIZE AGGREGATE (IN.)	MIN. CEMENT PER CU YD (SACKS)	MAX. W/C (BY WT.)
5,000	3/4	7.5	0.40



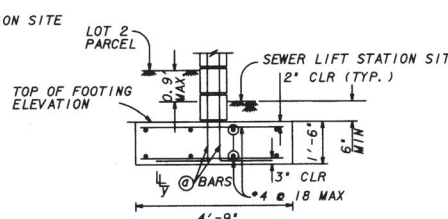
SECTION A-A



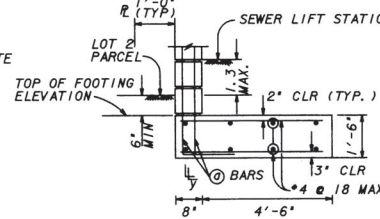
SPREAD FOOTING STEP DETAIL



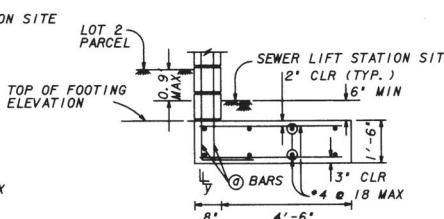
SPREAD FOOTING (T) SECTION CASE A



SPREAD FOOTING (T) SECTION CASE B



SPREAD FOOTING (L) SECTION CASE A

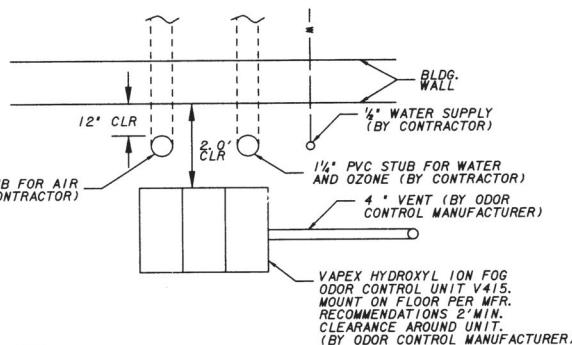


SPREAD FOOTING (L) SECTION CASE B

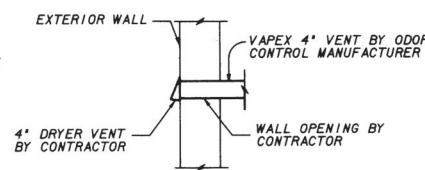
G 5/7 MASONRY BLOCK WALL ON FOOTING  
N.T.S.

NOTES:

- CONTRACTOR'S WORK:
- FOG NOZZLE 5" DIAMETER CORE HOLE IN WET WELL ROOF SHALL BE BY CONTRACTOR.
  - CONTRACTOR SHALL INSTALL 1/2" PVC AND 1/4" PVC CONDUIT FROM BUILDING TO WET WELL AND 1/4" WATER SUPPLY WITH STUBS AS NOTED IN THESE DRAWINGS.
  - CONTRACTOR SHALL INSTALL 4" VENT FROM BUILDING INTERIOR TO EXTERIOR THROUGH WALL.
  - CONTRACTOR TO COORDINATE WITH ODOR CONTROL MANUFACTURER TO DETERMINE SCHEDULE FOR INSTALLATION AND STARTUP OF ODOR CONTROL SYSTEM
- ODOR CONTROL MANUFACTURER'S WORK:
- FOG NOZZLE INSTALLATION AND ACCESS FOR MAINTENANCE AND REPAIR SHALL BE BY MANUFACTURER.
  - ODOR CONTROL UNIT SHALL BE BOLTED TO THE FLOOR WITH 3/4" STAINLESS STEEL DROP ANCHORS BY MANUFACTURER
  - A 4" VENT FOR THE ODOR CONTROL UNIT SHALL BE ROUTED TO AN EXTERIOR WALL BY MANUFACTURER.
  - FINAL HOOKUP INCLUDING ISOLATION VALVES, FITTINGS, FOG NOZZLE, VENTING FROM UNIT, ANCHORING, UNIT INSTALLATION SHALL BE BY ODOR CONTROL MANUFACTURER



G 5/7 ODOR CONTROL PLAN VIEW  
N.T.S.



EXTERIOR WALL PENETRATION  
N.T.S.

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REGISTERED PROFESSIONAL ENGINEER  
SAMUEL LAKE MCWHORTER  
STATE OF CALIFORNIA

Kimley-Horn and Associates, Inc.  
Engineering, Planning and Environmental Consultants  
517 Fourth Avenue - Suite 301 - San Diego, Ca. - 9201  
Tel: (619) 234-9411 Fax: (619) 234-9433  
PREPARED BY: Samuel Lake McWhorter 3/6/08  
SAMUEL LAKE MCWHORTER R. C. E. 61788 DATE

SEWER CERTIFICATION BLOCK  
I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.  
APPROVED BY: Samuel Lake McWhorter 3/6/08  
MECHANICAL ENGINEER M-28569 DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
MECHANICAL ENGINEER M-28569 DATE 7.11.08  
VOID AFTER ONE YEAR FROM THIS DATE  
BENCH MARK: NAIL w/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. 2781 RCFCD NOV 29. ELEVATION - 1566.64

WESTERN MUNICIPAL WATER DISTRICT  
P.O. BOX 5286  
RIVERSIDE, CA. 92517-5286  
450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508  
(951) 789-5000 (BUS) (951) 780-3857 (FAX) Rev. 2/28/00

MERIDIAN-UNIT 2  
TRACT NO. 30857-2  
UNIT 2 SEWER LIFT STATION  
DETAILS  
SCALE: HORIZ: 1" = 20' N/A

SHEET NO. 7  
OF 22 SHTS  
DWG. NO.:

TR 30857-2 7/22  
SEWER LIFT STATION

PLOTTED: 3/5/2008







ELECTRICAL SYMBOL LIST

SYMBOL	DESCRIPTION
	CONDUIT HOMERUN TO PANELBOARD. LETTER AND NUMERALS INDICATE PANEL AND CIRCUIT NUMBER(S).
	CONDUIT RUN, CONCEALED IN CEILING, WALLS OR UNDER FLOOR.
	CONDUIT RUN, UNDERGROUND (P.V.C. SCH 40)
	CROSS LINES ON CONDUIT NUMBER OF #12 AWG., 600V. CONTAINED THEREIN. TWO #12'S ARE INDICATED WHEN CROSS LINES ARE NOT SHOWN. NUMERAL AT CROSS LINES INDICATES THE SIZE OF CONDUCTOR(S) IN LIEU OF #12. CODE SIZE CONDUIT. CROSS LINE IN ELLIPSE INDICATES GROUND. #12 UNLESS NOTED OTHERWISE.
	CONDUIT RUN, EXPOSED, RIGID GALVANIZED STEEL.
	CONDUIT STUB WITH CAP (THREADED FOR RIGID.)
	1/2" C. 3*12
	3/4" C. 4*12
	1" C. 5*12
	1 1/2" C. 6*12
	2" C. 7*12
	2 1/2" C. 8*12
	3" C. 9*12
	PANEL DESIGNATION: FIRST LETTER INDICATES PANEL IDENTIFICATION; SECOND NUMERAL INDICATES VOLTAGE; 1-120/208V, 3Ø, 4W.; 2-240V, 3Ø, 3W.; 3-120/240V, 1Ø, 3W.; 4-277/480V, 3Ø, 4W.; 5-120/240V, 3Ø, 4W.
	BRANCH CIRCUIT PANEL, SURFACE MOUNTED, MOUNT AT +6'-0" TO TOP.
	JUNCTION BOX
	JUNCTION BOX WITH PIGTAIL INDICATING CONNECTION TO EQUIPMENT. SIZES OF CONDUIT AND CONDUCTORS SHALL BE SAME SIZE AS BRANCH CIRCUIT WIRING.
	DUPLEX GROUNDING TYPE RECEPTACLE (+18" ABOVE FLOOR UNLESS NOTED OTHERWISE). D-DEDICATED CIRCUIT.
	DOUBLE DUPLEX GROUNDING TYPE RECEPTACLE (+18" ABOVE FLOOR UNLESS NOTED OTHERWISE). D-DEDICATED CIRCUIT.
	SINGLE POLE 20A. SWITCH, LOWER CASE LETTER AT BOTTOM INDICATES OUTLETS CONTROLLED. SYMBOL AT TOP INDICATES TYPE: K-KEY CONTROLLED; P-PILOT LIGHT; 2-TWO POLE; 3-THREE WAY; 4-FOUR WAY. MOUNT AT +48" TO TOP UNLESS NOTED OTHERWISE.
	SINGLE POLE MANUAL MOTOR STARTER SWITCH WITH OVERLOAD ELEMENT(S). 2-TWO POLE, 3-THREE POLE.
	DISCONNECT SWITCH, F-FUSED, RATING AS NOTED. MOUNT AT +4'-6" TO HANDLE UNLESS NOTED OTHERWISE.
	PUSHBUTTON STATION; LOS-LOCK OUT STOP; ST-START; H-HIGH; L-LOW PL-PILOT LIGHT; S-STOP.
	SWITCH FUNCTION AS NOTED; MAS-MECHANICAL ALTERNATOR SWITCH; DS-DOOR SWITCH; FL-FLOAT SWITCH; PES-PNEUMATIC ELECTRIC SWITCH; PS-PRESSURE SWITCH; MC-MOMENTARY CONTACT SWITCH; MOUNTING /S-SURFACE; /R-RECESSED; /P-PANEL.
	THREE PHASE FRACTIONAL OR INTEGRAL HORSEPOWER MOTOR, NUMBER IN LIEU OF "M" INDICATES HORSEPOWER RATING.
	SINGLE PHASE, FRACTIONAL OR INTEGRAL HORSEPOWER, MOTOR.
	TELEPHONE CONDUIT RUN, 3/4" C.O.; T1-1" C.O.; T2-1-1/4" C.O.; T3-1-1/2" C.O.; T4-2" C.O.
	TELEPHONE OUTLET, (+18" ABOVE FLOOR UNLESS NOTED) LETTER(S) INDICATE TYPE; P-PAY STATION; W-WALL MOUNTED (+54" ABOVE FLOOR UNLESS NOTED OTHERWISE); H-HOUSE PHONE.
	MOLDED CASE, ENCLOSED, FLUSH MOUNTED CIRCUIT BREAKER, AMPERES & POLES AS NOTED.
	EXISTING EQUIPMENT TO REMAIN.
	NEW EQUIPMENT.

SYMBOL	DESCRIPTION
	GROUND
	CONDUCTORS CONNECTED.
	3 C.T.'s. CURRENT TRANSFORMERS
	TRANSFORMER, DESCRIPTION AS NOTED.
	DELTA-WYE TRANSFORMER CONNECTION.
	VARIABLE FREQUENCY DRIVE
	UTILITY COMPANY SERVICE METER
	AUTOMATIC TRANSFER SWITCH
	SOLENOID VALVE
	CIRCUIT BREAKER, AMPERE RATING AND NUMBER OF POLES AS NOTED.
	MOLDED CASE CIRCUIT BREAKER PLUG-IN TYPE, AMPERE RATING AND NUMBER OF POLES AS NOTED.
	COMBINATION MAGNETIC MOTOR STARTER WITH MOLDED CASE CIRCUIT BREAKER: FVNR-FULL VOLTAGE NON-REVERSING (U.N.O.) 25-TWO SPEED; R-REVERSING; RV-REDUCED VOLTAGE AUTO TRANSFORMER; PW-PART WINDING. ROMAN NUMERAL INDICATES SIZE.
	SOLID STATE RAMP-UP, RAMP-DOWN, COMBINATION CIRCUIT BREAKER, STARTER, AND CONTACTOR.
	MAGNETIC MOTOR STARTER: FVNR-FULL VOLTAGE NON-REVERSING (U.N.O.) 25-TWO SPEED; R-REVERSING; RV-REDUCED VOLTAGE AUTO TRANSFORMER; PW-PART WINDING. ROMAN NUMERAL INDICATES SIZE.
	FUSED SWITCH, AMPERE RATING AND NUMBER OF POLES AS NOTED.
	CURRENT LIMITING FUSE, AMPERE RATING AND NUMBER OF POLES AS NOTED.
	COPPERWELD GROUND ROD AND WELL, 3/4" X 10'.
	ELECTRICAL EQUIPMENT: CONTROL PANEL, DISTR. PANEL MOTOR CONTROL CENTER, MINI ZONE POWER UNIT, ETC. SEE PLANS FOR EQUIPMENT TYPE AND SPECIFICATIONS.
	SYMBOL INDICATES CONDUIT & TYPE AND CONDUCTOR SIZE & AMOUNT. SEE CONDUIT AND CONDUCTOR CHART.
	SPECIAL PURPOSE RECEPTACLE NOTE: THE FOLLOWING SUBSCRIPTS ARE USED TO INDICATE VARIOUS TYPES OF SPECIAL RECEPTABLES.
	A 20A., 250V., 2 POLE, 3 WIRE, 1 PHASE, GROUNDING SINGLE RECEPTACLE, IVORY, NEMA 6-20R
	B 30A., 250V., 3 POLE, 4 WIRE, 3 PHASE, GROUNDING, SINGLE RECEPTACLE, IVORY, NEMA 15-20R
	C 20A., 125/250V., 3 POLE, 4 WIRE, 1 PHASE, GROUNDING SINGLE RECEPTACLE, IVORY, NEMA 14-20R
	D 30A., 125V., 2 POLE, 3 WIRE, GROUNDING SINGLE RECEPTACLE, IVORY, NEMA 5-30R
	E 30A., 250V., 2 POLE, 3 WIRE, 1 PHASE, GROUNDING, SINGLE RECEPTACLE, IVORY, NEMA 6-30R
	F 30A., 250V., 3 POLE, 4 WIRE, 3 PHASE, GROUNDING, SINGLE RECEPTACLE, IVORY, NEMA 15-30R
	G 30A., 125/250V., 3 POLE, 4 WIRE, 1 PHASE, GROUNDING, SINGLE RECEPTACLE, BLACK, NEMA 14-30R
	H 30A., 250V., 2 POLE, 3 WIRE, 1 PHASE, GROUNDING, SINGLE RECEPTACLE, TWIST LOCK TYPE, IVORY, NEMA L6-30R
	I 30A., 250V., 3 POLE, 4 WIRE, 3 PHASE, GROUNDING, SINGLE RECEPTACLE, TWIST LOCK TYPE, IVORY, NEMA L15-30R

ABBREVIATIONS

A	AMPERE	FVR	FULL VOLTAGE REVERSING	OFOI	OWNER FURNISHED OWNER INSTALLED
AC	ALTERNATING CURRENT	GFT	GROUND FAULT TRIP	OL'S	OVERLOADS
AF	AMPERE FRAME	GALV	GALVANIZED	P	POLE, PHASE
AFU	ABOVE FINISHED FLOOR	GEN	GENERATOR	PA	PUBLIC ADDRESS
AHU	AIR HANDLING UNIT	GFCI	GROUND FAULT CIRCUIT INTERRUPT	PB	PULL BOX, PUSH BUTTON
AIC	AMPERE INTERRUPTING CAPACITY	GFI	GROUND FAULT INTERRUPTER	PC	PHOTOCELL CONTROLLED FIXTURE
AL	ALUMINUM	GND	GROUND	PANL	PANEL
ALM	ALARM	GRS	GROUNDING RIGID STEEL	PP	POWER PANEL
AR	ALARM RELAY	HAZ	HAZARDOUS LOCATION - EXPLOSION PROOF	PR	PAIR
AT	AMPERE TRIP	HOA	HAND OFF-AUTO	PRI	PRIMARY
ATS	AUTOMATIC TRANSFER SWITCH	HP	HAND HOLE	PROVIDE	FURNISH, INSTALL AND CONNECT
AIC	AMPERE INTERRUPTING CAPACITY	HOA	HAND-OFF-AUTO	PVC	POLYVINYLCHLORIDE
AUTO	AUTOMATIC	HP	HORSEPOWER	PW	PART WINDING
AUX	AUXILIARY	HT	HEIGHT	PWR	POWER
AWG	AMERICAN WIRE GAUGE	HTR	HEATER	RECEP	RECEPTACLE
BC	BARE COPPER CONDUCTOR	HV	HIGH VOLTAGE	REQD	REQUIRED
BKR	BREAKER	HZ	HERTZ (CYCLES PER SECOND)	RGS	RIGID GALVANIZED STEEL
C	CIRCUIT BREAKER	IL	INDICATING LAMP	RM	ROOM
C/B	CIRCUIT BREAKER	INCAND	INCANDESCENT	RMS	ROOT MEAN SQUARE
CKT	CIRCUIT	INST	INSTANTANEOUS	RS	RAPID START
CLG	CEILING	INSTR	INSTRUMENT	RTU	REMOTE TELEMETRY UNIT
CND	CONDUIT	INTLCK	INTERLOCK	RVNR	REDUCED VOLTAGE NON REVERSING
CNTRLR	CONTROLLER	JB	JUNCTION BOX	SCH	SCHEDULE
C.O.	CONDUIT ONLY	KVA	KILOVOLT AMPERES	SEC	SECONDARY, SECONDS
CONC	CONCRETE	KW	KILOWATTS	SEL	SELECTOR
COMP	COMPRESSOR	KWH	KILOWATT HOUR	SH	SHIELDED
COMPT	COMPARTMENT	KWHM	KILOWATT HOUR METER	SP	SPECIFICATIONS
CONT	CONTROL	LOC	LOCATION	SPEC	SINGLE POLE
CONTD	CONTINUED	LP	LIGHTING PANEL	SPDT	SINGLE POLE DOUBLE THROW
CR	CONTROL RELAY	LTG	LIGHTING	SPST	SINGLE POLE SINGLE THROW
CT	CURRENT TRANSFORMER	LV	LOW VOLTAGE (GENERALLY BELOW 600V)	SS	SOFT START, STAINLESS STEEL
CU	COPPER	MA	MAXIMUM	S/S	SELECTOR SWITCH
CW	COOL WHITE	MCC	MOTOR CONTROL CENTER	SUB	SUBSTATION
DB	DIRECT BURIAL	MCM	THOUSAND CIRCULAR MILLS	SV	SOLENOID VALVE
DC	DIRECT CURRENT	MCP	MOTOR CIRCUIT PROTECTOR	SW	SWITCH
DET	DETAIL	MH	MANHOLE	SWBD	SWITCHBOARD
DIA	DIAMETER	MIN	MINIMUM	TB	TERMINAL BLOCK
DIAG	DIAGRAM	MOV	MOTOR OPERATED VALVE	TC	TIME CLOCK
DISC	DISCONNECT	MR	MOTOR CONTRACTOR RELAY	TEL	TELEPHONE
DISTR	DISTRIBUTION	MS	MANUAL STARTER	TEMP	TEMPERATURE
DP	DISTRIBUTION PANEL	MSB	MAIN SWITCHBOARD	THWN	THERMOPLASTIC HEAT AND WATER RESISTANT NYLON COATED
DS	DISCONNECT SWITCH	MSG	MAIN SWITCHGEAR	TS	TIME SWITCH, TEMPERATURE SWITCH
ELEV	ELEVATION	MSP	MOTOR STARTER PANEL	TYP	TYPICAL
EMER	EMERGENCY	MTD	MOUNTED	UG	UNDERGROUND
ENCL	ENCLOSURE/ENCLOSED	MTG HT	MOUNTING HEIGHT	UNSW	UNSWITCHED
EQUIP	EQUIPMENT	MTR	MOTOR	UNO	UNLESS NOTED OTHERWISE
ES	ENERGY SAVING	MV	MILLIVOLTS	UPS	UNINTERRUPTIBLE POWER SUPPLY
EXIST	EXISTING	N/A	NOT APPLICABLE	US	UNIT SUBSTATION
EXP	EXPLOSION PROOF	NEC	NATIONAL ELECTRICAL CODE	V	VOLT
F	FREQUENCY	NF	NORMALLY CLOSED	VA	VOLT-AMPS
FA	FIRE ALARM	NF	NORMALLY OPEN	VDC	VOLT DIRECT CURRENT
FDR	FEEDER	NF	NOM FUSED	VFD	VARIABLE FREQUENCY DRIVE
FIN	FINISHED	NIC	NORMALLY OPEN	VOJ	VERIFY ON JOB
FLEX	FLEXIBLE	NP	NAMEPLATE	VSD	VARIABLE SPEED DRIVE
FP	FIELD PANEL	NTS	NOT TO SCALE	W	WATTS
FS	FLOW SWITCH	OC	ON CENTER, OVER CURRENT	W/	WITH
FUT	FUTURE	OFC	OIL FUSED CUTOFF	W/O	WITHOUT
FVNR	FULL VOLTAGE NON REVERSING	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED	WP	WEATHERPROOF
		OFCI	OWNER FURNISHED CONTRACTOR INSTALLED	XFMR	TRANSFORMER

GENERAL NOTES

- THE CONTRACTOR SHALL SUPPLY POWER TO AND MAKE CONNECTIONS TO ALL MOTORS AND EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS AS SHOWN ON THE SINGLE LINE DIAGRAM, ELECTRICAL PLANS, AND THE MECHANICAL AND PLUMBING DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW THE DRAWINGS OF THE MECHANICAL AND PLUMBING SECTIONS FOR CONTROL DIAGRAMS, SIZE OF EQUIPMENT AND LOCATION. ALL CONDUIT WIRING, CONTROL ITEMS, ETC. FOR MECHANICAL AND PLUMBING OPERATION SHALL BE PROVIDED.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSTALL CONDUIT AND/OR ELECTRICAL EQUIPMENT IN A LOCATION WHICH WILL CAUSE AS LITTLE INTERFERENCE AS POSSIBLE WITH THE INSTALLATION AND MAINTENANCE OF ANY OF THE MECHANICAL AND/OR PLUMBING DUCTS, LINES AND EQUIPMENT.
- ALL FINAL CONNECTIONS TO OWNER-FURNISHED EQUIPMENT SHALL BE MADE BY THE CONTRACTOR UNLESS NOTED OTHERWISE.
- THE NUMERAL(S) SHOWN AT TOP OF LIGHT FIXTURE IDENTIFICATION SYMBOL WHICH INDICATE NUMBER OF LIGHT FIXTURES REQUIRED SHALL NOT BE USED BY THE CONTRACTOR FOR DETERMINATION OF HOW MANY FIXTURES WILL BE INSTALLED. THE CONTRACTOR SHALL COUNT ALL LIGHT FIXTURES WHEREVER A FIXTURE OUTLET IS SHOWN ON DRAWINGS.
- CONTRACTOR SHALL VISIT THE SITE AND THOROUGHLY FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND ACCEPT THE CONDITIONS UNDER WHICH HE WILL BE REQUIRED TO WORK.
- WHEREVER A DISCREPANCY IN SIZE OF CONDUIT, WIRE OR EQUIPMENT ARISES ON THE DRAWINGS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING THE LARGEST SIZE OF THE ITEMS IN QUESTION.
- SEE SINGLE LINE DIAGRAM FOR CONDUIT AND CONDUCTOR SIZES TO PANELS, TRANSFORMERS, MOTOR CONTROL CENTERS, MECHANICAL EQUIPMENT, ETC. FEEDERS TO PANELS MAY NOT BE SHOWN ON PLAN DRAWINGS, BUT IS A PART OF THE CONTRACT.
- ALL ITEMS RELATED TO THE ELECTRICAL POWER SERVICE SUCH AS SERVICE CONDUIT, CONDUCTORS, DUCTS, PAD MOUNT, RISERS, PULL BOXES, PERMITS, FEES, AND PROTECTIVE COVERING FROM SERVICE POLE LOCATION SHALL BE PROVIDED AND/OR INSTALLED AND SHALL BE VERIFIED BY THE SERVING UTILITY. CONTRACTOR SHALL INSTALL SERVICE IN COMPLIANCE WITH THE SERVING UTILITY AND ENGINEER AND TO PAY ALL CHARGES LEVIED BY THE SERVING UTILITY FOR THIS SERVICE, EXCEPTING FIRST BILLING PERIOD.
- CONTRACTOR SHALL BE RESPONSIBLE TO SUBMIT CONTROL DRAWINGS FOR THE PUMP CONTROL PANEL/SYSTEM TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
- BY ACCEPTING THE CONTRACT, CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THE PROJECT EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.
- ALL CIRCUITS SHALL BE INSTALLED IN AN APPROVED RACEWAY.
- ANY FLEXIBLE CONDUIT USED SHALL BE LESS THAN 6'-0" IN LENGTH AND MUST CARRY AN APPROVED SIZE GROUND WIRE.
- THE CONTRACTOR SHALL SECURE AND PAY FOR PERMITS AND FEES FOR EXECUTION AND COMPLETION OF ELECTRICAL WORK, INCLUDING ALL CHARGES BY THE LOCAL GOVERNMENT AGENCIES.
- ALL CONDUIT STUB OUTS AND RUNS EXTERIOR TO THE NEMA ENCLOSURES SHALL BE A MINIMUM OF 24" BELOW GRADE. PROVIDE WEATHERPROOF JOINTS FOR PIPED AND OUTS.
- PROVIDE ENGRAVED LAMACOID NAME PLATES FOR ALL CIRCUIT BREAKERS, TRANSFORMERS, STARTERS, SWITCHES, PANELS ETC.
- THERE ARE WATER LINES AND OTHER UNDERGROUND UTILITIES IN THE AREAS WHERE TRENCHING FOR THE ELECTRICAL DUCT LINES ARE LOCATED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE ALL REPAIRS TO ANY UNDERGROUND UTILITY DAMAGED WHILE DIGGING ON THE SITE.
- ALL CONDUCTORS IN MANHOLES, TRENCHES, AND IN SWITCHGEAR SHALL BE ARC AND FIRE PROOFED BY WRAPPED CABLE AND JOINTS WITH 3M 7700 TAPE ONE LAYER HALF WRAPPED THE FULL LENGTH.
- TERMINATE AND SPLICE CONDUCTORS, IN MANHOLE OR WHERE INDICATED WITH TAPE TYPE TERMINATION KIT, SCOTCH 3M OR EQUAL.
- ALL CONDUCTORS IN MANHOLES, CABINETS, SWITCHES, ETC. SHALL BE IDENTIFIED WITH ENGRAVED, 2" DIAMETER, FIBER TAGS, INDICATE LOAD, VOLTAGE, AND PHASE.
- COIL CONDUCTORS IN MANHOLE, AT LEAST ONE TIME AROUND PERIMETER FOR ALL NEW CONDUCTORS SPLICED OR EXTENDED THROUGH MANHOLE OR U.G. FUL SECTIONS.

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	FINISH	LAMP(S)	REMARKS	MRF. & NO.
	12' SQUARE BY 5' DEEP POLE TOP MOUNTED ADJUSTABLE FLOOD LIGHT FIXTURE WITH CAST ALUMINUM HOUSING, SEALED AND GASKETED, WITH CLEAR TEMPERED GLASS HINGED LENS WITH CAPTIVE FASTENERS.	FACTORY FINISHED DARK BRONZE POWDER COAT	(2) 70W METAL HALIDE MEDIUM BASE	HIGH POWER FACTOR, RECOAT -20'F, DUAL VOLT BALLAST, FIXTURE COMPLETE WITH 2" ADJUSTABLE FITTER MOUNTING AND SINGLE FUSE PROTECTION AND PHOTOCELL. SEE DETAIL ON SHEET E-6 FOR ADDITIONAL REQUIREMENTS	RUUD LIGHTING *MFS340T-D
A 90	19' TALL - 4' STRAIGHT SQUARE (0.0120" WALL) STEEL POLE. 10" DIA. BOLT CIRCLE PROVIDE (4) 1" X 36" ANCHOR BOLTS	FACTORY FINISHED DARK BRONZE		PROVIDE ALL MOUNTING HARDWARE FOR BASE AND 2" ADJUSTABLE FITTER MOUNT. POLE COMPLETE WITH WEATHERPROOF G.F.C.I. RECEPTACLE AND MANUAL TOGGLE SWITCH	RUUD LIGHTING *PS4S319CBZ
B	TWO 48" FLUORESCENT LAMPS WITH BALLAST AND FIXTURE REINFORCED POLYESTER HOUSING, IMPACT RESISTANT UV RESISTANT ACRYLIC DIFFUSER, FULLY GASKETED, UL WET LOCATION		(2) 70W FLUORESCENT F40CW	BUILDING INTERIOR LIGHTS ATTACH TO ROOF JOISTS (TYP.) WITH 2" MIN HORIZONTAL CLEARANCE TO EXHAUST PIPE AND EXHAUST FAN	LITHONIA DMM-24-AR-120-ES
C	WALL LIGHTER METAL HALIDE WALL FIXTURE	DARK BRONZE	70W METAL HALIDE	BUILDING EXTERIOR LIGHT. ATTACH TO BUILDING WALL 10' FROM GRADE	GE WALL LIGHTER W70MH-1-A-1-0-MED-DB-0

NOTICE

RELEASE OF THESE PLANS CONTEMPLATES FURTHER COOPERATION AMONG THE OWNER, HIS CONTRACTOR, AND THE ENGINEER. DESIGN AND CONSTRUCTION ARE COMPLEX, ALTHOUGH THE ENGINEER HAS PERFORMED HIS SERVICES WITH DUE CARE AND DILIGENCE. HE CANNOT GUARANTEE PERFECTION. COMMUNICATION IS IMPERFECT, AND EVERY CONTINGENCY CANNOT BE ANTICIPATED. ANY AMBIGUITY OR DISCREPANCY DISCOVERED BY THE USE OF THESE PLANS SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER. FAILURE TO NOTIFY THE ENGINEER OF SUCH DISCREPANCIES MAY INCREASE CONSTRUCTION COSTS. A FAILURE TO COOPERATE BY A SIMPLE NOTICE TO THE ENGINEER SHALL RELIEVE THE ENGINEER FROM RESPONSIBILITY FOR ALL CONSEQUENCES. CHANGES MADE FROM THE PLANS WITHOUT THE CONSENT OF THE ENGINEER ARE UNAUTHORIZED, AND SHALL RELIEVE THE ENGINEER OF RESPONSIBILITY FOR ALL CONSEQUENCES ARISING OUT OF SUCH CHANGES. IT IS ALSO UNDERSTOOD AND AGREED THAT THE DESIGN PROFESSIONAL HAS NO CONSTRUCTIVE USE OF OWNER'S SITE; HAS NO CONTROL OR AUTHORITY OVER THE MEANS, METHODS, AND SEQUENCES OF CONSTRUCTION; AND THEREFORE HAS NO ONGOING RESPONSIBILITY WHATSOEVER FOR CONSTRUCTION SITE SAFETY. A RESPONSIBILITY THAT HAS BEEN WHOLLY VESTED IN THE GENERAL CONTRACTOR.

SEWER 1247

NOTE: THE DESIGN AND THE CONSTRUCTABILITY OF THE PROJECT AS WELL AS THE ACCURACY OF FIGURES ARE THE RESPONSIBILITY OF THE DESIGN ENGINEER. PLAN CHECK SERVICES BY WMMW WILL BE LIMITED TO THE ADHERENCE OF THE DISTRICT STANDARDS, MATERIALS, QUANTITIES AND SIZE OF FACILITIES. AS THEY RELATE TO THE SERVICE DISCHARGE OR APPROVED MASTER PLAN. DISCHARGE OF WASTEWATER FROM THE IMPROVEMENTS SHOWN ON THESE PLANS IS DEPENDENT UPON COMPLETION OF THE PIPING PROPOSED AS PART OF OTHER PHASES OF THIS TRACT AND/OR OTHER ADJACENT TRACTS.

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Engineering, Planning and Environmental Consultants  
517 Fourth Avenue - Suite 301 - San Diego, Ca. - 92101  
Tel: (619) 234-9441 Fax: (619) 234-9433

PREPARED BY: *Steven Chan* 3-6-08  
STEVEN CHAN R.E.E. 15107 DATE

SEWER CERTIFICATION BLOCK

I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.

*John H. ...* 7.10.08  
MECHANICAL ENGINEER E-28069 DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:

*John H. ...* 7.10.08  
MECHANICAL ENGINEER E-28069 DATE  
VOID AFTER ONE YEAR FROM THIS DATE

BENCH MARK: NAIL w/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. Z7981 RCFC NGVD 29. ELEVATION - 1568.64

AS-BUILT PLANS

WESTERN MUNICIPAL WATER DISTRICT

P.O. BOX 5286  
RIVERSIDE, CA. 92517-5286

450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508

(951) 789-6000 (BUS) (951) 780-3837 (FAX) Rev: 2/28/00

MERIDIAN-UNIT 2  
TRACT NO. 30857-2

UNIT 2 SEWER LIFT STATION

ELECTRICAL NOTES

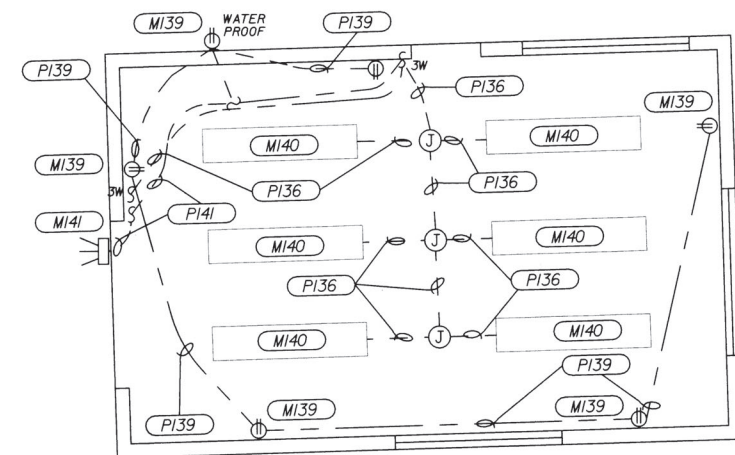
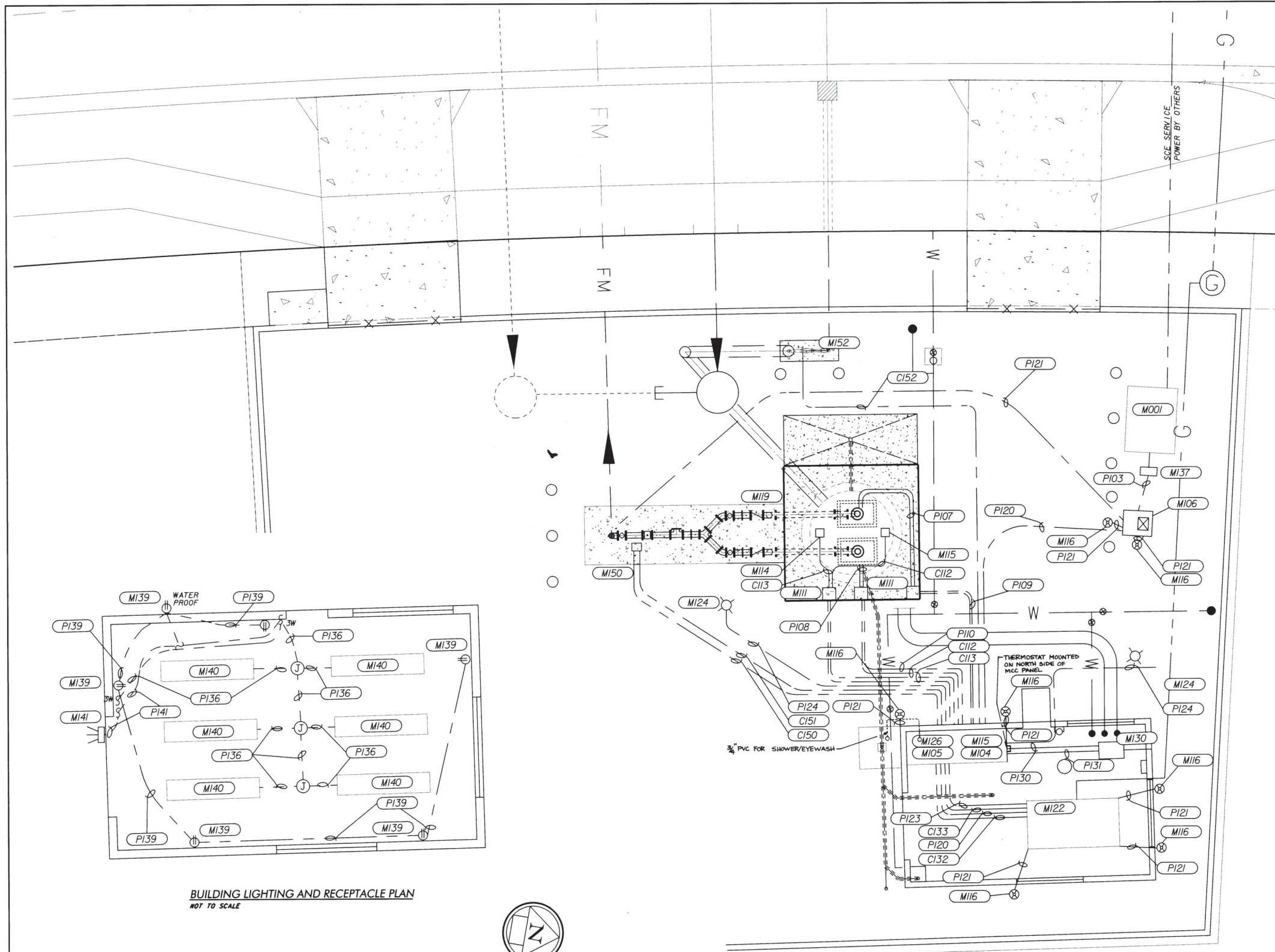
SHEET NO. 9

of 22 SHTS

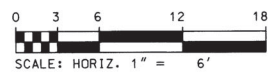
DWG. NO.: E-1

30857-2 9/22  
 SEWER LIFT STATION





**BUILDING LIGHTING AND RECEPTACLE PLAN**  
NOT TO SCALE



**UNIT 2 SEWER LIFT STATION**  
**ELECTRIC NOTES**

- (M001) UTILITY TRANSFORMER (INSTALLED BY OTHERS)
- (PI03) 4" CONDUIT ONLY - CONDUCTORS BY UTILITY CO.
- (MI04) MOTOR CONTROL CENTER "MCC" - SEE ELEVATION ON SHEET E-5, & CONTROL DIAGRAM ON SHEET E-4
- (MI05) 200A, 3P, AUTO TRANSFER SWITCH "ATS" FURNISHED BY MCC SUPPLIER
- (MI06) S.C.E. APPROVED SERVICE METER MAIN PEDESTAL SEE SHEET E-5 FOR ELEVATION. 200A, 3PH., 4W 277/480V.. COOPER-BEELINE \*CMP411MCH1/M042K
- (PI07) 3" C. (1) 3/C-8, 1\*8GRD & 2"C (1) 5/C-14 CABLES, 1\*12 GRD. (CABLES SHALL BE CONTINUOUS AND UNSPLICED BETWEEN SUBMERSIBLE PUMP AND WET WELL JUNCTION BOX), PUMP #1
- (PI08) 3" C. (1) 3/C-8, 1\*8GRD & 2"C (1) 5/C-14 CABLES, 1\*12 GRD. (CABLES SHALL BE CONTINUOUS AND UNSPLICED BETWEEN SUBMERSIBLE PUMP AND WET WELL JUNCTION BOX), PUMP #2
- (PI09) 3" C. 3 \*8 (PUMP POWER) AND 1 \*8 BARE GROUND; AND 2"C. 5 \*12 (PUMP CONTROL) AND 1 \*12 BARE GROUND, "PUMP #1"
- (PI10) 3" C. 3 \*8 (PUMP POWER) AND 1 \*8 BARE GROUND; AND 2"C. 5 \*12 (PUMP CONTROL) AND 1 \*12 BARE GROUND, "PUMP #2"
- (MI11) JUNCTION BOX SIZE. SEE DETAIL SHEET E-6.
- (CI12) 3/4" C. WITH MILTRONICS TRANSDUCER CABLE (NO SPLICE), 1\*12 GRD.
- (CI13) 3/4" C. 2\*14 SUBMERSIBLE (FLOAT) CABLES. (NO SPLICE), 1\*12 GRD
- (MI14) FLOAT SWITCHES - HIGH LEVEL ALARM AND LOW LEVEL PUMP SHUT DOWN CONTROL
- (MI15) MILTRONICS ULTRASONIC LEVEL TRANSDUCER SEE DETAIL SHEET E-6
- (MI16) GROUND ROD & WELL SEE DETAIL SHEET E-6.
- (MI19) ALL ELECTRICAL WORK IN THE WET WELL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NEC ARTICLE 500, CLASS I, DIVISION 1.
- (PI20) (1) 3"C., (4) \*3/0 & (1) \*1/0 GRD., THWN, CU.
- (PI21) 3/4" C. W/ (1) \*2 AWG CU GROUND BOND
- (MI22) STAND-BY NATURAL GAS ENGINE DRIVEN GENERATOR SET, OLYMPIAN G100F3, RATE 100 KW, 0.8PF, 480/277V, 3 PHASE, 4W, COMPLETE W/ SOUND ATTENUATION, BATTERY CHARGER AND 1000W COOLANT HEATER
- (PI23) 1-1/2" C., (4) \*12 & (1) \*12 GRD., THWN, CU TO PANEL "B", 120VAC POWER FOR BATTERY CHARGER, GENERATOR PANEL & (1) 240V COOLANT HEATER.
- (MI26) PROVIDE PANEL "B" IN "MCC" ASSEMBLY. PANEL "B" SHALL HAVE 14 CKTS WITH BKRS AS SHOWN IN SCHEDULE.
- (CI32) 3/4" C., (2) \*12 AND (1) \*12 GRD. (GENERATOR STATUS)
- (CI33) 3/4" C., (2) \*12 AND (1) \*12 GRD. (GENERATOR START)
- (PI30) 3/4" C. \*16 AWG CABLE ODOR CONTROL COMM (ODOR CONTROL UNIT STATUS) 1\*12 GRD
- (PI31) 3/4" C. 2\*10 AWG, 1\*10 GROUND ODOR CONTROL POWER
- (PI32) NOT USED
- (MI50) FLOW METER SENSOR AND FLOW METER SIGNAL CONVERTER AT FLOW METER
- (CI50) 3/4" C. 2\*12, 1\*12 GRD (FLOW METER POWER)
- (CI51) 3/4" C. RS485 2\*16 AWG TWISTED CABLE, 1\*12 GRD.
- (PI24) 1" \* C. 2 \*12 (LIGHT), 2 \*12 (RECEPTACLE), 1\*12 GRD.
- (MI24) POLE MOUNTED LIGHT FIXTURE. SEE DETAIL SHEET E-6
- (MI30) ODOR CONTROL UNIT
- (MI37) NO. 5 PULL BOX FOR UTILITY SERVICE CONNECTION
- (MI38) BUILDING LIGHT SWITCH
- (PI36) 3/4" C. 2\*12 (BUILDING LIGHT), 1\*12 GRD
- (MI39) DUPLEX RECEPTACLE (WATER PROOF TYPE WHERE INDICATED)
- (PI39) 3/4" C. 2\*12 (RECEPTACLE), 1\*12 GRD
- (MI40) BUILDING INTERIOR LIGHT FIXTURE. SEE LIGHTING FIXTURE SCHEDULE TYPE B ON SHEET 9.
- (CI52) 3/4" C. 2\*12 (RECLAIMED WATER VALVE SOLENOID), 1\*12 GRD
- (MI52) SOLENOID ACTIVATED CLA-VAL
- (PI40) 3/4" C. 2\*8 (BUILDING ELECTRICAL SUBPANEL), 1\*8 GRD
- (MI41) BUILDING EXTERIOR LIGHT FIXTURE. SEE LIGHTING FIXTURE SCHEDULE TYPE C ON SHEET 9
- (PI42) 3/4" C 2\*12 (BUILDING EXTERIOR LIGHT), 1\*12 GRD

**SEWER 1248**

NOTE:  
THE DESIGN AND THE CONSTRUCTABILITY OF THE PROJECT AS WELL AS THE ACCURACY OF FIGURES ARE THE RESPONSIBILITY OF THE DESIGN ENGINEER. PLAN CHECK SERVICES BY WMWD WILL BE LIMITED TO THE ADHERENCE OF THE DISTRICT STANDARDS, MATERIALS, QUANTITIES AND SIZE OF FACILITIES, AS THEY RELATE TO THE SERVICE DISCHARGE OR APPROVED MASTER PLAN. DISCHARGE OF WASTEWATER FROM THE IMPROVEMENTS SHOWN ON THESE PLANS IS DEPENDENT UPON COMPLETION OF THE PIPING PROPOSED AS PART OF OTHER PHASES OF THIS TRACT AND/OR OTHER ADJACENT TRACTS.

**TR 30857-2 10/22**  
**SEWER LIFT STATION**

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Engineering, Planning and Environmental Consultants  
517 Fourth Avenue - Suite 301 - San Diego, Ca. - 92101  
Tel: (619) 234-9411 Fax: (619) 234-9433

PREPARED BY: *Steven Chan*  
STEVEN CHAN R.E.E. 15107 DATE 9-5-08

**SEWER CERTIFICATION BLOCK**  
I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.

APPROVED BY: *Agathe Bousquet* 9.26.08  
MECHANICAL ENGINEER M-28569 DATE

AS-BUILT PLANS	12/10
REVISIONS	APPROX DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*Agathe Bousquet* 9.26.08  
WESTERN MUNICIPAL ENGINEER M-28569 DATE  
VOID AFTER ONE YEAR FROM THIS DATE

BENCH MARK:  
NAIL W/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE, 27981 RCFCD NGVD 29. ELEVATION 1568.64

**WESTERN MUNICIPAL WATER DISTRICT**  
P.O. BOX 5286  
RIVERSIDE, CA. 92517-5286  
450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508  
(951) 789-5000 (BUS) (951) 780-3837 (FAX) Rev: 2/28/00

**MERIDIAN-UNIT 2**  
TRACT NO. 30857-2

**UNIT 2 SEWER LIFT STATION**

**ELECTRICAL PLAN**

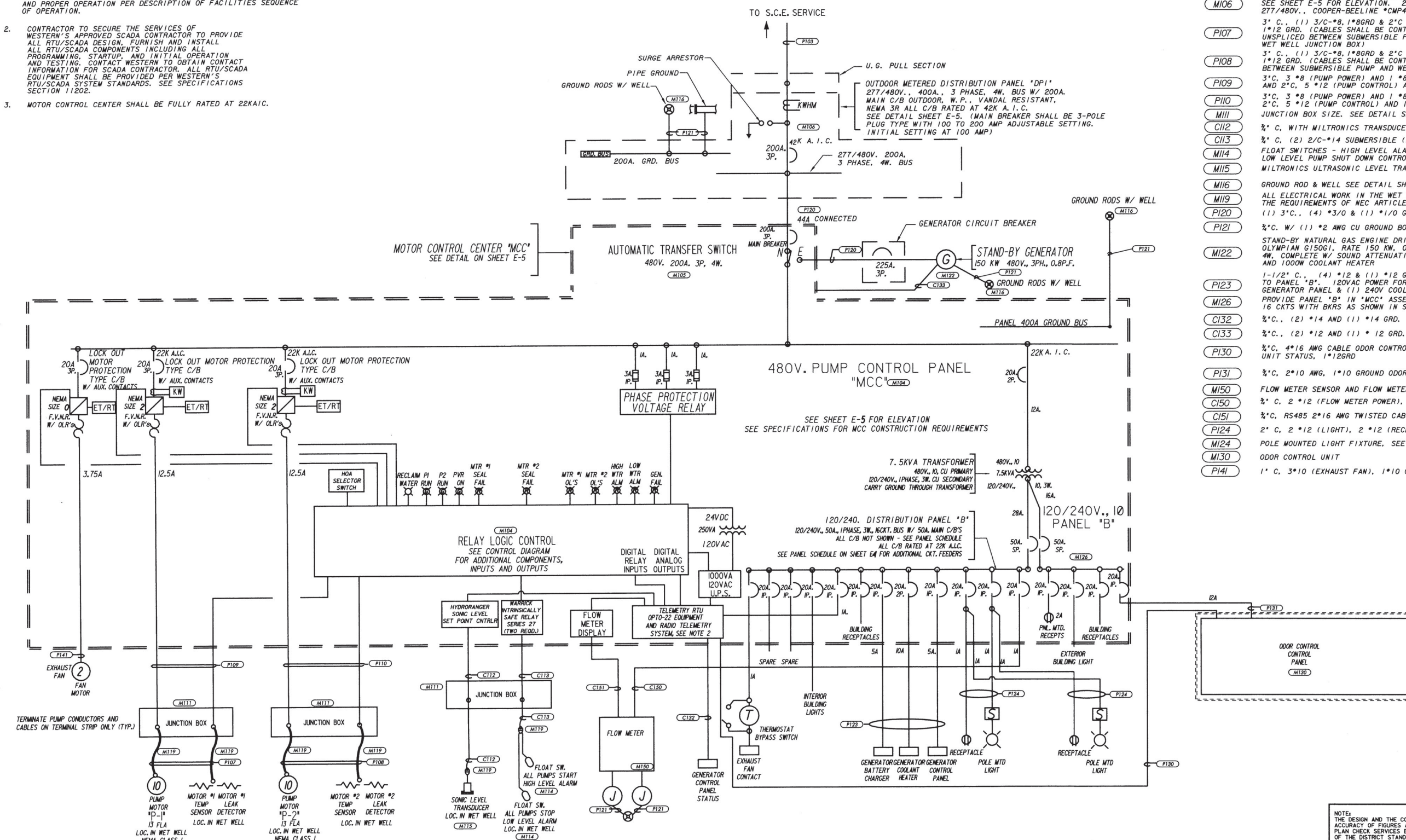
SHEET NO. 10  
OF 22 SHTS  
DWG. NO.: E-2

SCALE: HORIZ: 1" = 10' VERT: N/A



**NOTES:**

- MOTOR CONTROL CENTER SHALL BE PRE-MANUFACTURED. MANUFACTURERS SHALL SUBMIT DETAILED SHOP DRAWINGS OF PANEL CIRCUITRY FOR WWD REVIEW AND ENGINEER'S APPROVAL PRIOR TO ORDERING MANUFACTURED PANELS. ALL CONTROL COMPONENTS, CIRCUITRY, AND PROGRAMMING PROTOCOLS OF CONTROL PANELS MUST BE COORDINATED AND APPROVED BY WESTERN'S SCADA CONTRACTOR TO INSURE INTERFACE AND PROPER OPERATION PER DESCRIPTION OF FACILITIES SEQUENCE OF OPERATION.
- CONTRACTOR TO SECURE THE SERVICES OF WESTERN'S APPROVED SCADA CONTRACTOR TO PROVIDE ALL RTU/SCADA DESIGN, FURNISH AND INSTALL ALL RTU/SCADA COMPONENTS INCLUDING ALL PROGRAMMING, STARTUP, AND INITIAL OPERATION AND TESTING. CONTACT WESTERN TO OBTAIN CONTACT INFORMATION FOR SCADA CONTRACTOR. ALL RTU/SCADA EQUIPMENT SHALL BE PROVIDED PER WESTERN'S RTU/SCADA SYSTEM STANDARDS. SEE SPECIFICATIONS SECTION 11202.
- MOTOR CONTROL CENTER SHALL BE FULLY RATED AT 22KAIC.



**SINGLE LINE DIAGRAM UNIT 2 SEWER LIFT STATION**

**UNIT 2 SEWER LIFT STATION  
ELECTRIC NOTES**

- PI03 4" CONDUIT ONLY - CONDUCTORS BY UTILITY CO.
- MI04 MOTOR CONTROL CENTER "MCC" - SEE ELEVATION ON SHEET E-5, & CONTROL DIAGRAM ON SHEET E-4
- MI05 200A, 3P, AUTO TRANSFER SWITCH "ATS" FURNISHED BY MCC SUPPLIER.
- MI06 S.C.E. APPROVED SERVICE METER MAIN PEDESTAL SEE SHEET E-5 FOR ELEVATION. 200A, 3PH., 4W 277/480V., COOPER-BEELINE \*CMP4111MCH1/MQ42K
- PI07 3" C., (1) 3/C-#8, 1#8GRD & 2" C (1) 4/C-#14 CABLES, 1#12 GRD. (CABLES SHALL BE CONTINUOUS AND UNSPLICED BETWEEN SUBMERSIBLE PUMP AND WET WELL JUNCTION BOX)
- PI08 3" C., (1) 3/C-#8, 1#8GRD & 2" C (1) 4/C-#14 CABLES, 1#12 GRD. (CABLES SHALL BE CONTINUOUS AND UNSPLICED BETWEEN SUBMERSIBLE PUMP AND WET WELL JUNCTION BOX)
- PI09 3" C, 3 #8 (PUMP POWER) AND 1 #8 BARE GROUND; AND 2" C, 5 #12 (PUMP CONTROL) AND 1 #12 BARE GROUND
- PI10 3" C, 3 #8 (PUMP POWER) AND 1 #8 BARE GROUND; AND 2" C, 5 #12 (PUMP CONTROL) AND 1 #12 BARE GROUND
- MI11 JUNCTION BOX SIZE. SEE DETAIL SHEET E-6.
- CI12 3/4" C. WITH MILTRONICS TRANSDUCER CABLE (NO SPLICE), 1#12 GRD.
- CI13 3/4" C. (2) 2/C-#14 SUBMERSIBLE (FLOAT) CABLES, 1#12GRD.
- MI14 FLOAT SWITCHES - HIGH LEVEL ALARM AND LOW LEVEL PUMP SHUT DOWN CONTROL.
- MI15 MILTRONICS ULTRASONIC LEVEL TRANSDUCER SEE DETAIL SHEET E-6
- MI16 GROUND ROD & WELL SEE DETAIL SHEET E-6.
- MI19 ALL ELECTRICAL WORK IN THE WET WELL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NEC ARTICLE 500, CLASS 1, DIVISION 1.
- PI20 (1) 3" C., (4) #3/0 & (1) #1/0 GRD., THWN, CU.
- PI21 3/4" C. W/ (1) #2 AWG CU GROUND BOND
- MI22 STAND-BY NATURAL GAS ENGINE DRIVEN GENERATOR SET. OLYMPIAN G150G1. RATE 150 KW, 0.8PF. 480/277V, 3 PHASE, 4W. COMPLETE W/ SOUND ATTENUATION, BATTERY CHARGER AND 1000W COOLANT HEATER
- PI23 1-1/2" C., (4) #12 & (1) #12 GRD., THWN, CU TO PANEL "B". 120VAC POWER FOR BATTERY CHARGER, GENERATOR PANEL & (1) 240V COOLANT HEATER.
- MI26 PROVIDE PANEL "B" IN "MCC" ASSEMBLY. PANEL "B" SHALL HAVE 16 CKTS WITH BKRS AS SHOWN IN SCHEDULE.
- CI32 3/4" C., (2) #14 AND (1) #14 GRD. (GENERATOR STATUS)
- CI33 3/4" C., (2) #12 AND (1) #12 GRD. (GENERATOR START)
- PI30 3/4" C. #16 AWG CABLE ODOR CONTROL COMM, 1#12GRD ODOR CONTROL UNIT STATUS, 1#12GRD
- PI31 3/4" C. #10 AWG, 1#10 GROUND ODOR CONTROL POWER
- MI50 FLOW METER SENSOR AND FLOW METER SIGNAL CONVERTER AT FLOW METER
- CI50 3/4" C. 2 #12 (FLOW METER POWER), 1#12 GRD.
- CI51 3/4" C. RS485 #16 AWG TWISTED CABLE, 1#12 GRD.
- PI24 2" C. 2 #12 (LIGHT), 2 #12 (RECEPTACLE), 1#12 GRD.
- MI24 POLE MOUNTED LIGHT FIXTURE. SEE DETAIL SHEET E-6
- MI30 ODOR CONTROL UNIT
- PI41 1" C. 3#10 (EXHAUST FAN), 1#10 GRD

30857-2 11/22  
 TR 30857-2 11/22  
 SEWER LIFT STATION

NOTE:  
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 Tel: (619) 234-9411 Fax: (619) 234-9433

PREPARED BY: *Steven Chan*  
 STEVEN CHAN R.E.E. 15107 DATE 3-6-08

**SEWER CERTIFICATION BLOCK**  
 I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.

*John H. ...*  
 MECHANICAL ENGINEER M-26589 DATE 7-10-08

MARK	AS-BUILT PLANS	REVISIONS	APPR. DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*John H. ...*  
 MECHANICAL ENGINEER M-26589 DATE 7-10-08  
 VOID AFTER ONE YEAR FROM THIS DATE

BENCH MARK:  
 NAIL W/ RCF TAG AT THE SOUTHWEST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. 27981 RCFD NGVD 29. ELEVATION - 1568.64

WESTERN MUNICIPAL WATER DISTRICT  
 P.O. BOX 5286  
 RIVERSIDE, CA. 92517-5286  
 450 ALESSANDRO BLVD  
 RIVERSIDE, CA. 92508  
 (951) 789-5000 (BUS) (951) 780-3897 (FAX) Rev: 2/28/00

MERIDIAN-UNIT 2  
 TRACT NO. 30857-2  
 UNIT 2 SEWER LIFT STATION  
 ELECTRICAL  
 SINGLE LINE DIAGRAM

SHEET NO. 11  
 OF 22 SHTS  
 DWG. NO.: E-3

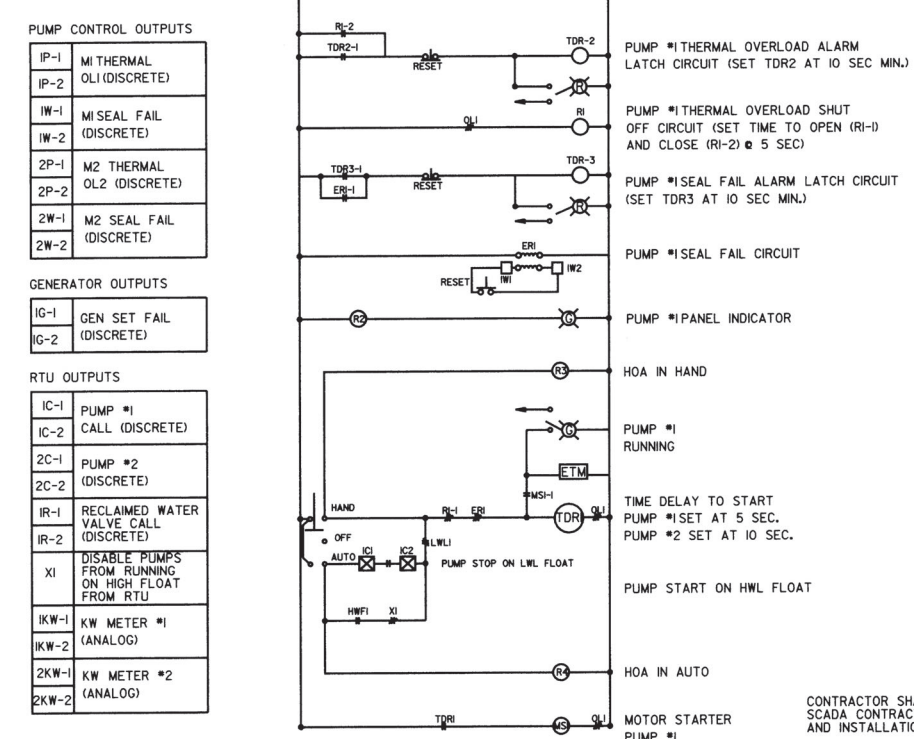
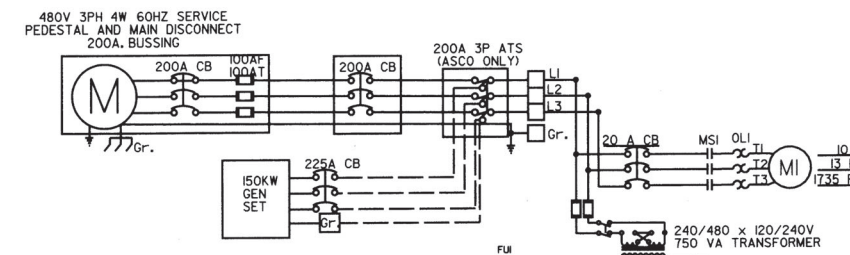
PLOTTED: 3/5/2008  
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# UNIT 2 SEWER LIFT STATION

TYPE: <u>NQOD</u>	22 K.A.I.C. PANEL	B	SCHEDULE	FED FROM	BUS <u>100</u> AMPS. MAIN <u>50</u> AMPS.												
MOUNTING: <u>IN MCC</u>				7.5KVA XFMR	VOLTAGE: <u>120/240V</u> , <u>1Ø</u> , <u>3W</u>												
TYPE LOAD & LOCATION	WATTS		LTC.	REC.	MS.	CIR. BREAKER POLE	CIR. AMPS	CIR. NO.	CIR. NO.	CIR. BREAKER AMPS	POLE	MS.	REC.	LTC.	WATTS		TYPE LOAD & LOCATION
	A	B													A	B	
POLE LIGHT FIXTURES	140		1			1	20	1	2	20	1				1000		TELEMETRY U.P.S.
POLE LIGHT RECEPTACLES		180				1	20	3	4	20	1					220	PANEL RECEPTACLE
GENSET BATTERY CHARGER	500					1	20	5	6	20	1				900		BUILDING INTERIOR LIGHT
GENSET JACKET WATER HEATER		1200				1	20	7	8	20	1				50		EXHAUST FAN CONTACT
GENSET JACKET CONTROL PANEL	200					-	-	9	10	20	1				-	720	ODOR CONTROL UNIT
FLOW METER		50				1	20	11	12	20	1				100		BUILDING EXTERIOR LIGHT
BUILDING RECEPTACLE						1	20	13	14	20	1						BUILDING RECEPTACLE
SPARE								15	16	20	1						SPARE
		840	1430												2000	990	
CONNECTED LOAD = 5260W L.C.L. = 4460W										FEEDER AMPS = 28A				SPARE = 0W.			

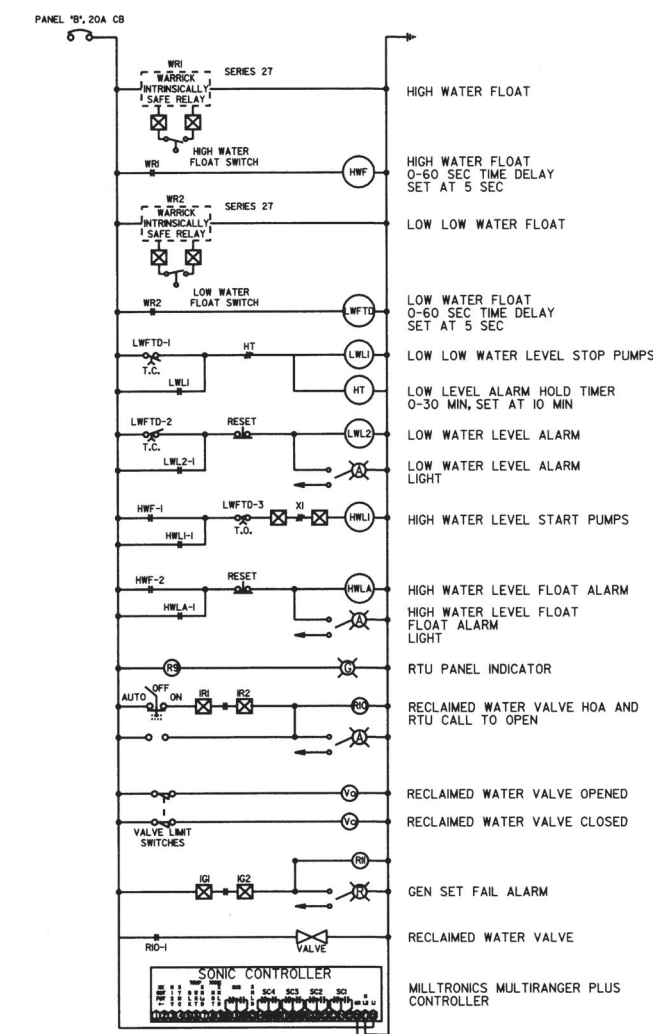
- OPERATION NOTES:**
- IN 'AUTO'
    - IN 'AUTO MODE' CONTACT CLOSURE FROM PLC SHALL CALL THE LEAD PUMP TO START/STOP BASED ON WATER LEVEL IN THE WET WELL.
    - IF WATER LEVEL CONTINUES TO INCREASE, THE PLC WILL START/STOP THE LAG PUMPING UNIT.
    - IF WATER LEVEL CONTINUES TO INCREASE, THE HIGH WATER LEVEL FLOAT (HWF) SHALL START BOTH PUMPS (WITH TIME DELAYS FOR EACH PUMP STARTING FROM FLOAT RELAY).
    - WHEN THE LOW WATER LEVEL FLOAT IS ACTIVATED, BOTH PUMPS SHALL STOP (LWL FLOAT SHALL STOP PUMPING UNITS WHETHER THE PUMPING UNITS ARE CALLED TO START BY THE HWL FLOAT OR THE PLC).
  - IN 'HAND'
    - PUMP SHALL START AND STOP BASED ON OPERATOR SELECTING HAND/OFF POSITIONS, UNLESS ALARM CONDITION EXIST.



**PUMP PANEL CONTROL DIAGRAM**  
(TYPICAL) NOT TO SCALE

22 K.A.I.C. MOTOR CONTROL CENTER "MCC"										VOLTAGE 480V. 3Ø, 4W	
										BUS: 400A	
CIRCUIT NUMBER	EQUIPMENT	HORSE POWER	K.V.A.	F.L.A.	C/B AMPS	C/B POLES	STARTER SIZE	CONDUIT SIZE	CONDUCTOR SIZE & AMOUNT	REMARKS	
MCC1	PUMP #1 F.V.N.R.	10	9.9	13	20	3	2	3"	3-#8, 1-#8 GRD	W/ 5-#14 CONTROL	
MCC2	PUMP #2 F.V.N.R.	10	9.9	13	20	3	2	3"	3-#8, 1-#8 GRD	W/ 5-#14 CONTROL	
MCC3	7.5KV XFMR - PANEL 'B'	-	9	12	20	3	-	-	3-#10, 1-#10 GRD		
MCC4	EXHAUST FAN	2	3	3.75	20	3	0	3/4"	3-#10, 1-#10 GRD		
TOTAL		15	28.8	41.75							

## PANEL SCHEDULES



- RTU INPUTS**
- M1 RUN\*
  - MS1-2 (DISCRETE)
  - M1 SEAL FAIL\*
  - ER1-2 (DISCRETE)
  - M1 THERMAL OVERLOAD\*
  - OLI-2 (DISCRETE)
  - M1 IN AUTO\*
  - R4-1 (DISCRETE)
  - M1 IN HAND\*
  - R3-1 (DISCRETE)
  - PUMP #1 PANEL ON\*
  - R2-1 (DISCRETE)
  - M2 RUN
  - MS2-2 (DISCRETE)
  - M2 SEAL FAIL
  - ER2-2 (DISCRETE)
  - M2 THERMAL OVERLOAD
  - OL2-2 (DISCRETE)
  - M2 IN AUTO
  - R8-1 (DISCRETE)
  - M2 IN HAND
  - R7-1 (DISCRETE)
  - PUMP #2 PANEL ON
  - R6-1 (DISCRETE)
  - GEN SET FAIL
  - R11-1 (DISCRETE)
  - RTU PANEL ON
  - R9-1 (DISCRETE)
  - LOW LEVEL ALARM
  - LWL2-2 (DISCRETE)
  - HIGH LEVEL ALARM
  - HWLA-2 (DISCRETE)
  - FLOW METER
  - (ANALOG)
  - RECLAIMED WATER VALVE ON
  - VO-1 (DISCRETE)
  - RECLAIMED WATER VALVE OFF
  - VC-1 (DISCRETE)
  - ODOR CONTROL UNIT STATUS
  - (DISCRETE)
  - PUMP #1 KW METER
  - (ANALOG)
  - PUMP #2 KW METER
  - (ANALOG)
- TYPICAL PUMP PANEL OUTPUTS**
- R1=THERMAL OVERLOAD RELAY\*
  - R2=PANEL INDICATOR RELAY\*
  - R3=HOA IN HAND RELAY\*
  - R4=HOA IN AUTO RELAY\*
  - TDR1=MOTOR START TIME DELAY RELAY\*
  - TDR2=THERMAL OVERLOAD TIME DELAY RELAY\*
  - TDR3=SEAL FAIL TIME DELAY RELAY\*
  - R9=RTU PANEL INDICATOR RELAY
  - R10=RECLAIMED WATER VALVE RELAY
  - R11=GEN SET FAIL RELAY
- TYPICAL PUMP PANEL RELAYS**
- R10=RECLAIMED WATER VALVE
  - R9=RTU PANEL INDICATOR RELAY
  - TDR3=SEAL FAIL TIME DELAY RELAY\*
  - TDR2=THERMAL OVERLOAD TIME DELAY RELAY\*
  - R4=HOA IN AUTO RELAY\*
  - R3=HOA IN HAND RELAY\*
  - R2=PANEL INDICATOR RELAY\*
  - R1=THERMAL OVERLOAD RELAY\*

**RTU PANEL CONTROL DIAGRAM**  
NOT TO SCALE

CONTRACTOR SHALL PROCURE THE SERVICES OF WESTERN'S APPROVED SCADA CONTRACTOR FOR PROGRAMMING THE OPTO 22 SCADA SYSTEM AND INSTALLATION OF RADIO TELEMETRY SYSTEM, SEE E-3

## UNIT 2 SEWER LIFT STATION - CONTROL DIAGRAMS

NOT TO SCALE

Don't Dig Until You Call U.S.A. Toll Free 1-800-227-2600 FOR THE LOCATION OF UNDERGROUND UTILITY LINES. DON'T INTERRUPT VITAL SERVICES. TWO WORKING DAYS BEFORE YOU DIG.		<b>Kimley-Horn and Associates, Inc.</b> Engineering, Planning and Environmental Consultants 517 Fourth Avenue - Suite 301 - San Diego, Ca. - 92101 Tel: (619) 234-9411 Fax: (619) 234-9433	SEWER CERTIFICATION BLOCK I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.	APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  MECHANICAL ENGINEER M-28689 DATE VOID AFTER ONE YEAR FROM THIS DATE BENCH MARK: NAIL w/ RCP TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. T7981 RCFCD NGVD 29. ELEVATION= 1568.64	WESTERN MUNICIPAL WATER DISTRICT P.O. BOX 5286 RIVERSIDE, CA. 92517-5286 450 ALESSANDRO BLVD RIVERSIDE, CA. 92508 (951) 789-6000 (BUS) (951) 789-3837 (FAX)	MERIDIAN-UNIT 2 TRACT NO. 30857-2 UNIT 2 SEWER LIFT STATION ELECTRICAL CONTROL DIAGRAMS AND SCHEDULES	SHEET NO. 12 OF 22 SHEETS DWG. NO.: E-4

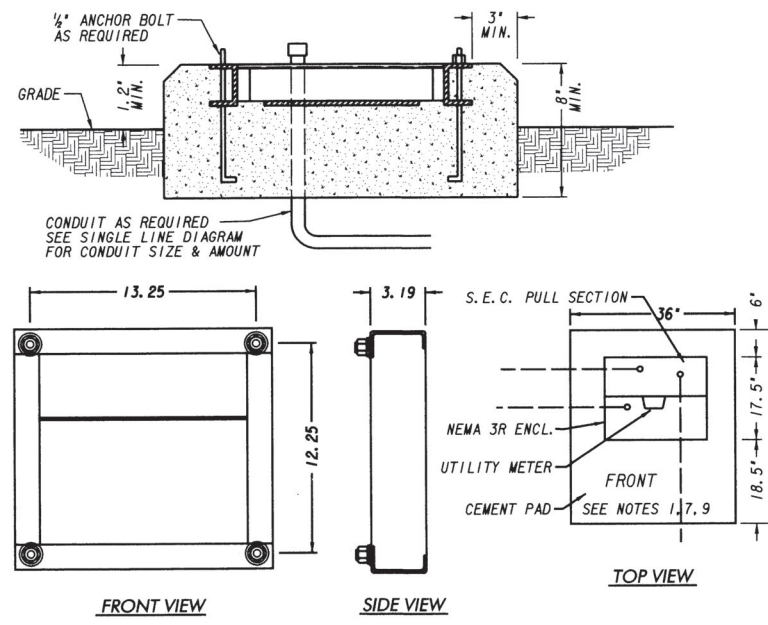
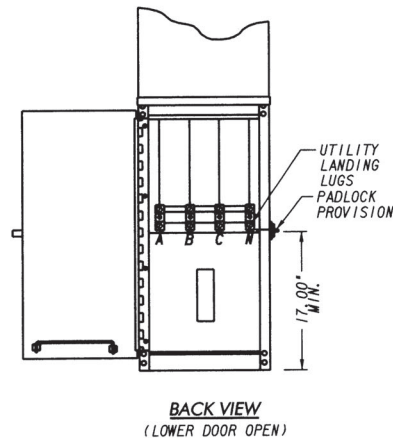
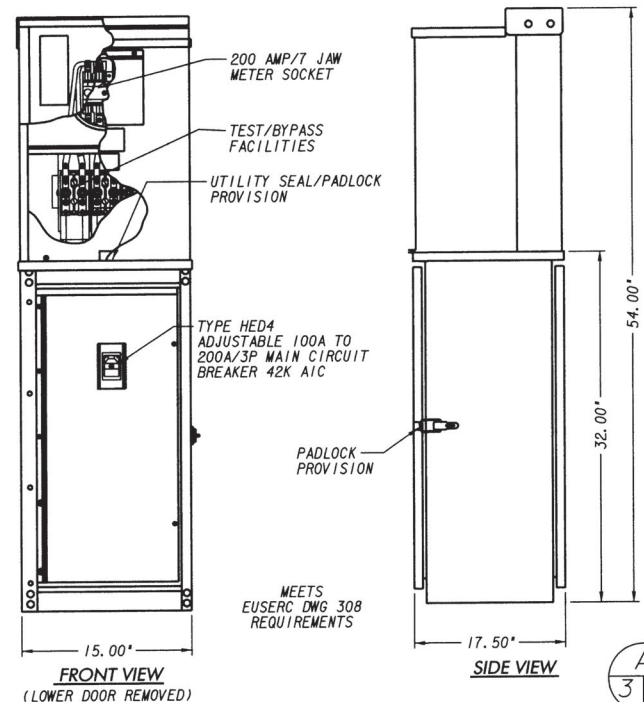
TR 30857-2 12/22  
 SEWER LIFT STATION

PLOTTED: 1.3/5.2008



**NOTES:**

- ALL DIMENSIONS FOR DISTRIBUTION PANEL TAKEN FROM MANUFACTURER'S SPECIFICATIONS. EQUIPMENT SHOWN IS MYERS \*MEGUD AUXILIARY CONTROL CABINET.
- PANEL SHALL BE LOCATED SO THAT THERE IS A MINIMUM OF 36" CLEARANCE FRONT AND BACK PER NEC 110-16. (RECOMMENDED SIDE CLEARANCE 10")
- CONCRETE PAD SHALL EXTEND 18" PAST FRONT DOOR(S) OF PANEL
- DISTRIBUTION PANEL TO BE NEMA 3R RATED FOR 400A. AT 277/480V 3Ø, 4W. COMPLETE WITH 200A, 3P, MAIN C/B. PLUG IN TYPE WITH 100 TO 200 AMP ADJUSTABLE SETTING. INITIAL SETTING AT 100 AMP.
- PANEL SHALL BE LOW PROFILE, VANDAL RESISTANT ENCLOSURE, COMPLETE WITH HINGED LOCKING DOORS, ADJUSTABLE MOUNTING PANS, REAR ACCESS DOOR, AND PLYWOOD BACKBOARD IN AUXILIARY SECTION.
- ALL CONDUITS TO BE INSTALLED BEFORE FOUNDATION IS POURED.
- MAIN C/B SHALL BE RATED FOR 42,000 A. I. C. SYMMETRICAL MINIMUM.
- SEE SINGLE LINE DIAGRAM FOR SIZE & AMOUNT OF CONDUITS TO BE IN EACH SECTION.
- FINISH TO BE LIGHT GREEN BAKED ENAMEL.

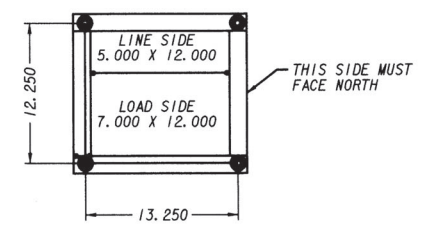


**INSTALLATION INSTRUCTIONS**  
CMP-4000 SERIES

METER PEDESTALS ARE DESIGNED FOR PAD-MOUNT INSTALLATION. TWO METHODS CAN BE USED TO INSTALL PEDESTALS ON A CONCRETE PAD.

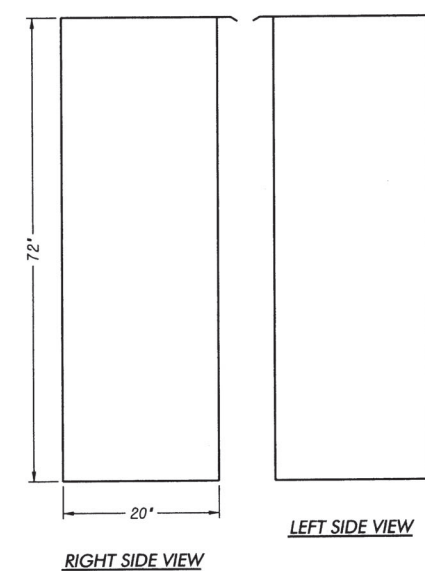
**METHOD 1.** USE PRE FABRICATED MOUNTING BASE ASSEMBLY A- CAT. NO. MB1515 - SUITABLE FOR 15"W x 14" D AND 15"W x 15"D PEDESTALS.

INSTALL MOUNTING BASE ASSEMBLY FLUSH WITH TOP SURFACE OF CONCRETE PAD, ALLOWING STUDS TO REACH ABOVE PAD. LOCATE LINE AND LOAD CONDUITS IN THE DESIGNATED AREAS, AS SHOWN ON DRAWING BELOW.



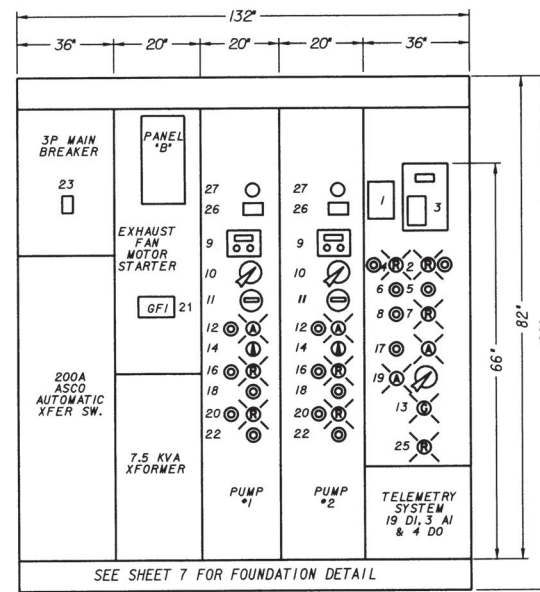
**METHOD 2.** USE ANCHOR BOLTS (0.625 DIA.) PRE-CAST IN CONCRETE PAD. MOUNTING HOLE DIMENSIONS ARE SHOWN ABOVE. LOCATE LINE AND LOAD CONDUITS THE SAME AS IN METHOD ONE.

**A**  
3/13  
**DISTRIBUTION PANEL "DP1" DETAILS**  
NOT TO SCALE



ENAMEL COATED GALV. STEEL ENCLOSURE  
NEMA 1 GASKETED, NO BOTTOM  
W/2" ANGLE FOR ANCHORING.

LIFTING EYES STEEL MOUNTING PANEL (WHITE)

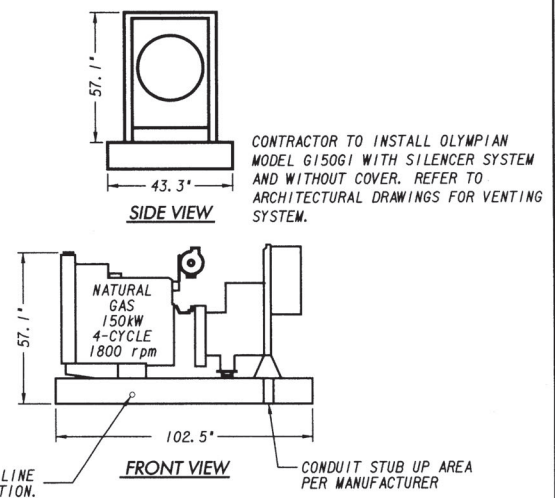


NOTE:  
MCC SUPPLIER TO HAVE ENCLOSURE CERTIFIED BY A SEISMIC ENGINEER TO PROVIDE ADEQUATE ANCHORAGE FOR WIND/SEISMIC LOADING. COMPLETE SHOP DRAWINGS SHALL BE SUBMITTED TO DISTRICT FOR APPROVAL OF ACTUAL EQUIPMENT FURNISH.

- FLOW METER DISPLAY (MOUNT 5'-6" OFF FLOOR, MAX)
  - LOW LEVEL ALARM LIGHT AND TEST LIGHT PB
  - SONIC CONTROLLER (MOUNT 5'-6" OFF FLOOR, MAX)\*
  - HIGH LEVEL ALARM LIGHT AND TEST LIGHT PB
  - LOW LEVEL RESET PB
  - HIGH LEVEL RESET PB
  - EMERGENCY HIGH LEVEL LIGHT
  - EMERGENCY HIGH LEVEL RESET PB
  - PHASE-POWER DIGITAL INDICATOR
  - INTERLOCKED CB HANDLE(S)
  - ELAPSED TIME METER(S)
  - MOTOR RUN LIGHT(S) AND TEST LIGHT PB
  - CONTROL POWER ON LIGHT
  - HAND OF AUTO SWITCH(S)
  - NOT USED
  - MOTOR THERMAL SHUT DOWN PL
  - RECLAIMED WATER VALVE LIGHT AND TEST LIGHT PB
  - MOTOR THERMAL RESET PB
  - RECLAIMED WATER VALVE HOA AND LIGHT
  - SEAL FAIL LIGHT(S) AND TEST LIGHT PB(S)
  - DUPLEX GF1 RECEPTACLES
  - OVERLOAD RESET PB
  - MCC MAIN BREAKER
  - NOT USED
  - GENERATOR FAIL ALARM LIGHT
  - KW METER
  - PUMP PANEL INDICATOR
- \* MILLTRONICS MULTI RANGER PLUS (TO MAINTAIN DISTRICT STANDARD)
- \*\* MCC EQUIPMENT HEAT GENERATION 115 VOLT~10AMP X 3.4-3910 BTU

SEE SHEET 7 FOR FOUNDATION DETAIL

**B**  
3/13  
**MOTOR CONTROL CENTER "MCC" DETAILS**  
NOT TO SCALE



**C**  
3/13  
**STANDBY GENERATOR**  
NOT TO SCALE

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REGISTERED PROFESSIONAL ENGINEER  
STEVEN CHAN  
NO. 5077  
ELECTRICAL  
STATE OF CALIFORNIA

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PREPARED BY: *Steven Chan*  
DATE: 3-6-08  
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MECHANICAL ENGINEER: *John A. Harty*  
DATE: 7.10.08

AS-BUILT PLANS

REVISIONS

APPR. DATE

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MECHANICAL ENGINEER: *John A. Harty*  
DATE: 7.10.08  
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MERIDIAN-UNIT 2  
TRACT NO. 30857-2

UNIT 2 SEWER LIFT STATION

ELECTRICAL PANEL DETAILS

SCALE:

SHEET NO. 13

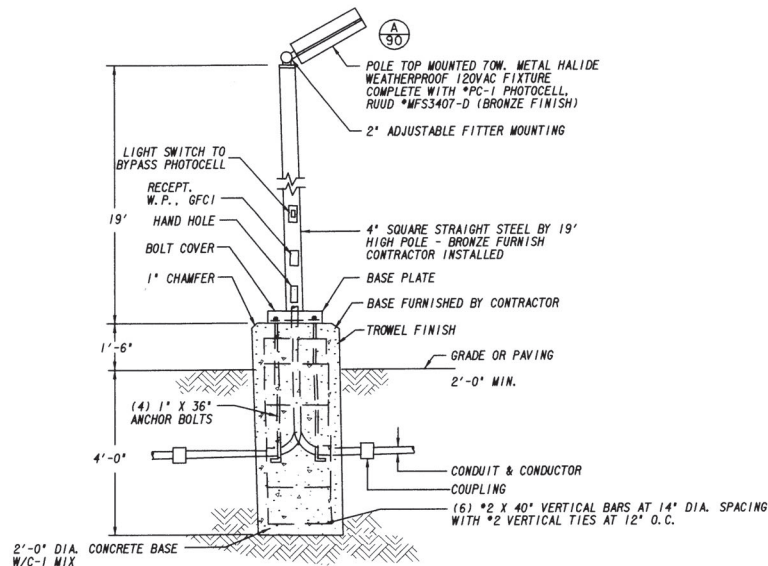
OF 22 SHTS

DWG. NO.: E-5

TR 30857-2 13/22  
 SEWER LIFT STATION

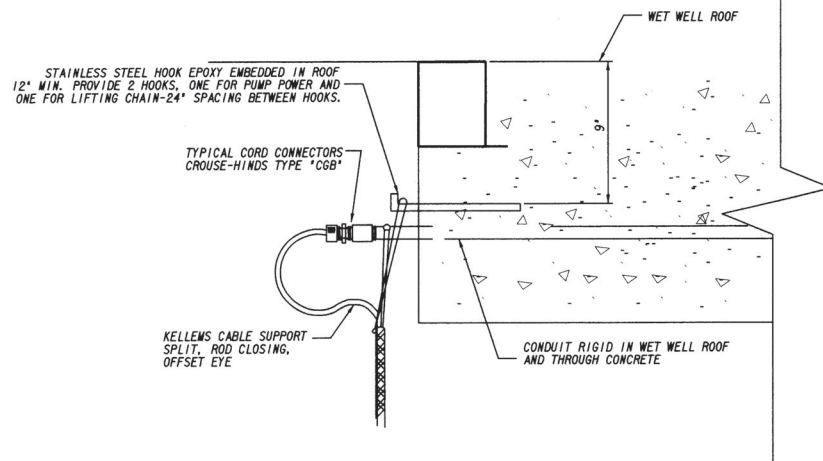
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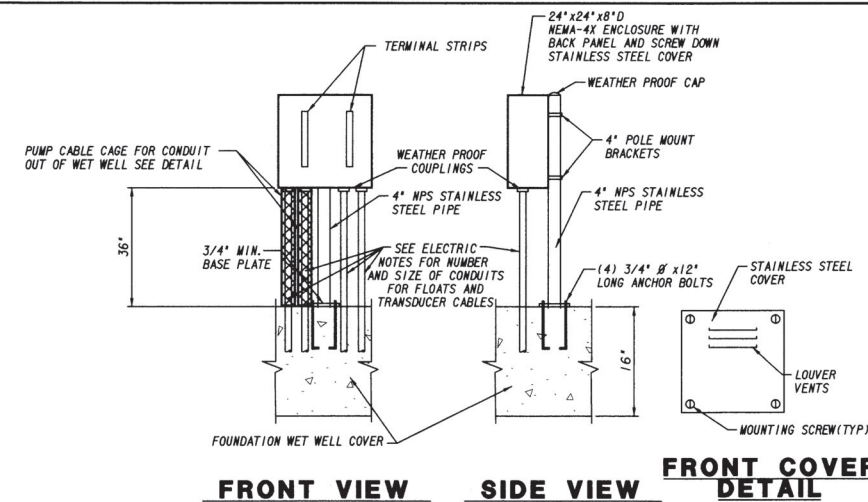
**POLE MOUNTED FIXTURE**

N.T.S.



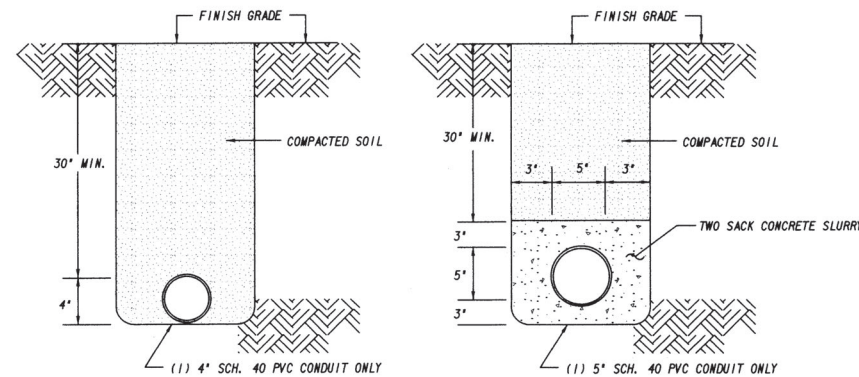
**CABLE SUPPORT DETAIL**

N.T.S.



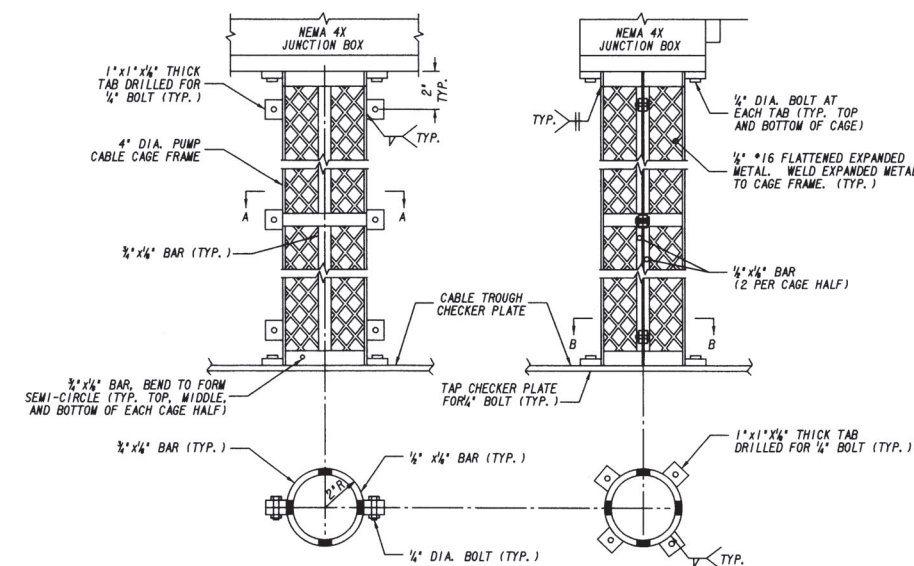
**WET WELL JUNCTION BOX DETAIL**

N.T.S.



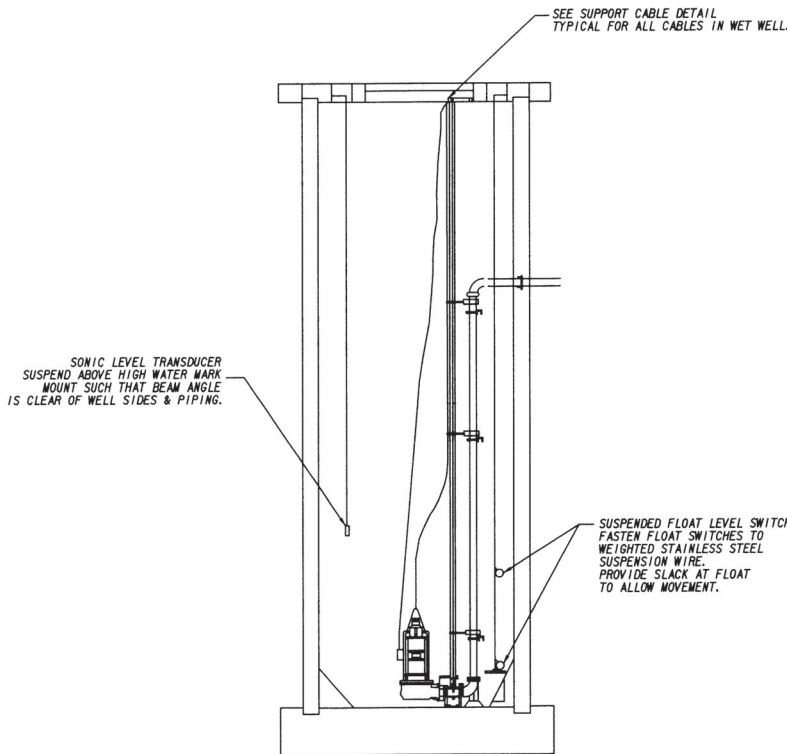
**UNDERGROUND CONDUIT CROSS SECTIONS**

N.T.S.



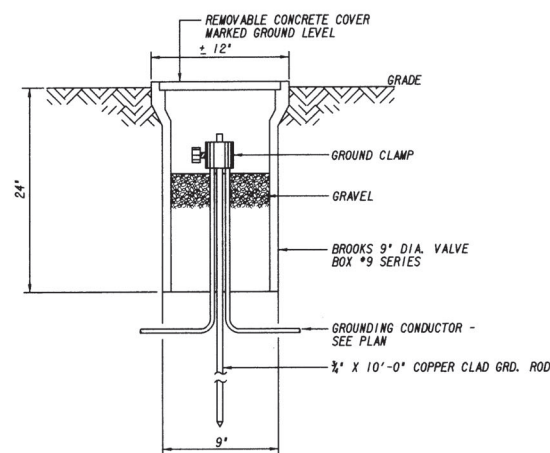
**PUMP CABLE CAGE DETAIL**

N.T.S.



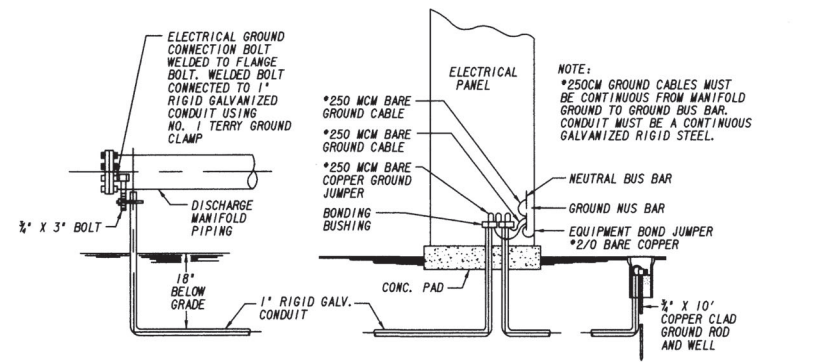
**WET WELL - LEVEL SENSOR DETAIL**

N.T.S.



**GROUND ROD DETAIL**

N.T.S.



**DISCHARGE MANIFOLD - GROUND DETAIL**

N.T.S.

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517 Fourth Avenue - Suite 301 - San Diego, Ca. - 92101  
Tel: (619) 234-9411 Fax: (619) 234-9433  
PREPARED BY: *Steven Chan*  
STEVEN CHAN R.E.E. 15107 DATE: 3-6-08

SEWER CERTIFICATION BLOCK  
I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.  
*Mark* MECHANICAL ENGINEER M-26589 DATE: 11/10/07

AS-BUILT PLANS	12/10/07
REVISIONS	APPR. DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*Mark* MECHANICAL ENGINEER M-26589 DATE: 7/10/07  
VOID AFTER ONE YEAR FROM THIS DATE  
BENCH MARK: NAIL w/ RCF TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. Z7981 RCFCD NGVD 29. ELEVATION: 1568.64

WESTERN MUNICIPAL WATER DISTRICT  
P.O. BOX 5286 RIVERSIDE, CA. 92517-5286  
450 ALESSANDRO BLVD RIVERSIDE, CA. 92508  
(951) 799-5000 (BUS) (951) 790-9897 (FAX) Rev: 2/28/00

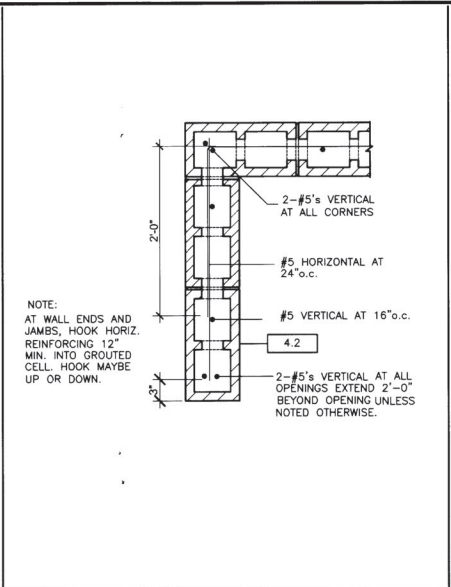
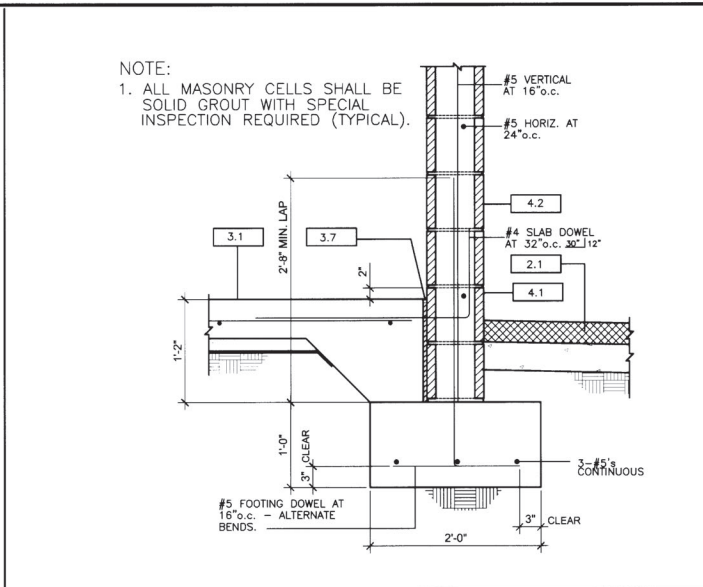
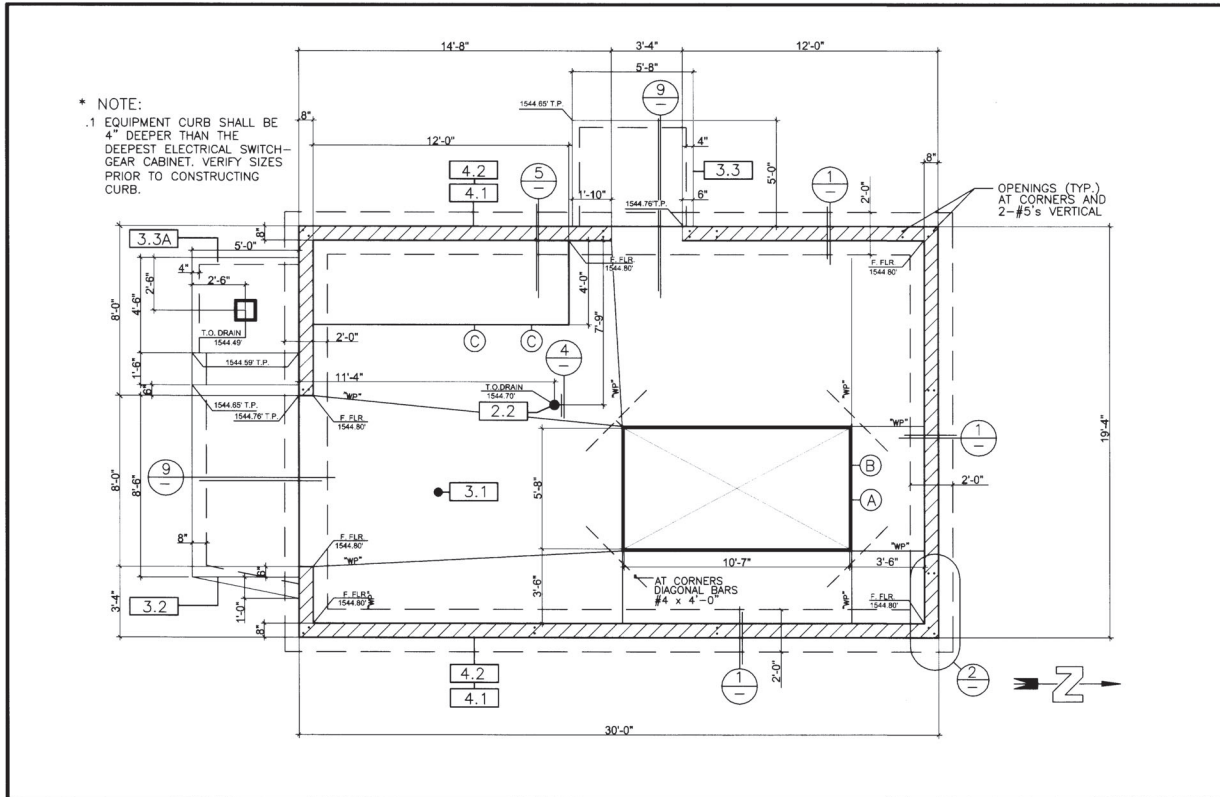
MERIDIAN-UNIT 2 TRACT NO. 30857-2  
UNIT 2 SEWER LIFT STATION  
ELECTRICAL PANEL DETAILS  
SCALE:

SHEET NO. 14 OF 22 SHTS  
DWC. NO.: E-6

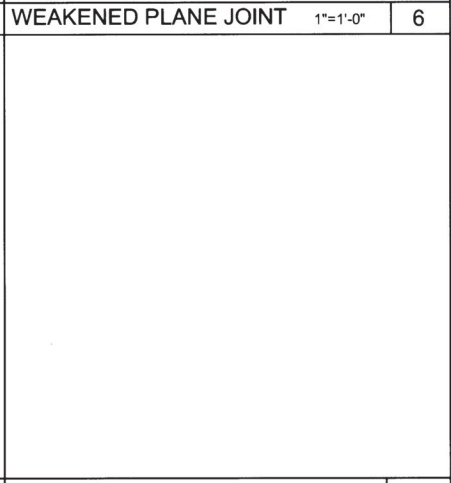
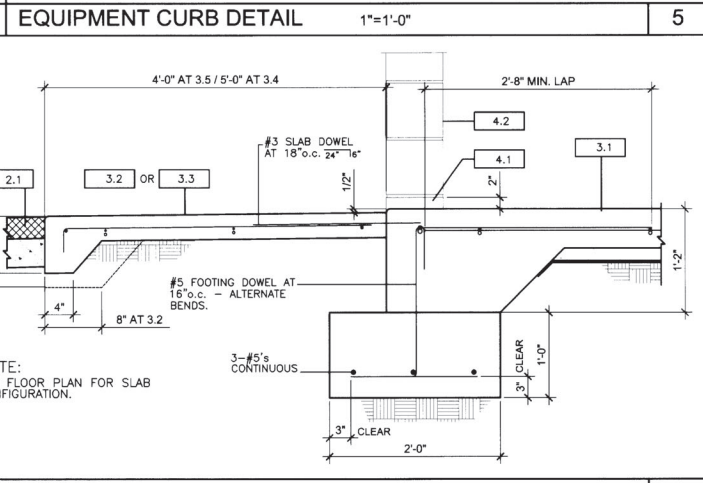
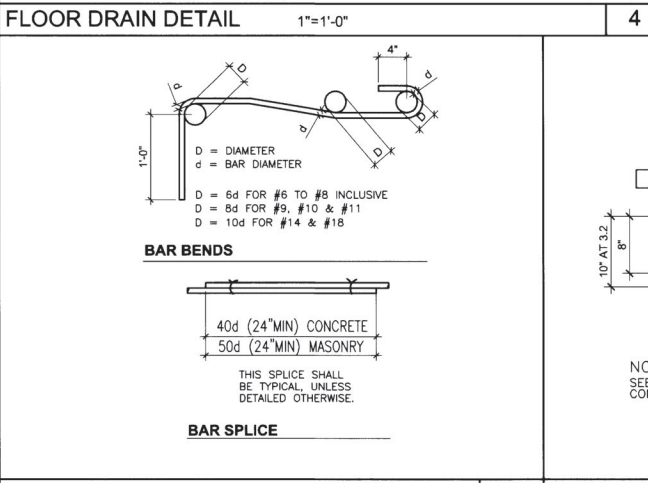
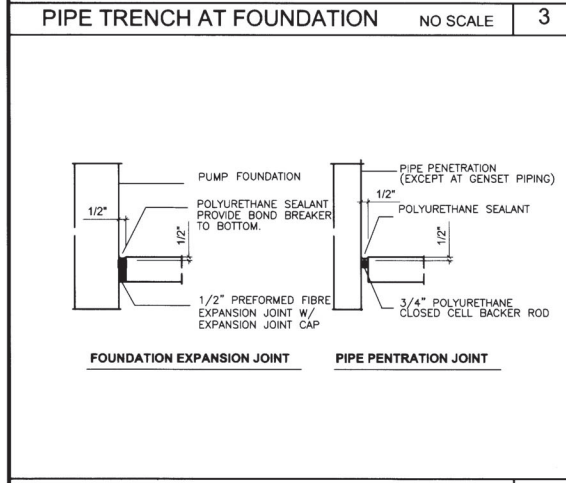
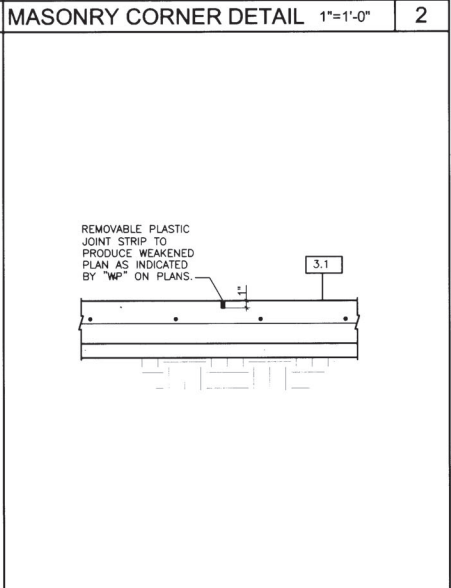
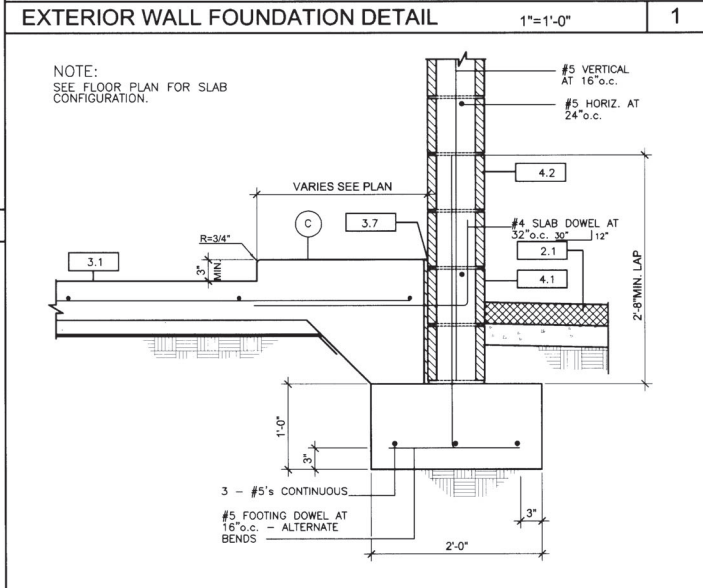
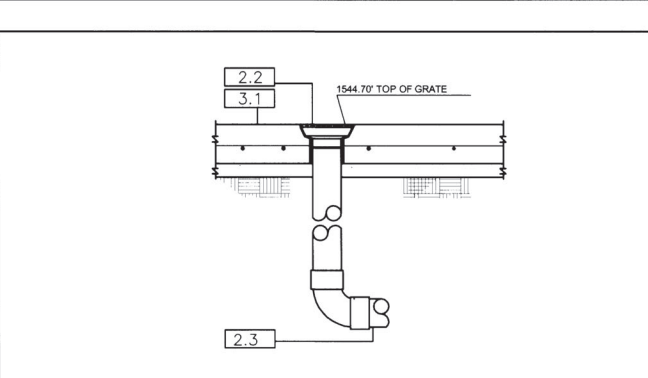
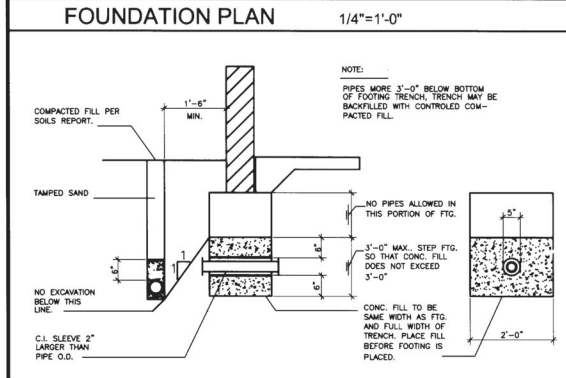
FULL CON. DRAWING  
 TR 30857-2 14/22  
 SEWER LIFT STATION

K:\Meridian\098300009 Design\Phase-Pumps\TRAP-LIFT-5w-14.dwg  
 PLOTTED: 3/6/2008

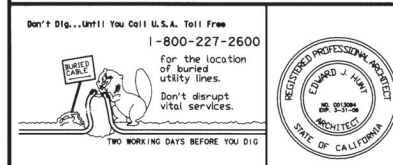




- GENERAL LEGEND**
- (A) ISOLATED RAISED CONCRETE FOUNDATION FOR GENERATOR
  - (B) ISOLATION JOINT - CAULK WITH POLYURETHANE SEALANT
  - (C) 3" HIGH CONCRETE CURB FOR ELECTRICAL EQUIPMENT.
- MATERIAL LIST:**
- 02.00 SITE WORK:
- .1 ASPHALT PAVING OVER CLASS 2 BASE SEE SHEET 3 FOR SPECIFICATIONS.
  - .2 4" NON-TRAFFIC AREA DRAIN WITH BLACK GALVANIZED TOP. MODEL No. A-338-4 BY ALHAMBRA FOUNDRY COMPANY OR EQUAL.
  - .3 4" SCHEDULE 40 PVC DRAINAGE PIPE.
  - .4 12"x12" BROOKS PRODUCTS CATCH BASIN ASSEMBLY. SEE DETAIL C ON SHEET 8 FOR SPECIFICATIONS.
- 03.00 CONCRETE:
- .1 6" CONCRETE SLAB WITH #4's AT 12" o.c. EACH WAY OVER 2" SAND FILL OVER 10 MIL. VISQUEEN. PROVIDE NON-SKID STEEL TROWEL FINISH.
  - .2 6" CONCRETE SLAB ON GRADE WITH #4's AT 12" o.c. EACH WAY. SLOPE 1/4" PER FOOT TO DRAIN. PROVIDE MEDIUM BROOM FINISH FOR NON-SKID SURFACE.
  - .3 4" CONCRETE STOOP WITH #4's AT 18" o.c. EACH WAY AT SLAB CENTER LINE. SLOPE 1/4" PER FOOT TO DRAIN AND PROVIDE A MEDIUM BROOM FINISH.
  - .3A 4" CONCRETE SLAB ON GRADE WITH #4's AT 18" o.c. EACH WAY AT SLAB CENTER LINE. SLOPE TO CATCH BASIN AND PROVIDE A MEDIUM BROOM FINISH.
  - .7 1/2" PREFORMED FIBER EXPANSION JOINT WITH EXPANSION JOINT CAP. REMOVE CAP AND PROVIDE POLYURETHANE SEALANT.
- 04.00 MASONRY:
- .1 8"x 8"x 16" PRECISION CONCRETE BLOCK IN RUNNING BOND WITH TOOLED CONCAVE JOINTS AT FIRST TWO COURSES. SOLID GROUT ALL CELLS. SEE DETAILS FOR REINFORCING.
  - .2 8"x 8"x 16" SPLIT FACE BLOCK IN RUNNING BOND WITH TOOLED CONCAVE JOINTS. SOLID GROUT ALL CELLS. SEE DETAILS FOR REINFORCING.



NOTE:  
THE DESIGN AND THE CONSTRUCTIBILITY OF THE PROJECT AS WELL AS THE ACCURACY OF FIGURES ARE THE RESPONSIBILITY OF THE DESIGN ENGINEER. PLAN CHECK SERVICES BY WMD WILL BE LIMITED TO THE ADHERENCE OF THE DISTRICT STANDARDS, MATERIALS, QUANTITIES AND SIZE OF FACILITIES, AS THEY RELATE TO THE SERVICE DISCHARGE OR APPROVED MASTER PLAN. DISCHARGE OF WASTEWATER FROM THE IMPROVEMENTS SHOWN ON THESE PLANS IS DEPENDENT UPON COMPLETION OF THE PIPING PROPOSED AS PART OF OTHER PHASES OF THIS TRACT AND/OR OTHER ADJACENT TRACTS.



**EDWARD J. HUNT** AIA ARCHITECT  
6911 MAGNOLIA AVENUE  
RIVERSIDE CA. 92506 (951) 369-6069

PREPARED BY:  
*Edward J. Hunt* 02/05/08

SEWER CERTIFICATION BLOCK  
I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to tract the anticipated wastes from the proposed tract.

*Michael J. ...* MECHANICAL ENGINEER N-265389 DATE 2/10/08

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*Michael J. ...* DATE 2/10/08

MECHANICAL ENGINEER N-265389 DATE 2/10/08

BENCH MARK:  
NAIL w/ RCF TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD. AND EASTERLY OF HARMON AVENUE. Z7981 RCFCD NGVD 29. ELEVATION= 1568.64

AS-BUILT PLANS

REVISIONS

APPR DATE

WESTERN MUNICIPAL WATER DISTRICT  
P.O. BOX 5286  
RIVERSIDE, CA. 92517-5286

450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508

(951) 789-5000 (BUS) (951) 780-3837 (FAX)

MERIDIAN-UNIT 2  
TRACT NO. 30857-2

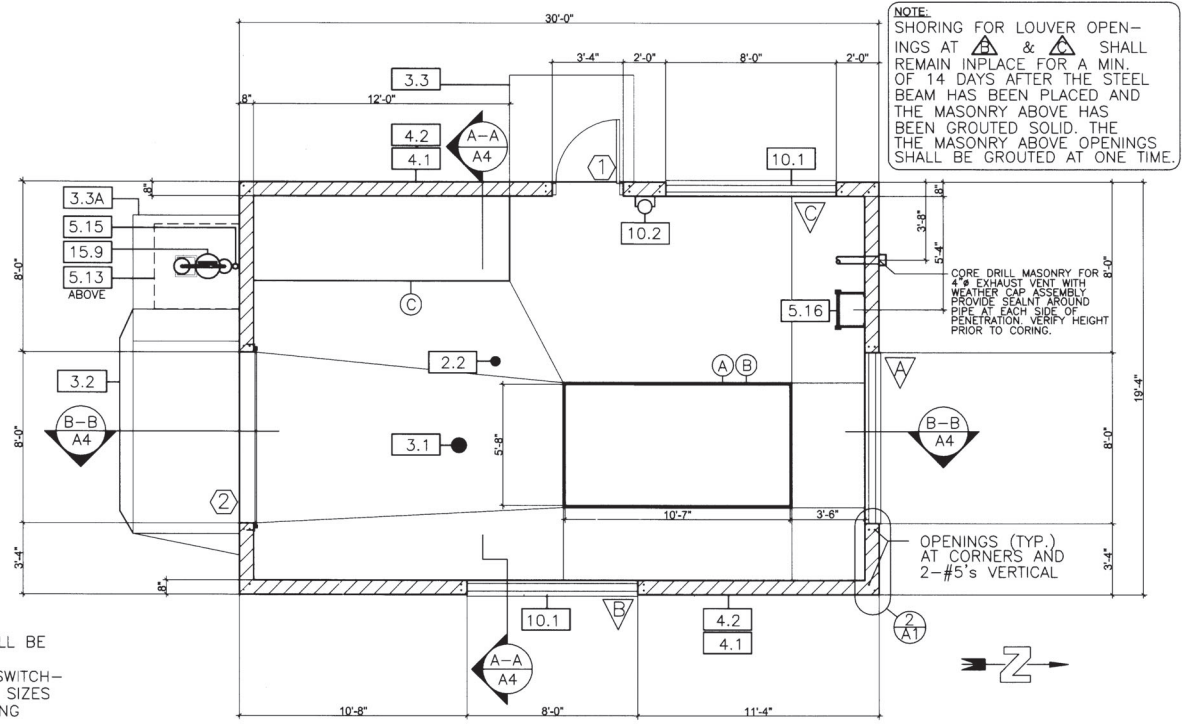
FOUNDATION PLAN AND DETAILS

SCALE: AS NOTED

SHEET NO. A1  
15  
OF 22 SHTS  
DWG. NO.

DATE PLOTTED: 02/05/08  
 TR 30857-2 15/22  
 SEWER LIFT STATION





NOTE:  
SHORING FOR LOUVER OPENINGS AT A & B SHALL REMAIN IN PLACE FOR A MIN. OF 14 DAYS AFTER THE STEEL BEAM HAS BEEN PLACED AND THE MASONRY ABOVE HAS BEEN GROUTED SOLID. THE MASONRY ABOVE OPENINGS SHALL BE GROUTED AT ONE TIME.

CORE DRILL MASONRY FOR 4" EXHAUST VENT WITH WEATHER CAP ASSEMBLY PROVIDE SCALNT AROUND PIPE AT EACH SIDE OF PENETRATION. VERIFY HEIGHT PRIOR TO CORING.

OPENINGS (TYP.) AT CORNERS AND 2-#5'S VERTICAL

\* NOTE:  
1 EQUIPMENT CURB SHALL BE 4" DEEPER THAN THE DEEPEST ELECTRICAL SWITCH-GEAR CABINET. VERIFY SIZES PRIOR TO CONSTRUCTING CURB.  
2 FOR EQUIPMENT LAYOUT SEE FLOOR PLAN ON SHEET 4.

FLOOR PLAN 1/4"=1'-0"

DOOR SCHEDULE:

NO	SIZE	TYPE	FINISH	REMARKS
1	3'-0"x 6'-8" x 1 3/4"	H.C. FLUSH PANEL 16GA GALV. METAL W/ ACOUSTICAL FILL	2-COATS SEMI-GLOSS ENAMEL/ SHOP PRIME	PROVIDE WEATHER TOP CAP
2	8'-0"x 8'-10"	22GA. INSULATED CHAIN OPERATED ROLL-UP DOOR	2-COATS SEMI-GLOSS ENAMEL/ SHOP PRIME	

DOOR LEGEND:  
MC - MCKINNEY  
LCN - LCN / CLOSER  
SCH - SCHLAGE  
PEM - PEMKO  
TRI - TRIMCO  
KSP - KRIEGER SPECIALTY PRODUCTS

HARDWARE SET - DOOR 1

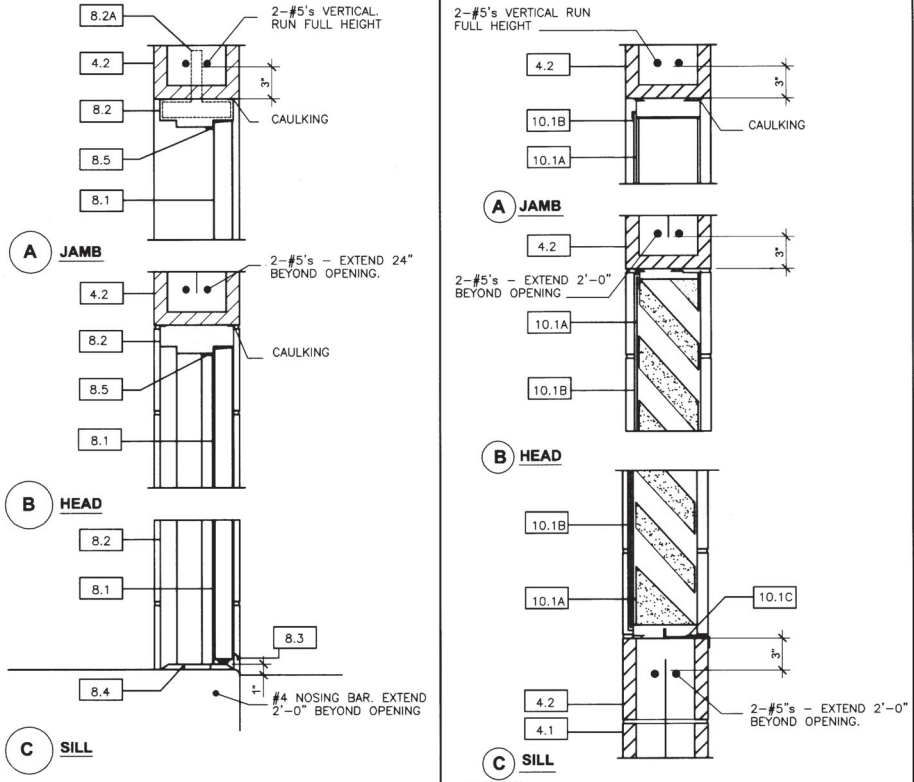
1 1/2 SET BUTTS	T2714	4.5x4.5	NRP	652	MC
1 CLOSER	1440			689	LCN
1 LOCKSET	D70PD	OLYMPIAD		626	SCH
1 SET WEATHERSTRIP	319CR				PEM
1 KICKPLATE	10"x36"			630	TRI
1 DOOR SHOE	216A-V				PEM
1 THRESHOLD	172A				PEM

HARDWARE SET - DOOR 2  
DOOR HARDWARE SHALL BE BY DOOR MANUFACTURER.

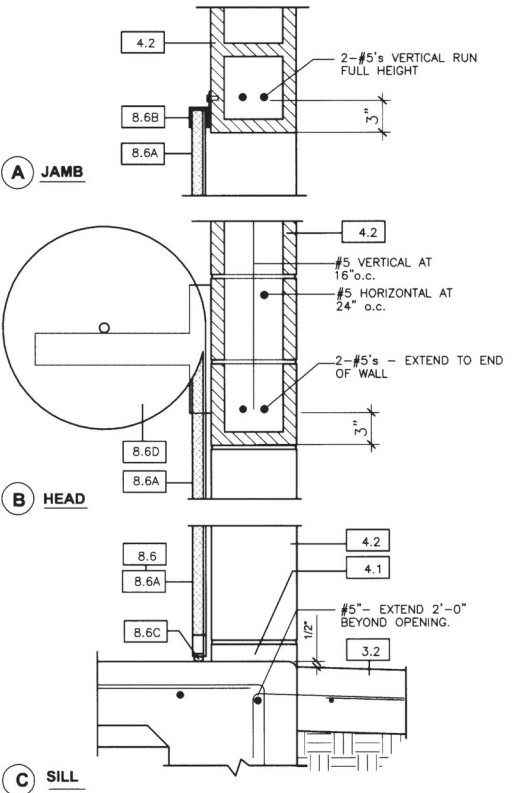
NOTE:  
1 LOCKSET TO BE KEYPED PER OWNER'S INSTRUCTIONS TO MATCH EXISTING BUILDINGS.  
2 MOUNT CLOSER TO DOOR STOP FACE-PUSH SIDE.

LOUVER SCHEDULE:

A	8'-0"x 8'-0" x 6" DEEP
B	8'-0"x 8'-0" x 6" DEEP
C	8'-0"x 8'-0" x 6" DEEP



METAL DOOR DETAIL 1 1/2"=1'-0" 1 FIXED ACOUSTICAL LOUVER 2



COILING DOOR DETAIL 1 1/2"=1'-0" 3

INTERIOR FINISH SCHEDULE

CONCRETE FLOOR	OKON CONCRETE SEALER OR APPROVED EQUAL
MASONRY WALLS	"MONOCHEM AQUASEAL" OR APPROVED EQUAL (APPLY FINISH ONLY AFTER MASONRY HAS A MINIMUM TIME OF TWO WEEKS TO CURE.)
STEEL DECK	GALVAPREP, 1 COAT CORROSION INHIBITIVE PRIMER, 2 COATS AMERCOAT 385, 1 COAT AMERCOAT 450HS
FERROUS METALS	2 COATS AMER COAT 385, 1 COAT AMERCOAT 450HS OVER SHOP PRIME
NON-FERROUS METALS	GALVAPREP, 1 COAT CORROSION INHIBITIVE PRIMER, 2 COATS AMERCOAT 385, 1 COAT AMERCOAT 450HS

NOTE:  
1. OWNER IS TO SELECT INTERIOR AND EXTERIOR COLORS.  
2. ALL WATER PIPING AND MACHINERY SHALL BE PAINTED COLORS IN ACCORDANCE WITH SAFETY GUIDELINES.

INTERIOR FINISH SCHEDULE

GENERAL LEGEND

- (A) ISOLATED RAISED CONCRETE FOUNDATION FOR GENERATOR
- (B) ISOLATION JOINT - CAULK WITH POLYURETHANE SEALANT
- (C) 3" HIGH CONCRETE CURB FOR ELECTRICAL EQUIPMENT.

MATERIAL LIST:

- 02.00 SITE WORK:  
1 ASPHALT PAVING OVER CLASS 2 BASE SEE SHEET 3 FOR SPECIFICATIONS.  
2 4" NON-TRAFFIC AREA DRAIN WITH BLACK GALVANIZED TOP, MODEL No. A-338-4 BY ALHAMBRA FOUNDRY COMPANY OR EQUAL.
- 03.00 CONCRETE:  
1 6" CONCRETE SLAB WITH #4'S AT 12" o.c. EACH WAY OVER 2" SAND FILL OVER 10 MIL. VISQUEEN. PROVIDE NON-SKID STEEL TROWEL FINISH.  
2 6" CONCRETE SLAB ON GRADE WITH #4'S AT 12" o.c. EACH WAY. SLOPE 1/4" PER FOOT TO DRAIN. PROVIDE MEDIUM BROOM FINISH FOR NON-SKID SURFACE.  
3 4" CONCRETE STOOP WITH #4'S AT 18" o.c. EACH WAY AT SLAB CENTER LINE. SLOPE 1/4" PER FOOT TO DRAIN AND PROVIDE A MEDIUM BROOM FINISH.  
3A 4" CONCRETE SLAB ON GRADE WITH #4'S AT 18" o.c. EACH WAY AT SLAB CENTER LINE. SLOPE TO CATCH BASIN AND PROVIDE MEDIUM BROOM FINISH.  
4 PRECAST CONCRETE SPLASH BLOCK AT EACH DOWNSPOUT.
- 04.00 MASONRY:  
1 8" x 8" x 16" PRECISION CONCRETE BLOCK IN RUNNING BOND WITH TOOLED CONCAVE JOINTS AT FIRST TWO COURSES. SOLID GROUT ALL CELLS. SEE DETAILS FOR REINFORCING.  
2 8" x 8" x 16" SPLIT FACE BLOCK IN RUNNING BOND WITH TOOLED CONCAVE JOINTS. SOLID GROUT ALL CELLS. SEE DETAILS FOR REINFORCING.
- 05.00 STEEL:  
13 FABRICATED STEEL AWNING ASSEMBLY. PROVIDE POWDER COAT FINISH TO FRAME.  
15 3" STANDARD WEIGHT DRAIN PIPE WITH SET SCREWS TO DRAINAGE STUB. PROVIDE ANCHOR STRAPS AT TOP, MID-SPAN AND BOTTOM.  
16 FIXED ALUMINUM ACCESS LADDER WITH POP-UP SAFETY POST, MODEL # 500-10-SP BY O'KEEFFE'S OR APPROVED EQUAL.
- 08.00 DOORS:  
1 16GA. HOLLOW CORE FLUSH PANEL METAL DOOR. SEE DOOR SCHEDULE FOR SIZE.  
2 16GA. x 6 3/4" STEEL FRAME WITH 2" FACE. (F16-4 BY STEELCRAFT OR APPROVED EQUAL) SOLID GROUT.  
2A MASONRY WIRE ANCHOR - 3 MIN. PER JAMB WITH FLOOR ANCHOR IN ADDITION.  
3 DOOR SHOE WITH VINYL INSERT MODEL 216A-V BY PEMKO OR APPROVED EQUAL.  
4 THRESHOLD SET IN MASTIC - MODEL No. 172A BY PEMKO OR APPROVED EQUAL.  
5 RIDGED JAMB WEATHERSTRIP - MODEL No. 319CR (PEMKO OR APPROVED EQUAL).  
6 CHAIN OPERATED, INSULATED ROLL-UP SERVICE DOOR ASSEMBLY. "THERMAL GUARD" BY "R & S MANUFACTURING" OR APPROVED EQUAL. PROVIDE CHAIN LOCK. SEE DOOR SCHEDULE FOR SIZE.  
6A 22GA. GALVANIZED STEEL INTERLOCKING FLAT SLAT CURTAIN WITH 3/4" POLYURETHANE FOAM AND 24GA. BACK SLATS.  
6B WALL MOUNTED STEEL GUIDES WITH WINDLOCK BARS. PROVIDE GUIDE WEATHERSTRIPPING.  
6C DOUBLE STEEL ANGLE FOOTPIECE WITH WEATHER-STRIPPING ASTRICAL.  
6D 24GA. GALVANIZED STEEL METAL HOOD REINFORCED WITH TOP AND BOTTOM FLANGES TO LIMIT DEFLECTION. PROVIDE INTERMEDIATE SUPPORT AS REQUIRED.
- 10.00 SPECIALTIES:  
1 6" DEEP FIXED ACOUSTICAL LOUVER ASSEMBLY BY AIRLITE OR APPROVED EQUAL. SEE LOUVER SCHEDULE FOR SIZE.  
1A 6" DEEP .081 EXTRUDED ALUMINUM FIXED ACOUSTICAL LOUVER MODEL T9106 BY AIRLITE OR APPROVED EQUAL. PROVIDE KYNAR FINISH WITH COLOR TO BE SELECTED BY OWNER.  
1B 1/4" MESH .063 ALUMINUM BIRD SCREEN IN A REMOVABLE EXTRUDED ALUMINUM FRAME.  
1C EXTENDED EXTRUDED ALUMINUM SILL - FACE OF BLOCK TO BE NOTCH TO RECEIVE SILL.  
2 2A10B.C WALL MOUNTED FIRE EXTINGUISHER MODEL # 3005 WITH MOUNTING BRACKET MODEL #3902 BY POTTER-ROEMER OR APPROVED EQUAL.
- 15.00 MECHANICAL AND PLUMBING:  
9 EMERGENCY EYEWASH AND SHOWER ASSEMBLY. SEE DETAIL C ON SHEET B FOR SPECIFICATIONS.

SEWER 1254

NOTE:  
THE DESIGN AND THE CONSTRUCTABILITY OF THE PROJECT AS WELL AS THE ACCURACY OF FIGURES ARE THE RESPONSIBILITY OF THE DESIGN ENGINEER. PLAN CHECK SERVICES BY WMD WILL BE LIMITED TO THE ADHERENCE OF THE DISTRICT STANDARDS, MATERIALS, QUANTITIES AND SIZE OF FACILITIES, AS THEY RELATE TO THE SERVICE DISCHARGE OR APPROVED MASTER PLAN. DISCHARGE OF WASTEWATER FROM THE IMPROVEMENTS SHOWN ON THESE PLANS IS DEPENDENT UPON COMPLETION OF THE PIPING PROPOSED AS PART OF OTHER PHASES OF THIS TRACT AND/OR OTHER ADJACENT TRACTS.

DOOR, DOOR HARDWARE & LOUVER SCHEDULES



EDWARD J. HUNT  
6911 MAGNOLIA AVENUE  
RIVERSIDE CA. 92506 (951) 369-6069  
AIA ARCHITECT  
PREPARED BY: *Edward J. Hunt*

SEWER CERTIFICATION BLOCK  
I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System separation plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to tract the anticipated wastes from the proposed tract.  
MECHANICAL ENGINEER M-26589  
DATE: *7.1.07*

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*[Signature]* DATE: *7/1/07*  
MECHANICAL ENGINEER M-26589  
VOID AFTER ONE YEAR FROM THIS DATE  
BENCH MARK:  
NAIL w/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD. AND EASTERLY OF HARMON AVENUE. 27981 RCFC D NGVD 29. ELEVATION= 1568.64

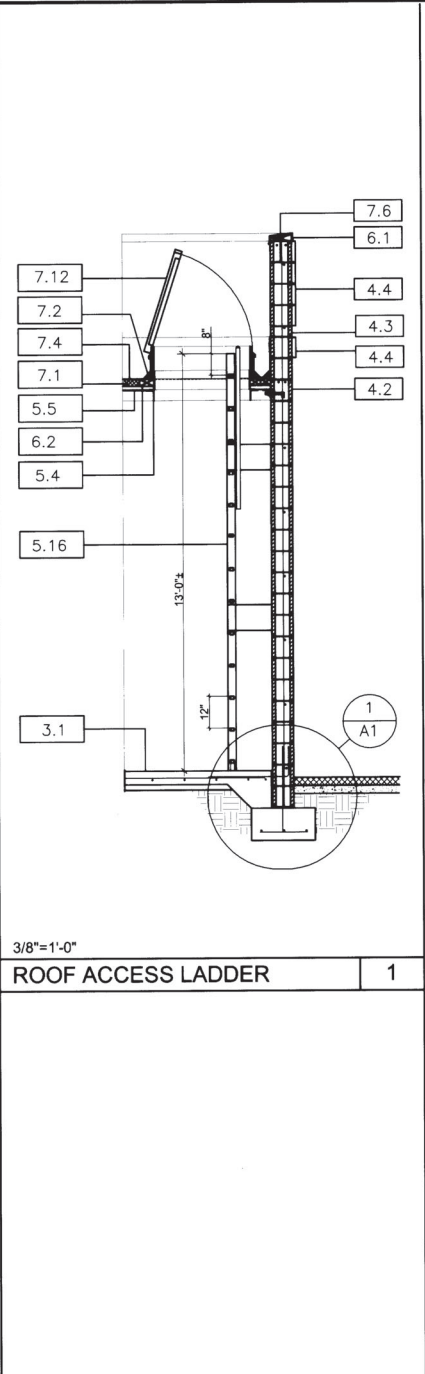
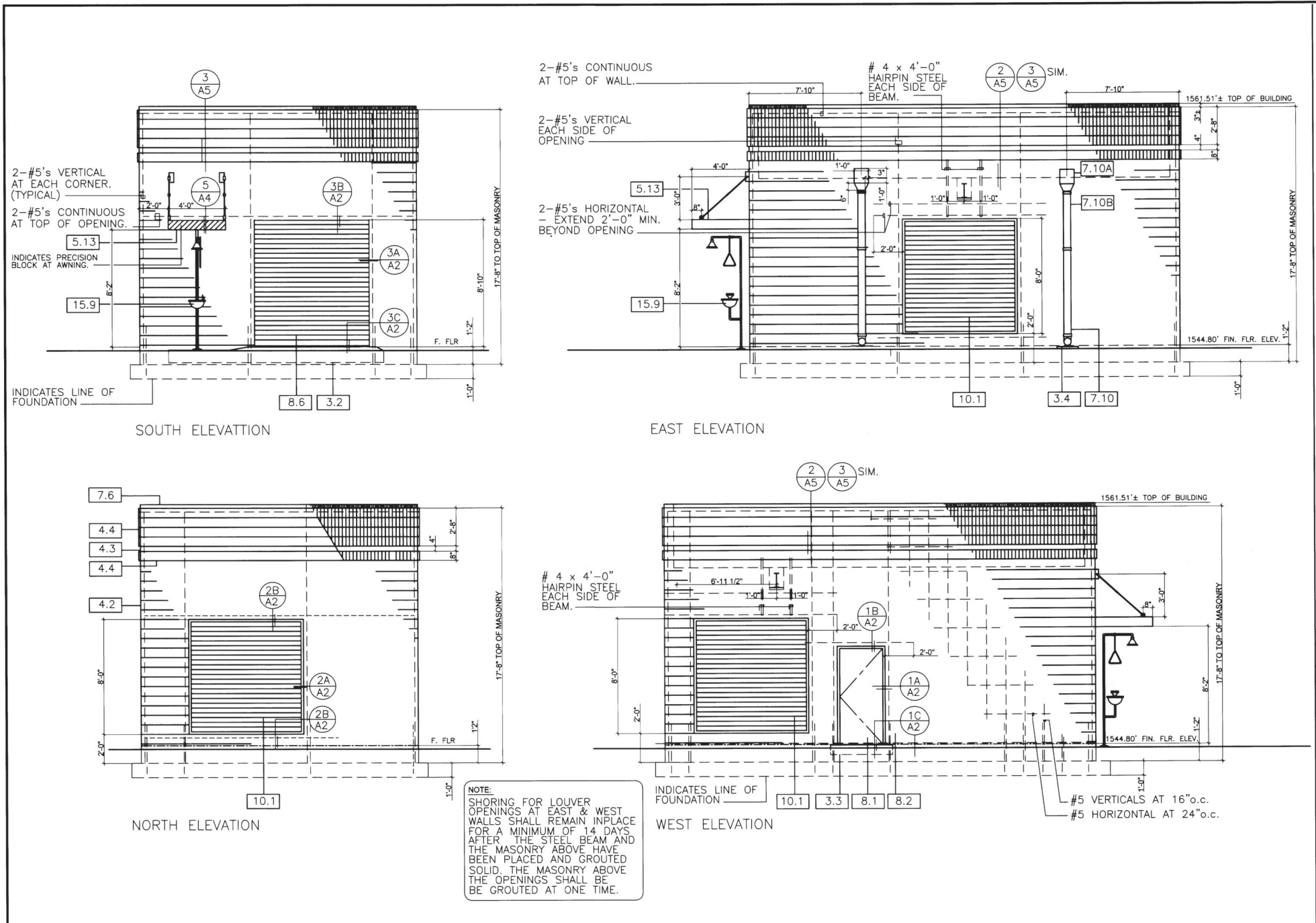
AS-BUILT PLANS  
REVISIONS  
APPR. DATE

WESTERN MUNICIPAL WATER DISTRICT  
P.O. BOX 5286  
RIVERSIDE, CA. 92517-5286  
450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508  
(951) 789-5000 (BUS) (951) 780-3837 (FAX) Rev. 2/28/06

MERIDIAN-UNIT 2  
TRACT NO. 30857-2  
FLOOR PLAN, DOOR & LOUVER DETAILS, DOOR & HARDWARE SCHEDULES & FINISH SCHEDULE  
SCALE: AS NOTED  
SHEET NO. A2  
16  
OF 22 SHTS.  
DWG. NO.

TR 30857-2 16/22  
SEWER LIFT STATION





- MATERIAL LIST:**
- 03.00 CONCRETE:**
- 6" CONCRETE SLAB WITH #4'S AT 12" O.C. EACH WAY OVER 2" SAND FILL OVER 10 MIL. VISQUEEN. PROVIDE NON-SKID STEEL TROWEL FINISH.
  - 6" CONCRETE SLAB ON GRADE WITH #4'S AT 12" O.C. EACH WAY. SLOPE 1/8" PER FOOT TO DRAIN. PROVIDE MEDIUM BROOM FINISH FOR NON-SKID SURFACE.
  - 4" CONCRETE STOOP WITH #4'S AT 18" O.C. EACH WAY AT SLAB CENTER LINE. SLOPE 1/8" PER FOOT TO DRAIN AND PROVIDE A MEDIUM BROOM FINISH.
  - PRECAST CONCRETE SPLASH BLOCK AT EACH DOWNSPOUT.
- 04.00 MASONRY:**
- 8" x 8" x 16" PRECISION CONCRETE BLOCK IN RUNNING BOND WITH TOOLED CONCAVE JOINTS AT FIRST TWO COURSES. SOLID GROUT ALL CELLS. SEE DETAILS FOR REINFORCING.
  - 8" x 8" x 16" SPLIT FACE BLOCK IN RUNNING BOND WITH TOOLED CONCAVE JOINTS. SOLID GROUT ALL CELLS. SEE DETAILS FOR REINFORCING.
  - 8" x 4" x 16" PRECISION CONCRETE BLOCK IN RUNNING BOND WITH TOOLED CONCAVE JOINTS. SOLID GROUT ALL CELLS. SEE DETAILS FOR REINFORCING.
  - 8" x 8" x 16" SPLIT FACE SCORE "301" CONCRETE BLOCK IN RUNNING BOND WITH TOOLED CONCAVE JOINTS. SOLID GROUT ALL CELLS. SEE DETAILS.
- 05.00 STEEL:**
- 4x4x1/4" STEEL ANGLE AT DECK OPENING.
  - 1 1/2" TYPE "B" x18 GAUGE GALVANIZED STEEL DECK WITH INTERLOCKING STANDING SEAM WELDED TO STRUCTURAL FRAME. STEEL DECK SHALL BE CONTINUOUS OVER 2 SPANS MIN. - SEE GENERAL DECK NOTES FOR WELDING.
  - FABRICATED STEEL AWNING ASSEMBLY. PROVIDE POWDER COAT FINISH TO AWNING FRAME.
  - FIXED ALUMINUM ACCESS LADDER WITH POP-UP SAFETY POST. MODEL # 500-10-SP BY O'KEEFE'S OR APPROVED EQUAL.
- 06.00 WOOD:**
- 3x8 PRESSURE TREATED SHAPED PLATE WITH 1/2" x 10" ANCHOR BOLTS AT 72" O.C. - COUNTERSINK BOLTS.
  - 2 1/2" x 6" PRESSURE TREATED WOOD NAILER AT VERTICAL WALLS AND AT CURB OPENINGS. FASTEN TO DECK IN ACCORDANCE WITH ROOFING MANUFACTURER'S SPECIFICATION.
- 07.00 MOISTURE PROTECTION:**
- 2 LAYERS OF RIDGED INSULATION COMPOSED OF A FIRST LAYER OF 1 1/2" BOARD MECHANICALLY FASTENED AND A SECOND LAYER OF 1" FESCO BOARD HOT MOPPED PER ROOFING MANUFACTURER'S SPECIFICATIONS.
  - 3 1/2" MIN. FIBER CANT AT ALL VERTICAL SURFACES.
  - 4-PLY HOT MOPPED BUILT-UP ROOF SYSTEM WITH MINERAL CAP SHEET.
  - 26GA GALVANIZED SHEET METAL FLASHING CAP WITH 3" LEGS AND DRIP.
  - 20GA GALVANIZED SHEET METAL CLOSURE PANEL WITH HEMMED EDGES. TACK WELD TO STEEL ANGLE PRIOR TO PLACEMENT OF DECK.
  - 24GA COLLECTOR HEAD AND DOWNSPOUT ASSEMBLY.
    - 10A 24GA GALVANIZED SHEET METAL COLLECTOR HEAD WITH HEMMED EDGES.
    - 10B 4" x 6" 24GA GALVANIZED SHEET METAL DOWNSPOUT - ANCHORED AT TOP, MID-POINT AND BOTTOM.
  - 2'-6" x 3'-0" ROOF ACCESS SCUTTLE "TYPE S" BY BILCO OR APPROVED EQUAL.
- 08.00 DOORS:**
- 16GA HOLLOW CORE FLUSH PANEL METAL DOOR. SEE DOOR SCHEDULE FOR SIZE.
  - 16GA x 6 3/4" STEEL FRAME WITH 2" FACE. (F16-4 BY STEELCRAFT OR APPROVED EQUAL) SOLID GROUT.
  - CHAIN OPERATED, INSULATED ROLL-UP SERVICE DOOR ASSEMBLY. "THERMAL GUARD" BY "R & S MANUFACTURING" OR APPROVED EQUAL. PROVIDE CHAIN LOCK. SEE DOOR SCHEDULE FOR SIZE.
    - 6A 22GA GALVANIZED STEEL INTERLOCKING FLAT SLAT CURTAIN WITH 3/4" POLYURETHANE FOAM AND 24GA. BACK SLATS.
    - 6B WALL MOUNTED STEEL GUIDES WITH WINDLOCK BARS. PROVIDE GUIDE WEATHERSTRIPPING.
    - 6C DOUBLE STEEL ANGLE FOOTPIECE WITH WEATHER-STRIPPING ASTICAL.
    - 6D 24GA GALVANIZED STEEL METAL HOOD REINFORCED WITH TOP AND BOTTOM FLANGES TO LIMIT DEFLECTION. PROVIDE INTERMEDIATE SUPPORT AS REQUIRED.
- 10.00 SPECIALTIES:**
- 6" DEEP FIXED ACOUSTICAL LOUVER ASSEMBLY BY AIROLITE OR APPROVED EQUAL. SEE LOUVER SCHEDULE FOR SIZE.
- 15.00 MECHANICAL AND PLUMBING:**
- EMERGENCY EYEWASH AND SHOWER ASSEMBLY.

TR 30857-2 1/122  
 SEWER LIFT STATION

**EXTERIOR ELEVATIONS** 1/4"=1'-0"

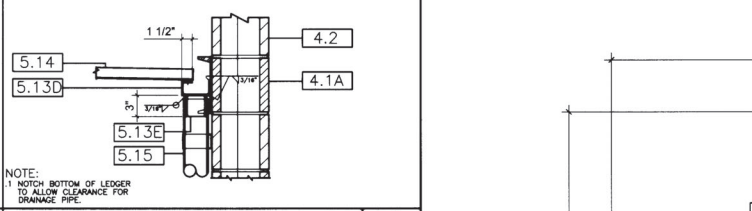
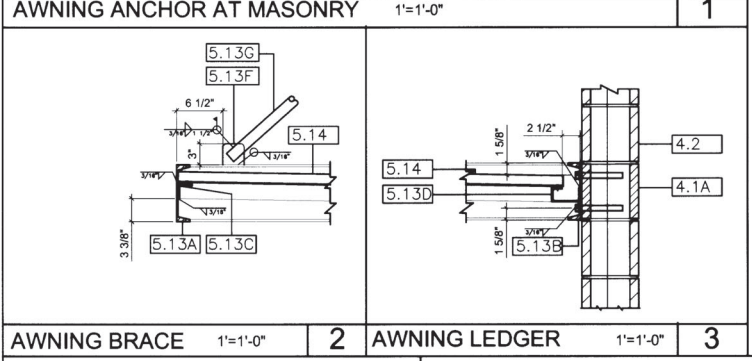
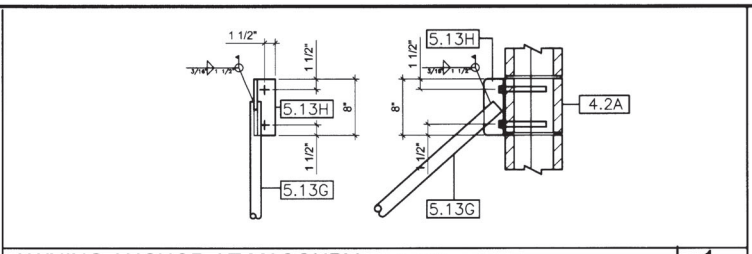
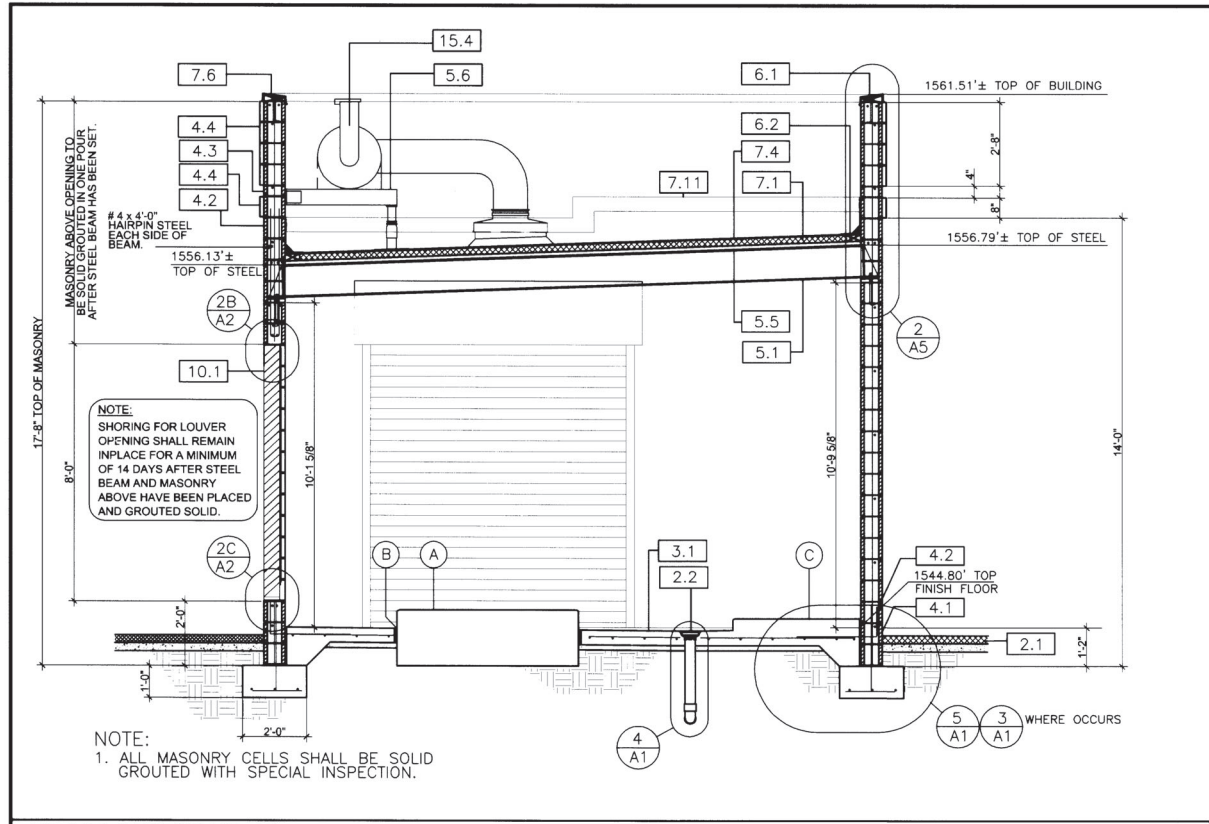
EXTERIOR FINISH SCHEDULE	
MASONRY WALLS	THREE COATS "PERMASHIELD" BY MONOCHEM OVER ONE COAT "AQUASEAL ME 12" BY MONOCHEM ALLOW MASONRY TO CURE FOR 28 DAYS PRIOR TO APPLYING SEALERS.
FERROUS METALS	2 COATS ALKYD SEMI-GLOSS ENAMEL OVER SHOP PRIME.
NON-FERROUS METALS	GALVA-ETCH, 1 COAT CORROSION INHIBITIVE PRIMER, 2 COATS ALKYD SEMI-GLOSS ENAMEL.

- NOTE:
- OWNER IS TO SELECT EXTERIOR COLORS.
  - APPLY MASONRY SEALER AND GAFFITI CONTROL SYSTEM PER MANUFACTURE'S SPECIFICATIONS.

NOTE:  
 SHORING FOR LOUVER OPENINGS AT EAST & WEST WALLS SHALL REMAIN IN PLACE FOR A MINIMUM OF 14 DAYS AFTER THE STEEL BEAM AND THE MASONRY ABOVE HAVE BEEN PLACED AND GROUTED SOLID. THE MASONRY ABOVE THE OPENINGS SHALL BE GROUTED AT ONE TIME.

<p><b>EDWARD J. HUNT</b>          AIA ARCHITECT          6911 MAGNOLIA AVENUE          RIVERSIDE CA. 92506 (951) 369-6069</p> <p>PREPARED BY:  <i>Edward J. Hunt</i></p>	<p>SEWER CERTIFICATION BLOCK</p> <p>I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated waste from the proposed tract.</p> <p><i>John A. Hunt</i>          MECHANICAL ENGINEER M-26589</p>	<p>APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:</p> <p><i>John A. Hunt</i> 7.12.22          MECHANICAL ENGINEER M-26589 DATE          VOID AFTER ONE YEAR FROM THIS DATE</p> <p>BENCH MARK:          NAIL w/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD. AND EASTERLY OF HARMON AVENUE. Z7981 RCFC D NGVD 29. ELEVATION= 1568.64</p>	<p>WESTERN MUNICIPAL WATER DISTRICT</p> <p>P.O. BOX 5286          RIVERSIDE, CA. 92517-5286</p> <p>450 ALESSANDRO BLVD          RIVERSIDE, CA. 92508</p> <p>(951) 789-5000 (BUS) (951) 780-3837 (FAX)</p>	<p>MERIDIAN-UNIT 2          TRACT NO. 30857-2</p> <p>EXTERIOR ELEVATIONS          AND ROOF ACCESS LADDER DETAIL</p> <p>SCALE: AS NOTED</p>	<p>SHEET NO.  <b>A3</b></p> <p>17</p> <p>OF 22 SHTS</p> <p>DWG. NO.:</p>





**GENERAL LEGEND**

(A) ISOLATED RAISED CONCRETE FOUNDATION FOR GENERATOR  
 (B) ISOLATION JOINT - CAULK WITH POLYURETHANE SEALANT  
 (C) 3" HIGH CONCRETE CURB FOR ELECTRICAL EQUIPMENT.

**MATERIAL LIST:**

02.00 SITE WORK:  
 1 ASPHALT PAVING OVER CLASS 2 BASE SEE SHEET 3 FOR SPECIFICATIONS.  
 2 4" NON-TRAFFIC AREA DRAIN WITH BLACK GALVANIZED TOP, MODEL No. A-338-4 BY ALHAMBRA FOUNDRY COMPANY OR EQUAL.  
 3 4" SCHEDULE 40 PVC DRAINAGE PIPE.

03.00 CONCRETE:  
 1 6" CONCRETE SLAB WITH #4'S AT 12" O.C. EACH WAY OVER 2" SAND FILL OVER 10 MIL. VISQUEEN. PROVIDE NON-SKID STEEL TROWEL FINISH.  
 2 6" CONCRETE SLAB ON GRADE WITH #4'S AT 12" O.C. EACH WAY. SLOPE 1/8" PER FOOT TO DRAIN. PROVIDE MEDIUM BROOM FINISH FOR NON-SKID SURFACE.

04.00 MASONRY:  
 1 8" x 8" x 16" PRECISION CONCRETE BLOCK IN RUNNING BOND WITH TOOLED CONCAVE JOINTS AT AWNING LOCATION. SOLID GROUT ALL CELLS.  
 2 8" x 8" x 16" SPLIT FACE BLOCK IN RUNNING BOND WITH TOOLED CONCAVE JOINTS. SOLID GROUT ALL CELLS. SEE DETAILS FOR REINFORCING.  
 2 8" x 8" x 16" SPLIT FACE BLOCK NOTCHED TO ALLOW STEEL ANCHOR FOR AWNING TO SIT FLUSH WITH FACE OF BLOCK.

05.00 STEEL:  
 1 W12x14 STEEL BEAM  
 2 L3x 3x 3/16" CONTINUOUS STEEL ANGLE LEDGER WITH 3/4" ANCHOR BOLTS AT 24" O.C. - PLACE 2" MIN. TO 12" MAX. FROM END OF ANGLE.  
 3 1 1/2" TYPE "B" #18 GAUGE GALVANIZED STEEL DECK WITH INTERLOCKING STANDING SEAM WELDED TO STRUCTURAL FRAME. STEEL DECK SHALL BE CONTINUOUS OVER 2 SPANS MIN. - SEE GENERAL DECK NOTES FOR WELDING.  
 4 SILENCER SUPPORT ASSEMBLY - VERIFY SILENCER DIAMETER PRIOR TO FABRICATION.  
 5 FABRICATED STEEL AWNING ASSEMBLY. PROVIDE POWDER FINISH TO AWNING FRAME.  
 6 M3x8x5 WELDED STEEL CHANNEL FRAME.  
 7 M3x8x5 WELDED STEEL CHANNEL LEDGER WITH 4-5/8"x6" SIMPSON THD62600H TITEN WALL ANCHORS STAGGARD. PROVIDE 4" MIN. EMBEDMENT.  
 8 2"x2"x1/4" STEEL ANGLE WELDED TO STEEL CHANNEL. PROVIDE 1/4" PER FOOT SLOPE TO DRAIN AT SIDE CHANNELS.  
 9 2"x3"x1/4" TUBULAR STEEL WELDED TO STEEL CHANNEL FRAME. CUT TOP SURFACE TO FORM GUTTER. PROVIDE 2" HOLE FOR DRAINAGE.  
 10 2 1/2" STANDARD WEIGHT PIPE STUB WELDED TO TUBULAR STEEL AT DRAINAGE HOLE.  
 11 3"x3"x1/2" STEEL CLIP WELDED TO TOP OF STEEL CHANNEL FRAME.  
 12 1 1/2" STANDARD WEIGHT PIPE BRACE WITH SLOTTED ENDS TO PROVIDE 1 1/2" MIN WELD TO ANCHOR POINTS.  
 13 3"x3"x1/2"x8" STEEL ANGLE WALL ANCHOR WITH 2-5/8" SIMPSON THD62600H TITEN WALL ANCHORS.  
 14 1 1/2"x 18GA. (HR36) ZINCALUME STEEL DECK WITH #8 TECK WITH NEOPRENE WASHERS AT EACH LOW FLUTE AND AT SIDE ANGLES. USE SEALANT TAPE AT BEARING POINTS.  
 15 3" STANDARD WEIGHT STEEL PIPE WITH SET SCREWS TO DRAINAGE STUB. PROVIDE ANCHOR STRAPS AT TOP, MIDSPAN AND BOTTOM.  
 16 8" x 4" x 3/16" TUBULAR STEEL DECK STIFFENER WELDED TO STEEL BEAMS AT LINE OF MUFFLER SUPPORTS.

06.00 WOOD:  
 1 3x8 PRESSURE TREATED SHAPED PLATE WITH 1/2" x 10" ANCHOR BOLTS AT 72" O.C. - COUNTERSINK BOLTS.  
 2 2 1/2" x 6 PRESSURE TREATED WOOD NAILER AT VERTICAL WALLS AND AT CURB OPENINGS. FASTEN TO DECK IN ACCORDANCE WITH ROOFING MANUFACTURER'S SPECIFICATION.

07.00 MOISTURE PROTECTION:  
 1 2 LAYERS OF RIDGED INSULATION COMPOSED OF A FIRST LAYER OF 1 1/2" BOARD MECHANICALLY FASTENED AND A SECOND LAYER OF 1" FESCO BOARD HOT MOPPED PER ROOFING MANUFACTURER'S SPECIFICATIONS.  
 2 3 1/2" MIN. FIBER CANT AT ALL VERTICAL SURFACES.  
 3 4-PLY HOT MOPPED BUILT-UP ROOF SYSTEM WITH MINERAL CAP SHEET.  
 4 26GA. GALVANIZED SHEET METAL FLASHING CAP WITH 3" LEGS AND DRIP.  
 5 24GA. COLLECTOR HEAD AND DOWNSPOUT ASSEMBLY.  
 6 MASONRY COUNTERFLASHING TYPE MA-MASONRY BY FRY REGLET OR APPROVED EQUAL.  
 7 20GA. GALVANIZED SHEET METAL BONNET ASSEMBLY WITH THREE 3" LEGS WITH DRIP. LAP BONNET PIECES 1" RIVET AND SEAL.

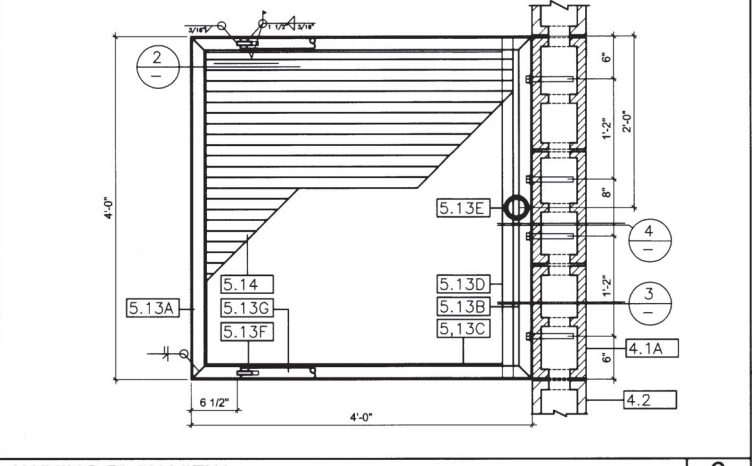
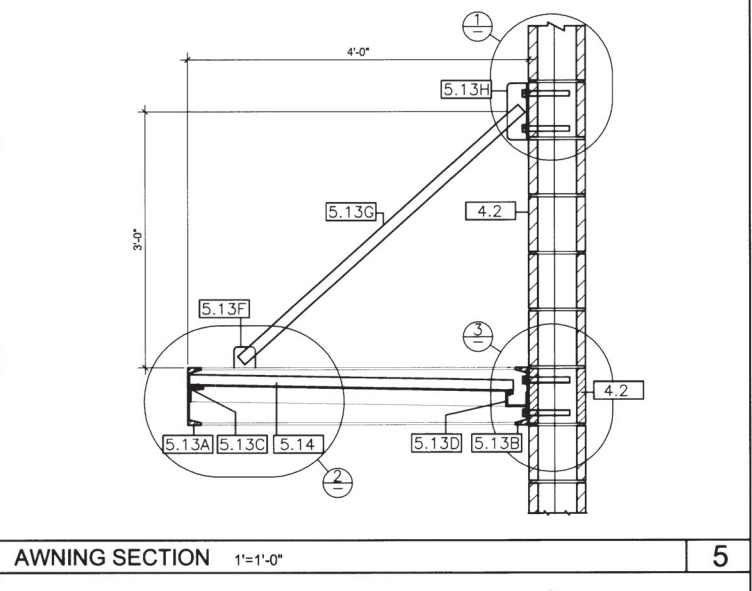
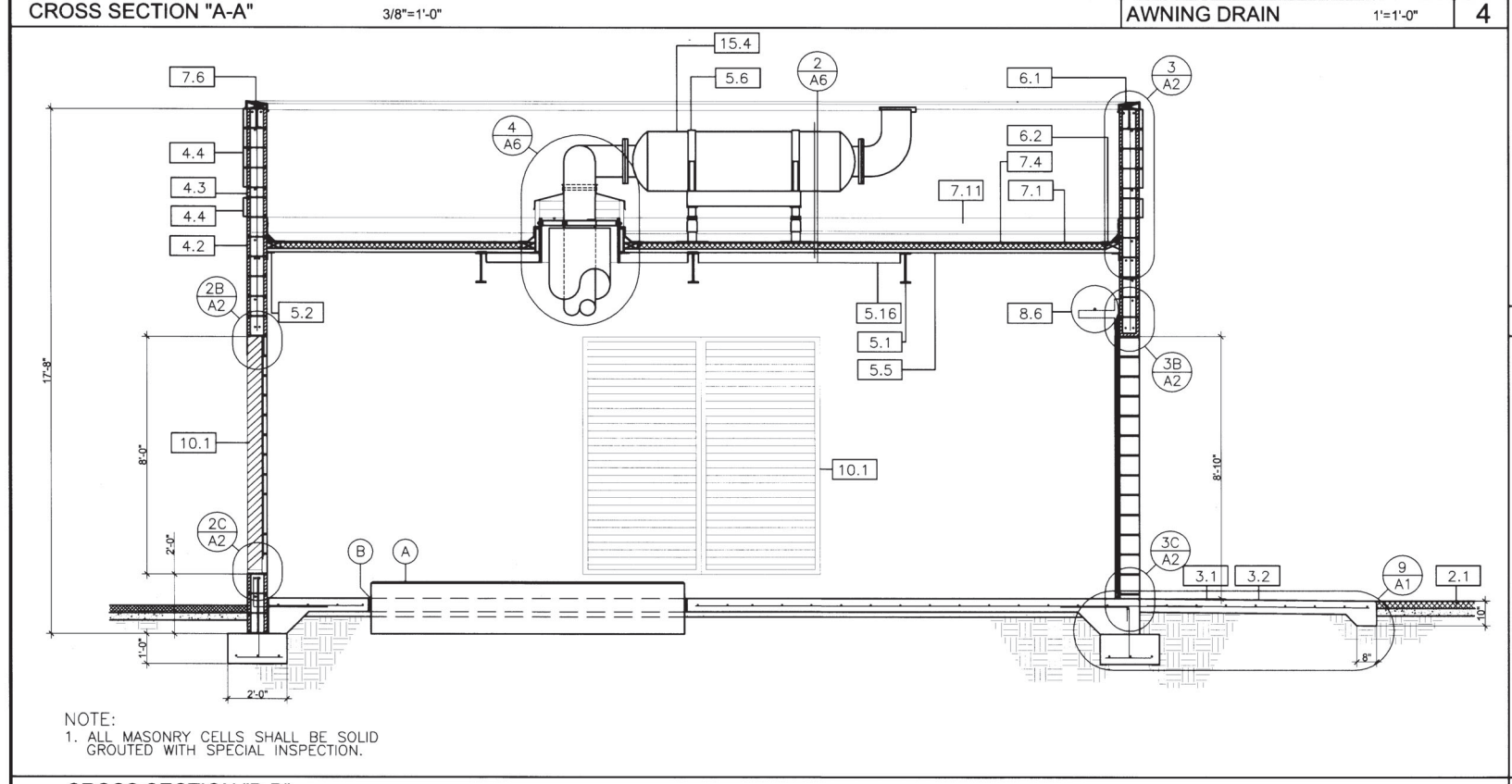
08.00 DOORS:  
 1 16GA. HOLLOW CORE FLUSH PANEL METAL DOOR. SEE DOOR SCHEDULE FOR SIZE.  
 2 16GA. x 6 3/4" STEEL FRAME WITH 2" FACE. (F16-4 BY STEELCRAFT OR APPROVED EQUAL) SOLID GROUT.  
 3 CHAIN OPERATED, INSULATED ROLL-UP SERVICE DOOR ASSEMBLY. "THERMAL GUARD" BY "R & S MANUFACTURING" OR APPROVED EQUAL. PROVIDE CHAIN LOCK. SEE DOOR SCHEDULE FOR SIZE.

10.00 SPECIALTIES:  
 1 6" DEEP FIXED ACOUSTICAL LOUVER ASSEMBLY BY AIROLITE OR APPROVED EQUAL. SEE LOUVER SCHEDULE FOR SIZE.

15.00 MECHANICAL:  
 1 PREFABRICATED SELF FLASHING CURB - ATTACH TO DECK WITH 3/8" x 2 1/2" LAG SCREW AT 24" O.C.  
 2 ROOF CURB MOUNTED EXHAUST FAN - SEE SCHEDULE - SHEET A6, DETAIL 3.  
 3 CARBON STEEL DOUBLE WALLED EXHAUST SILENCER ASSEMBLY, MODEL No. 201-5110-1-C BY GT EXHAUST SYSTEMS OR APPROVED EQUAL.

**SEWER1256**

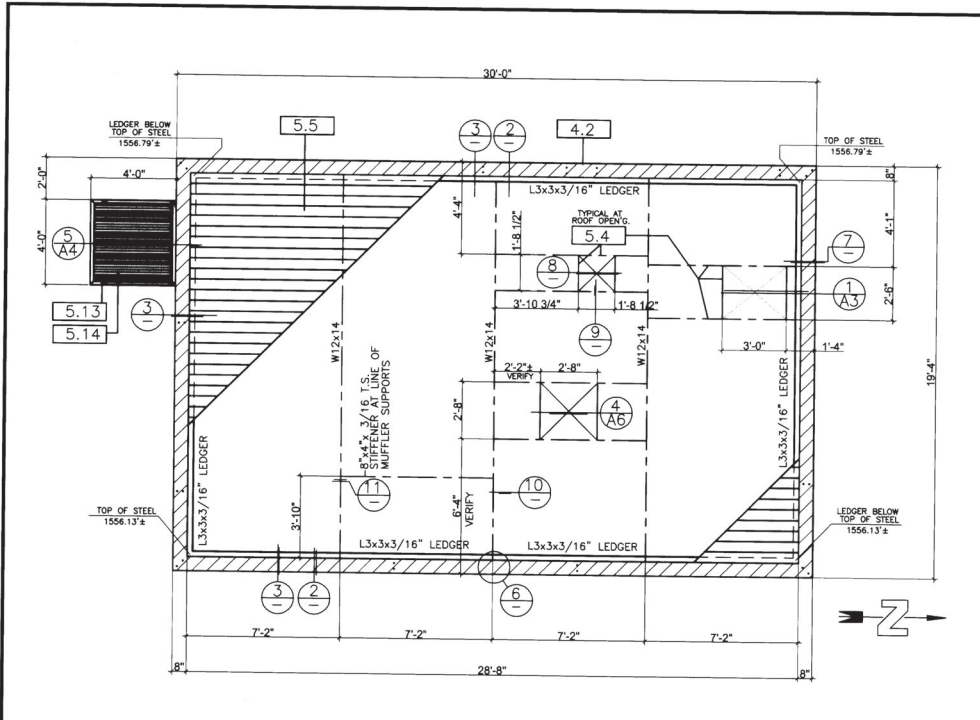
NOTE:  
THE DESIGN AND THE CONSTRUCTABILITY OF THE PROJECT AS WELL AS THE ACCURACY OF FIGURES ARE THE RESPONSIBILITY OF THE DESIGN ENGINEER. PLAN CHECK SERVICES BY WMD WILL BE LIMITED TO THE ADHERENCE OF THE DISTRICT STANDARDS, MATERIALS, QUANTITIES AND SIZE OF FACILITIES, AS THEY RELATE TO THE SERVICE DISCHARGE OR APPROVED MASTER PLAN. DISCHARGE OF WASTEWATER FROM THE IMPROVEMENTS SHOWN ON THESE PLANS IS DEPENDENT UPON COMPLETION OF THE PIPING PROPOSED AS PART OF OTHER PHASES OF THIS TRACT AND/OR OTHER ADJACENT TRACTS.



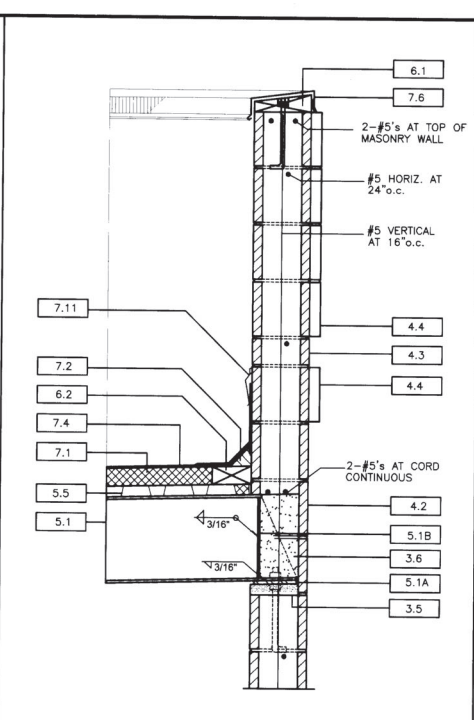
<p>Don't Dig... Until You Call U.S.A. Toll Free 1-800-227-2600</p> <p>For the location of buried utility lines. Don't disrupt vital services. TWO WORKING DAYS BEFORE YOU DIG</p>	<p>EDWARD J. HUNT AIA ARCHITECT 6911 MAGNOLIA AVENUE RIVERSIDE CA. 92506 (951) 369-6069</p> <p>PREPARED BY: <i>Edward J. Hunt</i></p>	<p>SEWER CERTIFICATION BLOCK</p> <p>I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.</p> <p><i>Angie Hunsley</i> MECHANICAL ENGINEER #126589</p>	<p>APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:</p> <p><i>Angie Hunsley</i> 7/10/08 MECHANICAL ENGINEER #126589 DATE</p> <p>VOID AFTER ONE YEAR FROM THIS DATE</p> <p>BENCH MARK: NAIL w/ RCF TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD. AND EASTERLY OF HARMON AVENUE. Z7981 RCFCD NGVD 29. ELEVATION= 1568.64</p>	<p>WESTERN MUNICIPAL WATER DISTRICT</p> <p>P.O. BOX 5286 RIVERSIDE, CA. 92517-5286</p> <p>450 ALESSANDRO BLVD RIVERSIDE, CA. 92508</p> <p>(951) 789-5000 (BUS) (951) 780-3837 (FAX)</p>	<p>MERIDIAN-UNIT 2 TRACT NO. 30857-2</p> <p>CROSS SECTIONS "A-A" &amp; "B-B"</p>	<p>SHEET NO. A4 18</p> <p>OF 22 SHTS</p> <p>BVG. NO.</p>

TR 30857-2 10/122  
 SEWER LIFT STATION

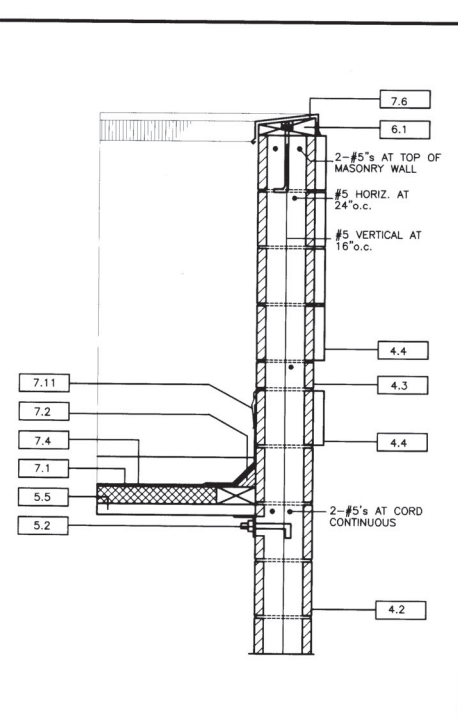




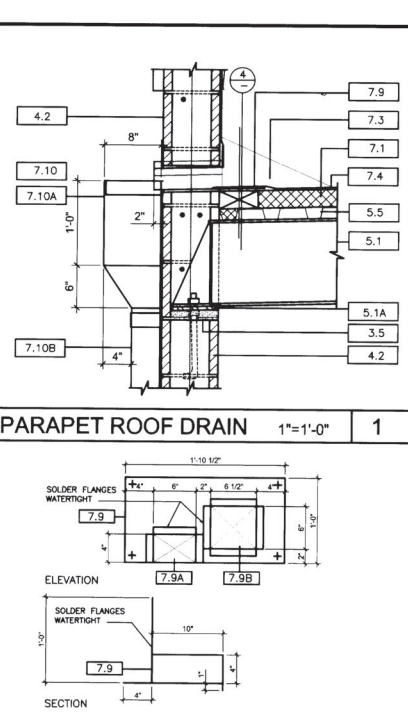
ROOF FRAMING PLAN 1/4"=1'-0"



STEEL BEAM AT WALL 1"=1'-0" 2

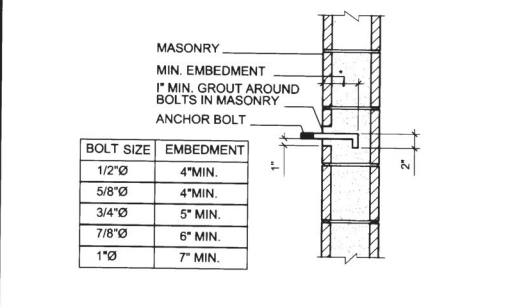


LEDGER AT WALL 1"=1'-0" 3

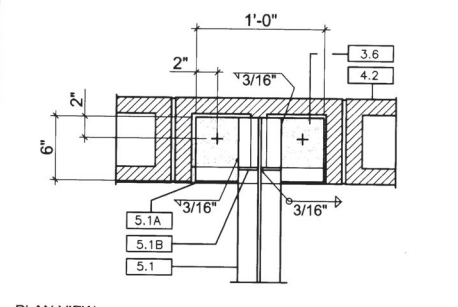


PARAPET ROOF DRAIN 1"=1'-0" 4

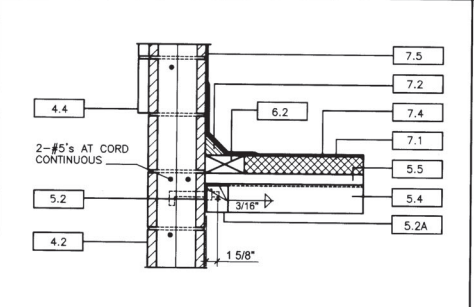
- MATERIAL LIST:**
- 03.00 CONCRETE:
- .5 1 1/2" DRY PACK FOR SOLID BEARING.
  - .6 DRY PACK BEAM CAVITY AFTER BEAM HAS BEEN INSTALLED. COLOR TO MATCH BLOCK.
- 04.00 MASONRY:
- .2 8" x 8" x 16" SPLIT FACE BLOCK IN RUNNING BOND WITH TOOLED CONCAVE JOINTS. SOLID GROUT ALL CELLS. SEE DETAILS FOR REINFORCING.
  - .3 8" x 4" x 16" PRECISION CONCRETE BLOCK IN RUNNING BOND WITH TOOLED CONCAVE JOINTS. SOLID GROUT ALL CELLS. SEE DETAILS FOR REINFORCING.
  - .4 8" x 8" x 16" SPLIT FACE SCORE "301" CONCRETE BLOCK IN RUNNING BOND WITH TOOLED CONCAVE JOINTS. SOLID GROUT ALL CELLS SEE DETAILS.
- 05.00 STEEL:
- .1 W12x14 STEEL BEAM
  - .1A 1/2" x 6" x 12" LONG STEEL BEARING PLATE WITH 2-3/4" x 12" ANCHOR BOLTS, WELD BEARING PLATE TO BOTTOM FLANGE OF STEEL BEAM.
  - .1B 1/4" STEEL STIFFENER PLATE AT EACH SIDE OF WEB.
  - .2 L3x3x3/16" CONTINUOUS STEEL ANGLE LEDGER WITH 3/4" ANCHOR BOLTS AT 24" o.c. - PLACE 2" MIN. TO 12" MAX. FROM END OF ANGLE.
  - .2A 1/4" STEEL PLATE WELDED TO LEDGER WITH 5/8" M. BOLT TO STEEL ANGLE.
  - .3 L 4x 4x 1/4" STEEL ANGLE WELD TO STEEL ANGLE CLIP.
  - .3A L4x 3x 1/4" x 4" STEEL ANGLE CLIP WELDED TO TOP FLANGE OF STEEL BEAM. PLACE LONG LEG OF CLIP VERTICAL.
  - .4 L4x 4x 1/4" STEEL ANGLE AT DECK OPENING.
  - .5 1 1/2" TYPE "B" x18 GAUGE GALVANIZED STEEL DECK WITH INTERLOCKING STANDING SEAM WELDED TO STRUCTURAL FRAME. STEEL DECK SHALL BE CONTINUOUS OVER 2 SPANS MIN. - SEE GENERAL DECK NOTES FOR WELDING.
  - .13 FABRICATED STEEL AWNING ASSEMBLY. PROVIDE POWDER COAT FINISH TO FRAME.
  - .14 1 1/2" 18GA HR36 ZINCALUME STEEL DECKING SLOPED 1/4" TO DRAIN.
  - .16 8" x 4" x 3/16" TUBULAR STEEL DECK STIFFENER WELDED TO STEEL BEAMS AT LINE OF MULLER SUPPORTS.
  - .16A 4" x 3" x 1/4" x 8 1/2" LONG STEEL ANGLE CLIP WELDED TO END OF TUBULAR STEEL STIFFENER AND TO THE TOP FLANGE OF THE STEEL BEAM.
- 06.00 WOOD:
- .1 3x8 PRESSURE TREATED SHAPED PLATE WITH 1/2" x 10" ANCHOR BOLTS AT 72" o.c. - COUNTERSINK BOLTS.
  - .2 2 1/2" x 6" PRESSURE TREATED WOOD NAILER AT VERTICAL WALLS AND AT CURB OPENINGS. FASTEN TO DECK IN ACCORDANCE WITH ROOFING MANUFACTURER'S SPECIFICATION.
- 07.00 MOISTURE PROTECTION:
- .1 2 LAYERS OF RIDGED INSULATION COMPOSED OF A FIRST LAYER OF 1 1/2" BOARD MECHANICALLY FASTENED AND A SECOND LAYER OF 1" FESCO BOARD HOT MOPPED PER ROOFING MANUFACTURER'S SPECIFICATIONS.
  - .2 3 1/2" MIN. FIBER CANT AT ALL VERTICAL SURFACES.
  - .3 BUILT-UP FIBER CRICKETS TO DIRECT ROOF DRAINAGE TOWARDS PARAPET DRAINS.
  - .4 4-PLY HOT MOPPED BUILT-UP ROOF SYSTEM WITH MINERAL CAP SHEET.
  - .5 90# MINERAL FINISHED COUNTER FLASHING.
  - .6 26GA. GALVANIZED SHEET METAL FLASHING CAP WITH 3" LEGS AND DRIP.
  - .7 26GA. GALVANIZED SHEET METAL CAP WITH 3" LEGS WITH ALL EDGES HEMMED.
  - .8 20GA. GALVANIZED SHEET METAL CLOSURE PANEL WITH HEMMED EDGES TACK WELD TO STEEL ANGLE PRIOR TO PLACEMENT OF DECK.
  - .9 24GA. GALVANIZED SIDE WALL PARAPET DRAIN AND OVERFLOW SCUPPER ASSEMBLY.
    - .9A 6"x4" ROOF DRAIN
    - .9B 8"x6" OVERFLOW SCUPPER 2" ABOVE ROOF LOW POINT.
  - .10 24GA. COLLECTOR HEAD AND DOWNSPOUT ASSEMBLY.
    - .10A 24GA. GALVANIZED SHEET METAL COLLECTOR HEAD WITH HEMMED EDGES.
    - .10B 4" x 6" 24GA. GALVANIZED SHEET METAL DOWNSPOUT - ANCHORED AT TOP, MIDPOINT AND BOTTOM.
  - .11 MASONRY COUNTERFLASHING TYPE MA-MASONRY BY FRY REGLET OR APPROVED EQUAL.
- 15.00 MECHANICAL:
- .1 PREFABRICATED SELF FLASHING CURB - ATTACH TO DECK WITH 3/8" x 2 1/2" LAG SCREW AT 24" o.c.



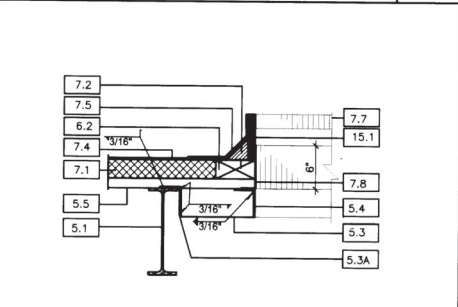
ANCHOR BOLT TO WALL 1"=1'-0" 5



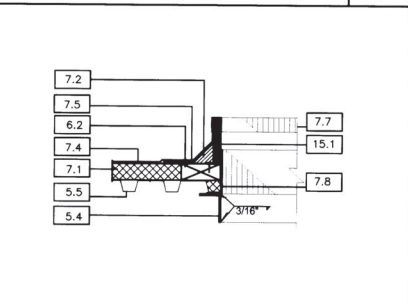
STL. BEAM AT WALL 1"=1'-0" 6



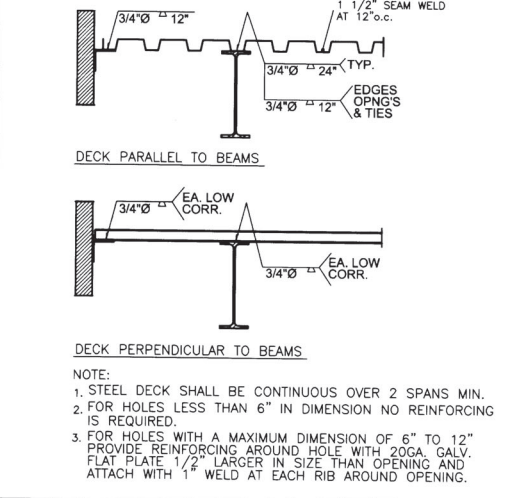
STL. ANGLE TO LEDGER 1"=1'-0" 7



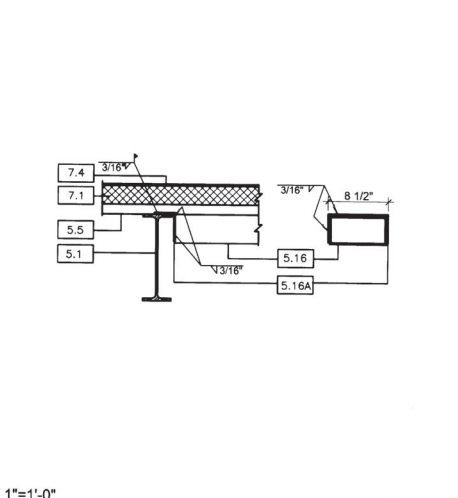
DECK OPENING AT BEAM 1"=1'-0" 8



DECK OPENING 1"=1'-0" 9



DECK WELDS AND NOTES 10



DECK STIFFENER AT MULLER 11

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1-800-227-2600  
For the location of buried utility lines.  
Don't disrupt vital services.  
TWO WORKING DAYS BEFORE YOU DIG

EDWARD J. HUNT AIA ARCHITECT  
6911 MAGNOLIA AVENUE  
RIVERSIDE CA. 92506 (951) 369-6069

PREPARED BY:  
*Edward J. Hunt*

SEWER CERTIFICATION BLOCK  
I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System separation plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.

MECHANICAL ENGINEER M-65589  
*Paul J. Hunt*  
DATE: 7/10/01

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*Paul J. Hunt* 7.10.01 DATE

MECHANICAL ENGINEER M-26589  
VOID AFTER ONE YEAR FROM THIS DATE

BENCH MARK:  
NAIL w/ RCF TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD. AND EASTERLY OF HARMON AVENUE. Z7981 RCFD NGVD 29. ELEVATION= 1568.64

AS-BUILT PLANS  
DATE: 12/10/01

WESTERN MUNICIPAL WATER DISTRICT  
P.O. BOX 5286  
RIVERSIDE, CA. 92517-5286

450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508  
(951) 789-5000 (BUS) (951) 780-3837 (FAX)

MERIDIAN-UNIT 2  
TRACT NO. 30857-2

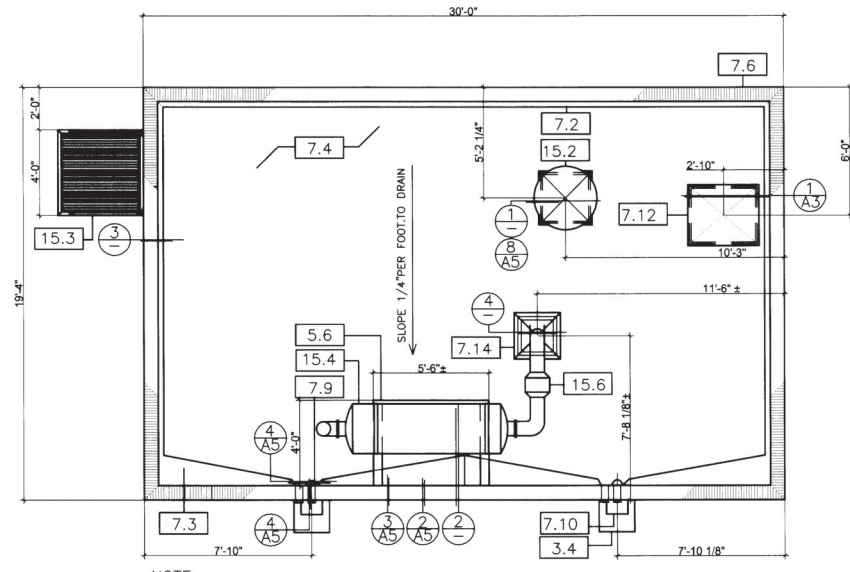
ROOF FRAMING PLAN AND DETAILS

SCALE: AS NOTED

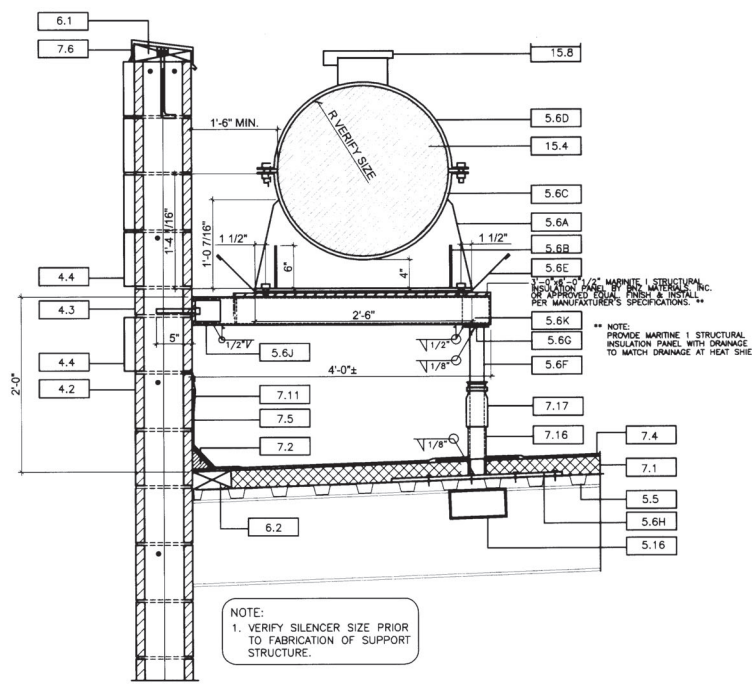
SHEET NO. A5  
19  
OF 22 SHTS  
DWG. NO.

TR 30857-2 19/22  
 SEWER LIFT STATION

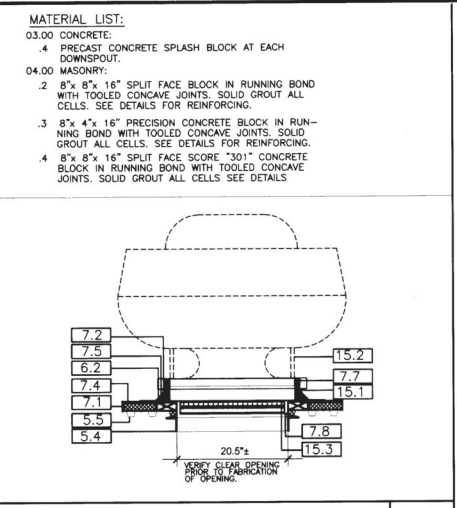




NOTE:  
1. ROOF MOUNTED EXHAUST SYSTEM IS DIAGRAMATIC. CONTRACTOR IS TO VERIFY ALL SIZES AND SUPPORT SYSTEMS WITH STANDBY GENERATOR MANUFACTURER. FINAL DESIGN LAYOUT IS TO BE REVIEWED BY ENGINEER PRIOR TO FABRICATION.



NOTE:  
1. VERIFY SILENCER SIZE PRIOR TO FABRICATION OF SUPPORT STRUCTURE.

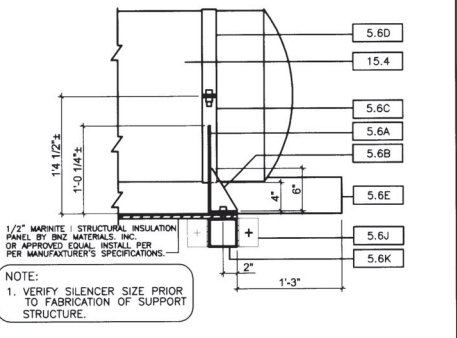


EXHAUST FAN AT ROOF NO SCALE 1

HVAC LEGEND:

HVAC EQUIPMENT SCHEDULE  
 MFR. & MODEL No.: GREENHECK GB 200-20  
 FAN PERFORMANCE: 6,000 CFM @ .5 ESP  
 RPM: 1725  
 MOTOR: 2.0 HP  
 ELECTRIC: 480V-3ph-60~  
 WEIGHT: 406 LBS  
 OPTIONS: 120v THERMOSTATS

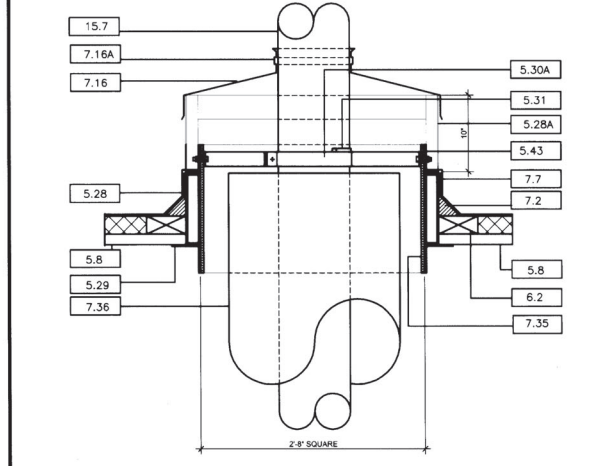
EXHAUST FAN SCHEDULE 3



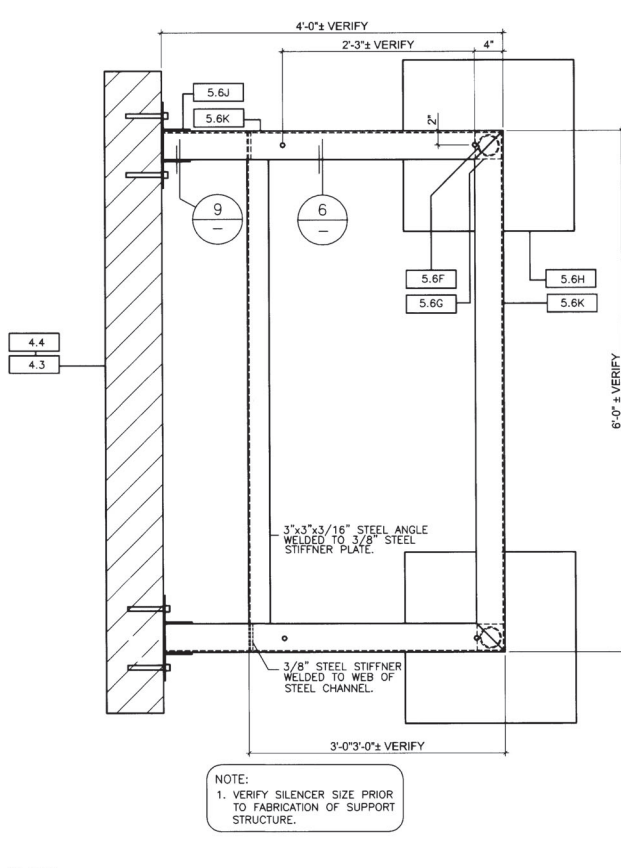
STEEL CHANNEL AT MUFFLER 1"=1'-0" 6

ROOF PLAN 1/4"=1'-0"

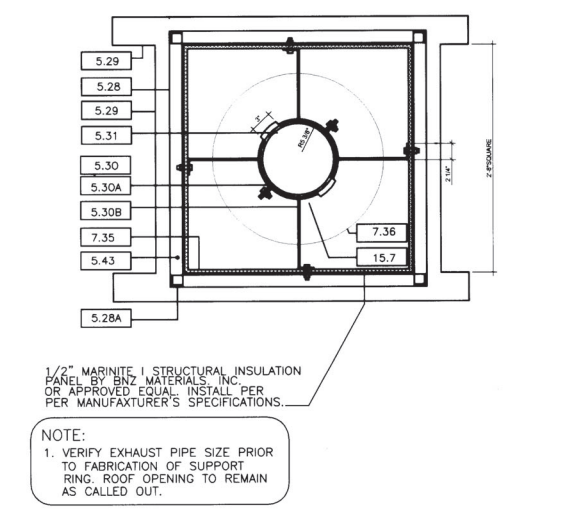
SILENCER & SUPPORT FRAME 2



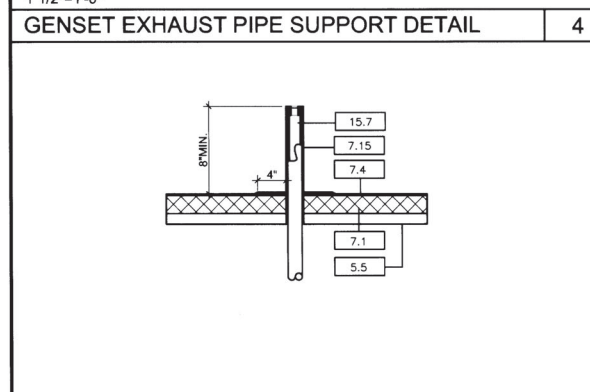
1 1/2"=1'-0" GENSET EXHAUST PIPE SUPPORT DETAIL 4



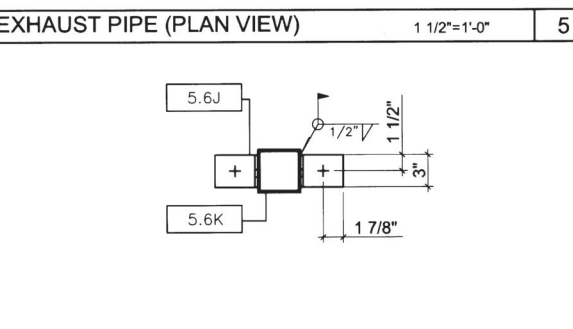
1"=1'-0" MUFFLER SUPPORT ASSEMBLY (PLAN VIEW) 8



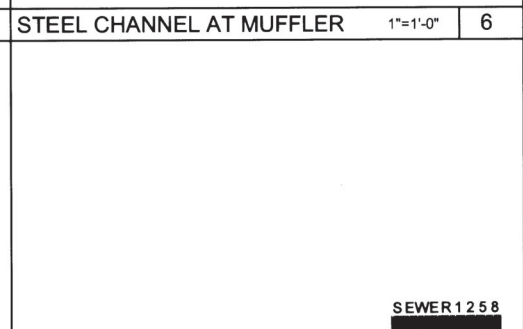
EXHAUST PIPE (PLAN VIEW) 1 1/2"=1'-0" 5



1 1/2"=1'-0" VENT PIPE DETAIL 7



1"=1'-0" STEEL CHANNEL AT WALL CLIP 9



1"=1'-0" STEEL CHANNEL AT MUFFLER 6

- 05.00 STEEL:
- W12x14 STEEL BEAM
  - L3x 3x 3/16" CONTINUOUS STEEL ANGLE LEDGER WITH 3/4" ANCHOR BOLTS AT 24" o.c. - PLACE 2" MIN. TO 12" MAX. FROM END OF ANGLE.
  - L4x 4x 1/4" STEEL ANGLE AT DECK OPENING.
  - 1 1/2" TYPE "B" x18" GAUGE GALVANIZED STEEL DECK WITH INTERLOCKING STANDING SEAM WELDED TO STRUCTURAL FRAME. STEEL DECK SHALL BE CONTIGUOUS OVER 2 SPANS MIN. - SEE GENERAL DECK NOTES FOR WELDING.
  - SILENCER SUPPORT ASSEMBLY - VERIFY SILENCER DIAMETER PRIOR TO FABRICATION.
  - 1/4" BENT STEEL PLATE WITH 3" BOTTOM LEG WITH TWO 5/8" M. BOLTS. CUT TO MATCH DIAMETER OF SILENCER.
  - 3" x 6" x 1/4" STEEL GUSSET PLATE WELDED TO BENT PLATE.
  - 3/16" x 2" WIDE STEEL STRAP TO BE WELDED TO 1/4" BENT PLATE. PROVIDE END TABS FOR 1/2" M. BOLT.
  - 3/16" x 2" WIDE STEEL STRAP WITH END TABS FOR 1/2" M. BOLT. VERIFY SILENCER DIAMETER PRIOR TO FABRICATION.
  - 20GA ALUMINUM HEAT SHIELD WITH 4-5/8" M. BOLTS. PROVIDE HEATED EDGES AND A 1" DRAIN HOLE AT CENTER OF SHIELD.
  - 2" STANDARD PIPE COLUMN.
  - 3"x3"x 3/16" TOP PLATE BEARING WELDED TO FRAME AND PIPE COLUMN.
  - 24"x24"x 3/16" BOTTOM BEARING PLATE WELDED TO PIPE COLUMN AND SCREW ATTACH TO STEEL DECK FLUTES WITH #8 SHEET METAL SCREWS.
  - L4"x4"x 1/4"x 3" STEEL ANGLE CLIP WELDED TO EACH SIDE OF FRAME WITH 1-5/8" EXPANSION BOLT TO MASONRY WITH 5" MIN. EMBROIDMENT.
  - 4"x 4"x 3/16" TUBULAR STEEL WELDED FRAME WITH 5/8" ALL THREAD STUDS WELDED TO TOP OF FRAME AS SHOWN.
  - 2"x 10"x 3/16" TUBULAR STEEL CURB WITH MITERED CORNERS WELDED TO STEEL ANGLE.
  - L4x 4x 1/4" STEEL ANGLE AT DECK OPENING WITH 1/2" M. BOLT.
  - EXHAUST PIPE SUPPORT RING ASSEMBLY.
    - 1/4" x 2" CIRCUMFERENTIAL CLAMP RING. BOLT HALVES OF CLAMP RING TOGETHER USING 1/2" M. BOLTS.
    - 1/4" x 2" BENT STEEL PLATE WELDED TO STEEL CLAMP RING AND BOLTED TO STEEL ANGLE WITH 1/2" M. BOLTS.
  - 1 1/2" x 3" LONG STEEL LUG SHAPED AND WELDED TO EXHAUST PIPE - 2 PLACES.
  - 4" x 1/4" 12" LONG STEEL LUG SHAPED AND WELDED TO VENT PIPE - 2 PLACES OPPOSITE SIDES OF PIPE. TACK WELD TO STEEL DECK.
  - FABRICATED STEEL AWNING ASSEMBLY. PROVIDE POWDER COATED FINISH TO STEEL FRAME.
  - 8" x 4" x 3/16" TUBULAR STEEL DECK STIFFENER WELDED TO STEEL BEAMS AT LINE OF MUFFLER SUPPORTS.
- 06.00 WOOD:
- 3x8 PRESSURE TREATED SHAPED PLATE WITH 1/2" x 10" ANCHOR BOLTS AT 72" o.c. - COUNTERSINK BOLTS.
  - 2 1/2" x 6" PRESSURE TREATED WOOD NAILER AT VERTICAL WALLS AND AT CURB OPENINGS. FASTEN TO DECK IN ACCORDANCE WITH ROOFING MANUFACTURER'S SPECIFICATION.
- 07.00 MOISTURE PROTECTION:
- 2 LAYERS OF RIDGED INSULATION COMPOSED OF A FIRST LAYER OF 1 1/2" BOARD MECHANICALLY FASTENED AND A SECOND LAYER OF 1" PEGBOARD HOT MOPPED PER ROOFING MANUFACTURER'S SPECIFICATIONS.
  - 1/2" MIN. FIBER CANT AT ALL VERTICAL SURFACES.
  - BUILT-UP FIBER CRICKETS TO DIRECT ROOF DRAINAGE TOWARDS PARAPET DRAINS.
  - 4-PLY HOT MOPPED BUILT-UP ROOF SYSTEM WITH MINERAL CAP SHEET.
  - 90# MINERAL FINISHED COUNTER FLASHING.
  - 26GA GALVANIZED SHEET METAL FLASHING CAP WITH 3" LEGS AND DRIP.
  - 26GA GALVANIZED SHEET METAL CAP WITH 3" LEGS WITH ALL EDGES HEMED.
  - 20GA GALVANIZED SHEET METAL CLOSURE PANEL WITH HEMED EDGES TACK WELD TO STEEL ANGLE PRIOR TO PLACEMENT OF DECK.
  - 24GA GALVANIZED SIDEWALL PARAPET DRAIN AND OVER-FLOW SCUPPER ASSEMBLY.
  - 24GA COLLECTOR HEAD AND DOWNSPOUT ASSEMBLY.
  - MASONRY COUNTERFLASHING TYPE MA-MASONRY BY FRY REGLET OR APPROVED EQUAL.
  - 2"-6" x 3"-0" ROOF ACCESS SCUTTLE "TYPE S" BY BILCO OR APPROVED EQUAL.
  - 20GA GALVANIZED SHEET METAL CAP WITH 3" LEGS AND DRIP.
  - 20GA GALVANIZED SHEET METAL BONNET ASSEMBLY WITH THREE 3" LEGS WITH DRIP. LAP BONNET PIECES 1" RIVET AND SEAL.
  - 14A 20GA GALVANIZED COLLAR ATTACHED TO PIPE WITH DRAW BAND.
  - 24GA GALVANIZED SHEET METAL FLASHING WITH 4" FLANGE TO ROOF DECK. TURN TOP OF FLASHING DOWN INTO VENT PIPE.
  - 24GA GALVANIZED SHEET METAL FLASHING WITH 4" FLANGE TO ROOF DECK.
- 15.00 MECHANICAL:
- PREFABRICATED SELF FLASHING CURB - ATTACH TO DECK WITH 3/8" x 2 1/2" LAG SCREW AT 24" o.c.
  - ROOF CURB MOUNTED EXHAUST FAN - SEE SCHEDULE - SHEET A6.
  - BACKDRAFT DAMPER BY FAN MANUFACTURER.
  - CARBON STEEL DOUBLE WALLED EXHAUST SILENCER ASSEMBLY. MODEL NO. 0155-2065-04 BY CUMMINGS OR APPROVED EQUAL.
  - 4" ± STANDARD WEIGHT EXHAUST PIPE VERIFY SIZE WITH STANDBY GENERATOR MANUFACTURER.
  - CATALYST CONVERTER PER STANDBY GENERATOR MANUFACTURER'S RECOMMENDATIONS.
  - VENT PIPE - SEE ROOF PLAN FOR SIZE AND LOCATION.
  - STAINLESS STEEL RAINGUARD.
- NOTE:  
THE DESIGN AND THE CONSTRUCTABILITY OF THE PROJECT AS WELL AS THE ACCURACY OF FIGURES ARE THE RESPONSIBILITY OF THE DESIGN ENGINEER. PLAN CHECK SERVICES BY WMD WILL BE LIMITED TO THE ADHERENCE OF THE DISTRICT STANDARDS, MATERIALS, QUANTITIES AND SIZE OF FACILITIES, AS THEY RELATE TO THE SERVICE DISCHARGE OR APPROVED MASTER PLAN. DISCHARGE OF WASTEWATER FROM THE IMPROVEMENTS SHOWN ON THESE PLANS IS DEPENDENT UPON COMPLETION OF THE PIPING PROPOSED AS PART OF OTHER PHASES OF THIS TRACT AND/OR OTHER ADJACENT TRACTS.

Don't Dig...Until You Call U.S.A. Toll Free  
1-800-227-2600

For the location of buried utility lines. Don't disrupt vital services. TWO WORKING DAYS BEFORE YOU DIG!

**EDWARD J. HUNT** AIA ARCHITECT  
6911 MAGNOLIA AVENUE  
RIVERSIDE CA. 92506 (951) 369-6069

PREPARED BY:  
*Edward J. Hunt*

SEWER CERTIFICATION BLOCK  
I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System separation plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.

MECHANICAL ENGINEER N-65369  
*APR 12 2012*

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION

*John J. Staudy* 7.12.07  
MECHANICAL ENGINEER N-25587 DATE  
VOID AFTER ONE YEAR FROM DATE

BENCH MARK  
NAIL w/ RCF TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD. AND EASTERLY OF HARMON AVENUE. Z7981 RCFCD NGVD 29. ELEVATION= 1568.64

12/10/12  
APPR. DATE

WESTERN MUNICIPAL WATER DISTRICT  
P.O. BOX 5286  
RIVERSIDE, CA. 92517-5286

450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508  
(951) 789-5000 (BUS) (951) 780-3837 (FAX)  
Rev. 2/28/06

MERIDIAN-UNIT 2  
TRACT NO. 30857-2

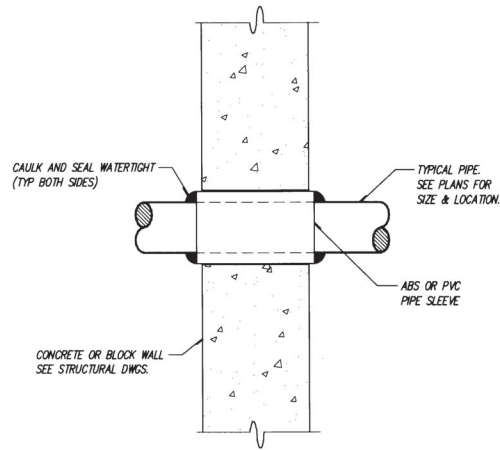
ROOF PLAN & DETAILS

SCALE: AS NOTED

SHEET NO. **A6**  
20  
OF 22 SHTS  
DWG. NO.

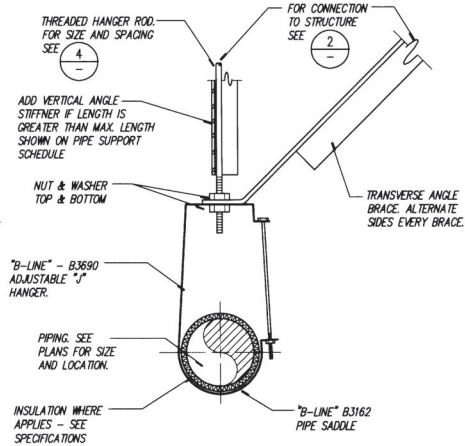
TR 30857-2 20122  
 SEWER LIFT STATION





PIPE PENETRATION DETAIL

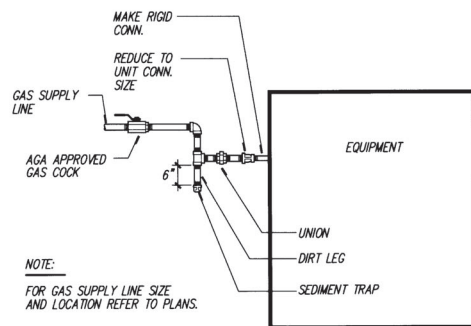
5



NOTE:  
1. DETAIL APPLIES TO PIPES 2" I.D. AND SMALLER.  
2. REFER TO PIPE SUPPORT SCHEDULE FOR ADDITIONAL INFORMATION.

PIPE SUPPORT DETAIL

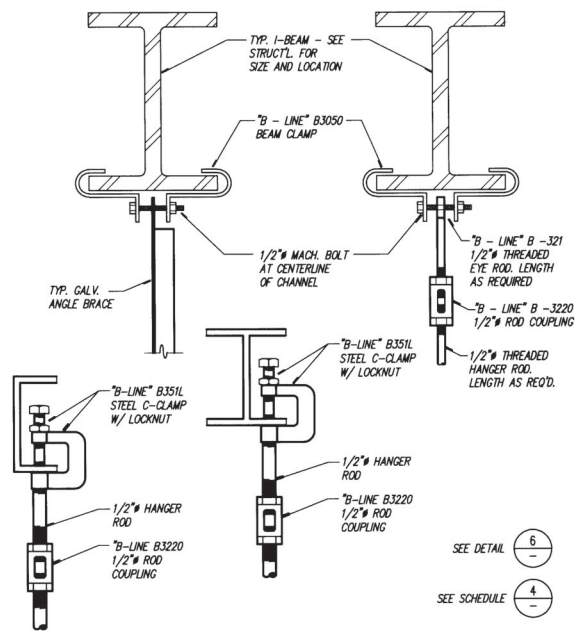
6



NOTE:  
FOR GAS SUPPLY LINE SIZE AND LOCATION REFER TO PLANS.

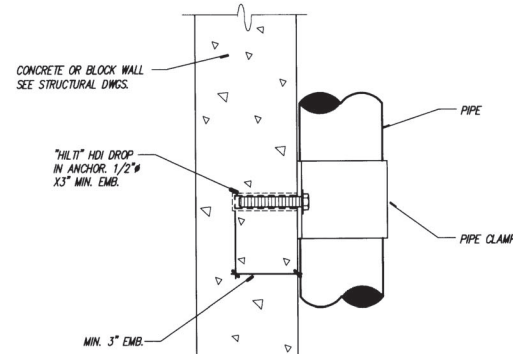
GAS CONNECTION DETAIL

7



CONNECTION TO STRUCTURE

2



CONNECTION TO STRUCTURE

3

PIPE SIZE IN CHARGE	MAXIMUM SPAN BETWEEN SUPPORT HANGING O.C.		HANGER ROD DIAMETER SIZE	MAX. LENGTH FOR RODS	LONGITUDINAL ANGLE BRACE	VERTICAL HANGER ANGLE STOPPERS	TRANSVERSE ANGLE BRACE	BOLT SIZE
	HORIZ.	VERT.						
STEEL PIPE FOR GAS								
1/2" & 3/4"	6'-0"	6'-0"	3/8"	37"	1-1/2" x 1-1/2" x 18 ga @ 80'-0" O.C.	1 x 1 x 18ga	1-1/2" x 1-1/2" x 18 ga @ 40'-0" O.C.	3/8"
1"	8'-0"	8'-0"	3/8"	37"	1-1/2" x 1-1/2" x 18 ga @ 80'-0" O.C.	1 x 1 x 18ga	1-1/2" x 1-1/2" x 18 ga @ 40'-0" O.C.	3/8"
1-1/4" thru 2"	10'-0"	10'-0"	3/8"	37"	2-1/2" x 2-1/2" x 16 ga @ 80'-0" O.C.	1 x 1 x 18ga	2-1/2" x 2-1/2" x 16 ga @ 40'-0" O.C.	3/8"

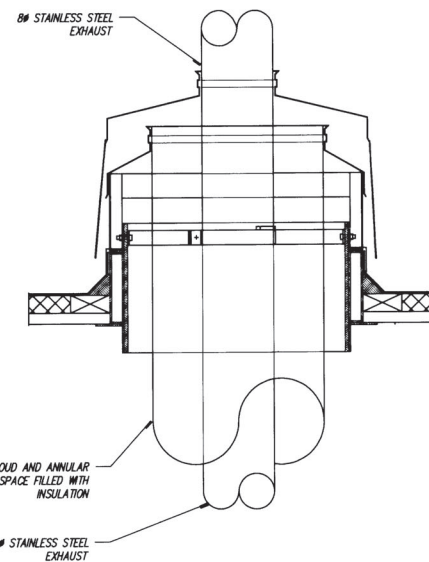
NOTES:  
① VERTICAL ANGLE ONLY REQUIRED WHEN ROD MAXIMUM LENGTH IS EXCEEDED.  
② BRACING MAY BE OMITTED WHERE TOP OF PIPE IS 12" OR LESS FROM BOTTOM OF HANGER SUPPORT CONNECTED TO STRUCTURE.  
③ ALLOW FOR EXPANSION EVERY 30'-0".

PIPE SUPPORT SCHEDULE

4

MECHANICAL GENERAL NOTES

- THE TOTAL INSTALLATION SHALL COMPLY WITH ANY AND ALL REQUIREMENTS OF THE LEGALLY CONSTITUTED AUTHORITIES HAVING JURISDICTION INCLUDING 2007 CBC (CALIFORNIA BUILDING CODE) AND 2007 CMIC/OPC (CALIFORNIA MECHANICAL AND PLUMBING CODE).
- THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID AND SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS UNDER WHICH HE WILL BE REQUIRED TO WORK.
- ALL INDICATED DIMENSIONS ARE APPROXIMATE AND ARE GIVEN FOR ESTIMATE PURPOSES ONLY. BEFORE PROCEEDING WITH THE WORK THIS CONTRACTOR SHALL CAREFULLY CHECK AND VERIFY ALL DIMENSIONS, SIZES, REQUIRED CLEARANCES AND SHALL ASSUME FULL RESPONSIBILITY FOR THE FITTING OF ALL EQUIPMENT AND MATERIALS HEREIN REQUIRED TO OTHER PARTS OF THE WORK OF OTHER TRADES.
- THE DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC TO THE EXTENT THAT ALL OFFSETS, BENDS, SPECIAL FITTINGS AND LOCATIONS ARE NOT EXACTLY LOCATED.
- IN THE PREPARATION OF THESE DOCUMENTS, CERTAIN ASSUMPTIONS ARE MADE REGARDING EXISTING CONDITIONS. SOME OF THESE ASSUMPTIONS MAY NOT BE VERIFIABLE WITHOUT EXPENDING ADDITIONAL SUMS OF MONEY OR DESTROYING OTHERWISE ADEQUATE OR SERVICEABLE PORTIONS OF EXISTING BUILDINGS AND/OR EQUIPMENT. THEREFORE, THE ENGINEER SHALL NOT BE HELD RESPONSIBLE FOR ANY CHANGES OR ADDITIONAL COSTS INCURRED DUE TO EXISTING CONDITIONS.
- THE CONTRACTOR SHALL COMPLY WITH ALL CONTRACT DOCUMENTS IN LAYING OUT HIS WORK AND EQUIPMENT. HE SHALL COORDINATE THE WORK OF THIS SECTION WITH THE WORK OF OTHER TRADES AND ALL JOB CONDITIONS.
- THE INSTALLATION OF ACCESS PANELS OR OTHER INDICATING EQUIPMENT OR SPECIALTIES REQUIRING READING, ADJUSTMENT, INSPECTION, REPAIRS, REMOVAL OR REPLACEMENT SHALL BE CONVENIENTLY LOCATED WITH REFERENCE TO THE FINISHED BUILDING.
- ALL EQUIPMENT AND FIXTURES INSTALLED UNDER THIS CONTRACT SHALL BE HUNG OR ANCHORED IN ACCORDANCE WITH TITLE 24, TABLE NO. 16 A-0.
- WHERE MATERIAL IS SHOWN ON THE DRAWINGS BUT NOT SPECIFIED, IT SHALL BE OF THE SAME TYPE AND QUALITY AS EXISTING MATERIAL.
- PROVIDE MANUAL VOLUME DAMPERS AT UPSTREAM PORTION OF ALL TERMINAL AIR BRANCHES. THESE SHALL BE OF THE LOCKING QUADRANT TYPE. WHERE LOCATED OVER SLOPED OR HARD CEILINGS, PROVIDE DURO-DYNE ANGLE GEAR DRIVE OR BOWDEN CABLE CONTROL SYSTEM.
- PROVIDE 1" ACOUSTICAL LINING IN ALL DUCTWORK WITHIN 10 FEET OF ALL AIR MOVING EQUIPMENT. PROVIDE DURO-DYNE FLEXIBLE CONNECTION AT ALL DUCT AT EQUIPMENT LOCATIONS.
- WHERE NOT SPECIFICALLY INDICATED OTHERWISE, ALL DUCTWORK AND EQUIPMENT SHALL BE SUPPORTED PER THE SHACMA GUIDELINES FOR SEISMIC RESTRAINT AND CURRENT APPLICABLE UNIFORM MECHANICAL CODE. SEE ANCHORAGE AND BRACING NOTES THIS PAGE.
- WHEN A FIRE ALARM SYSTEM WITH FULL COVERAGE SMOKE DETECTORS ARE PROVIDED, DUCT SMOKE DETECTORS MAY BE ELIMINATED. FIRE ALARM CONTRACTOR SHALL WIRE SMOKE/FIRE DAMPER ACTIVATORS TO AREA SMOKE DETECTORS.
- TESTING, ADJUSTING, AND BALANCING (TAB) OF THE AIR CONDITIONING SYSTEMS AND RELATED ANCILLARY EQUIPMENT WILL BE PERFORMED BY A CERTIFIED, INDEPENDENT THIRD PARTY, AABC AGENCY SELECTED AND EMPLOYED DIRECTLY BY THE OWNER. A COMPLETE AIR BALANCE REPORT TO BE SUBMITTED TO THE ADMINISTRATIVE AUTHORITY AND TO THE MECHANICAL ENGINEER.
- DUCT SYSTEMS USED WITH BLOWER TYPE EQUIPMENT WHICH ARE PORTIONS ON THE HEATING, COOLING, ABSORPTION, EVAPORATIVE COOLING OR OUTDOOR AIR VENTILATION SYSTEM SHALL BE SIZED IN ACCORDANCE WITH CHAPTER 16, PART II REFERENCE STANDARDS OF THE CALIFORNIA MECHANICAL CODE.



DUCT THROUGH ROOF

1

HVAC AND PLUMBING LEGEND

SYMBOL	ABBREVIATIONS	DESCRIPTION
		SO, RECT. OR ROUND DUCT AS NOTED
		EXIST. DUCT OR EQUIP. TO REMAIN
		EXIST. DUCT OR EQUIP. TO BE REMOVED
		FLEXIBLE DUCT
	CD	CEILING DIFFUSER, SUPPLY
	CR	CEILING REGISTER, RETURN & EXHAUST
		SECTION THROUGH DUCT
		DUCT DOWN
		SQUARE TO ROUND TRANSITION
		DUCT ACCESS DOOR
		DUCT WITH TURNING VANES
	T/STAT	THERMOSTAT
	DETAIL No.	DETAIL REFERENCE
	SHEET No.	SECTION REFERENCE
	EQUIPMENT ID. No.	EQUIPMENT REFERENCE
	COND	CONDENSATE DRAIN
	G	GAS LOW PRESSURE
	MPG	GAS MEDIUM PRESSURE
	GC	GAS COOK (OR GAS STOP)
	GR	GAS REGULATOR
	DN	PIPE DOWN
	UP	PIPE UP
		PIPE RISER (UP AND DOWN)
	CONN	CONNECTION
	CONT	CONTINUATION
	IE	INVERT ELEVATION
	NC	NORMALLY CLOSED
	NO	NORMALLY OPEN
	TYP. V.T.R.	TYPICAL VENT THROUGH ROOF
	W/	WITH
	CFM	CUBIC FEET OF AIR PER MINUTE
	CFMS	CFM SUPPLY
	CFMR	CFM RETURN
	CFME	CFM EXHAUST
	(N)	NEW
	10#	INDICATES ROUND DUCT (INCHES)

EXHAUST FAN SCHEDULE

EF 1	MFR. & MODEL NO.:	GREENHECK GB 200-20
	FAN PERFORMANCE:	6,000 CFM @ 0.5" ESP
	RPM:	1725
	MOTOR:	2 HP
	ELEC.:	480V-3ph-60Hz
	WEIGHT:	406 LBS
	ACCESSORIES:	BACKDRAFT DAMPER, 120V THERMOSTAT

PIPE MATERIAL SCHEDULE

SERVICE	PIPE MATERIAL & WEIGHT	TYPE OF JOINTS	PRESSURE FITTINGS MATERIAL	SHUT-OFF RATINGS PSL - DuP	VALVE
Fuel Gas	Steel 40, Black	Screwed	Mall. Iron	150	Sqr Head
	Steel 40, Black	Welded	Steel Weld	150	Cock

SEWER 1259



DESIGN WEST ENGINEERING  
MECHANICAL-ELECTRICAL-PLUMBING CONTRACTORS

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EDWARD J. HUNT AIA ARCHITECT  
8911 MAGNOLIA AVENUE  
RIVERSIDE CA. 92506 (951) 399-0080

PREPARED BY:

SEWER CERTIFICATION BLOCK  
I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.

Signature of Engineer  
MECHANICAL ENGINEER

7.10.08

DATE

AS-BUILT PLANS

MARK

REVISIONS

APPR. DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION

Signature of District Engineer  
MECHANICAL ENGINEER  
VOID AFTER ONE YEAR FROM THIS DATE

BENCH MARK  
NAIL w/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. 27981 RCFC NGVD 29. ELEVATION= 1568.64

WESTERN MUNICIPAL WATER DISTRICT

P.O. BOX 5286  
RIVERSIDE, CA. 92517-5286

450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508

(951) 789-5000 (BUS) (951) 780-3837 (FAX)



Rev. 2/28/00

MERIDIAN-UNIT 2  
TRACT NO. 30857-2

MECHANICAL & PLUMBING LEGEND NOTES  
SCHEDULES AND DETAILS

SCALE: AS NOTED

SHEET NO.

MP-1

21

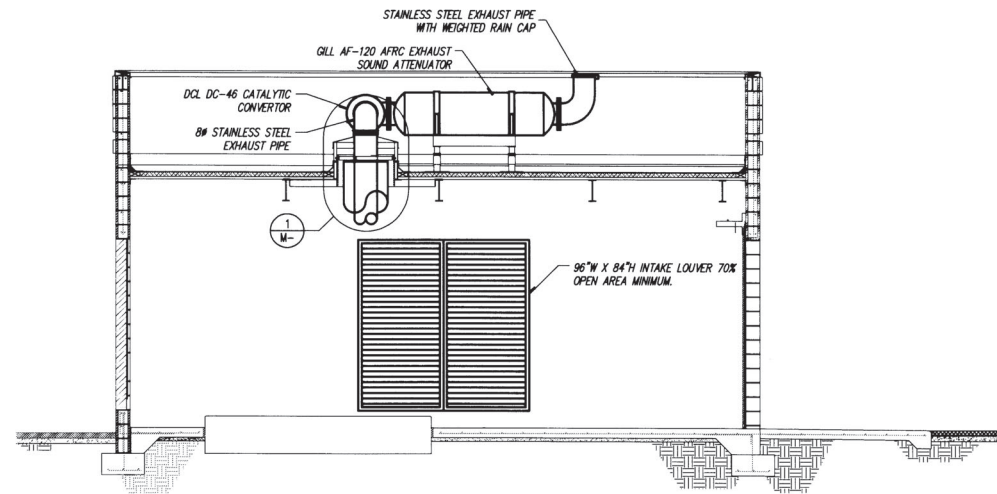
OF 22 SHTS

DWG. NO.:

TR 30857-2 2/1/22  
 SEWER LIFT STATION

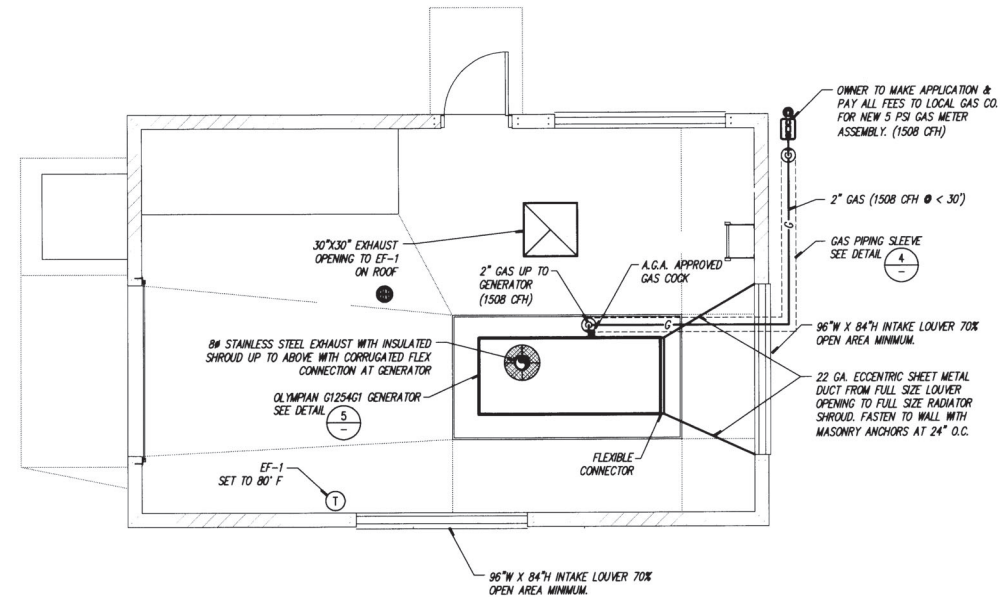


**CONSTRUCTION NOTES**



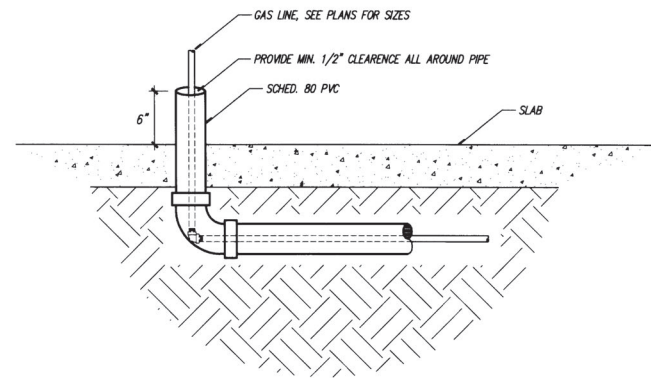
**MECHANICAL SECTION VIEW**

SCALE: 1/4" = 1'-0" **3**



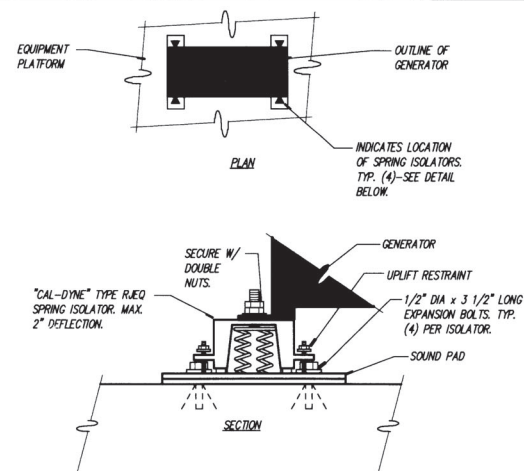
**MECHANICAL FLOOR PLAN**

SCALE: 1/4" = 1'-0" **2**



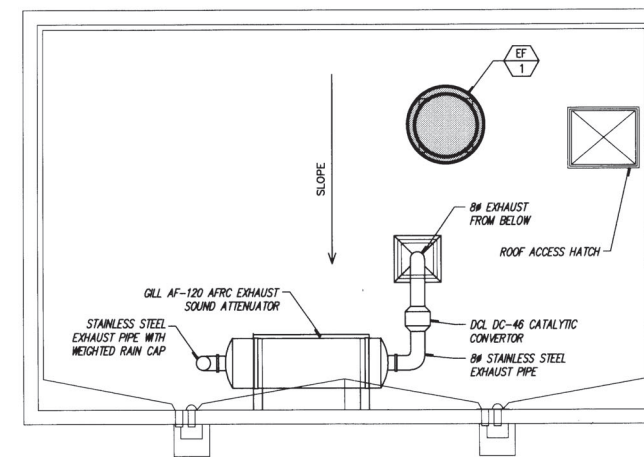
**GAS LINE BELOW SLAB DETAIL**

N.T.S. **4**



**GENERATOR MOUNTING DETAIL**

N.T.S. **5**



**MECHANICAL ROOF PLAN**



**MECHANICAL & PLUMBING FLOOR PLAN**

SCALE: 1/4" = 1'-0" **1**

SEWER 1260

**DESIGN WEST ENGINEERING**  
MECHANICAL - ELECTRICAL - ENERGY CONSULTING

1640 Parkway Center Dr., Suite 4000  
Riverside, CA 92518  
Phone: (951) 519-0700  
Fax: (951) 519-0704  
Email: ccsd@designwesteng.com

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8911 MAGNOLIA AVENUE  
RIVERSIDE CA 92508 (951) 388-0088

PREPARED BY:

**SEWER CERTIFICATION BLOCK**  
I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.

*Edward J. Hunt* 7/18/08  
MECHANICAL ENGINEER M-65389 DATE

AS-BUILT PLANS	7/18/08	APPR. DATE
REVISIONS		
MARK		

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION

*Frank A. ...* 7/18/08  
MECHANICAL ENGINEER M-26588 DATE  
VOID AFTER ONE YEAR FROM THIS DATE

BENCH MARK:  
NAIL w/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. Z7981 RCFC NGVD 29. ELEVATION= 1568.64

WESTERN MUNICIPAL WATER DISTRICT  
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MERIDIAN-UNIT 2  
TRACT NO. 30857-2

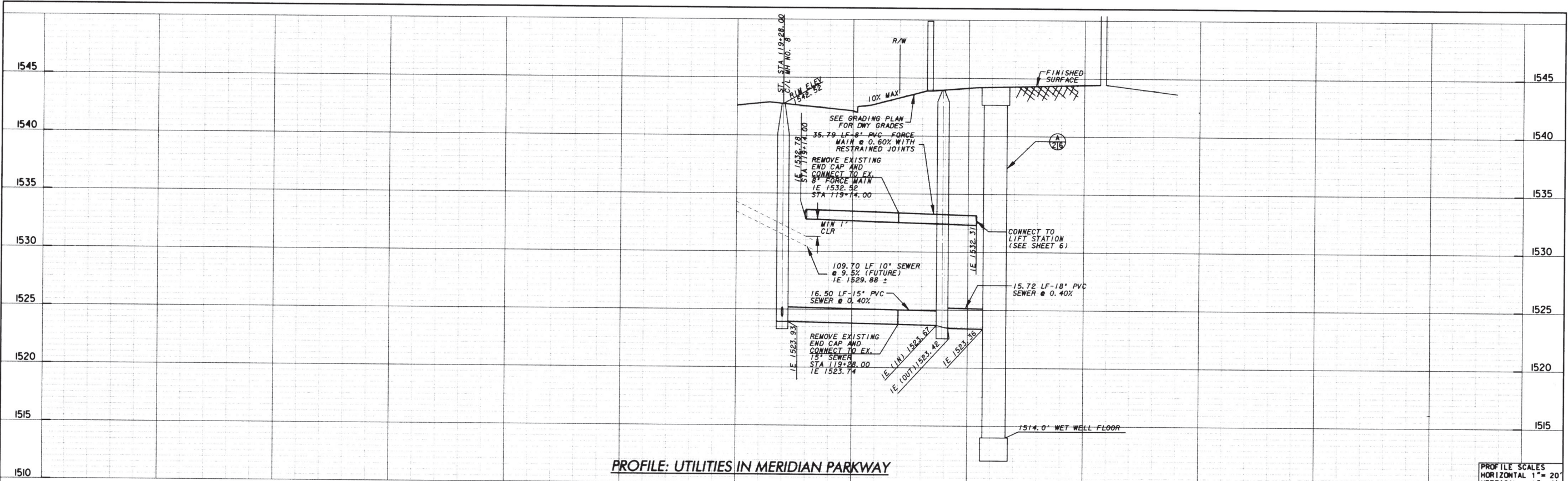
MECHANICAL & PLUMBING FLOOR PLAN

SCALE: AS NOTED

SHEET NO.  
**MP-2**  
**22**  
OF 22 SHTS  
DWG. NO.:

TR 30857-2 22/22  
 SEWER LIFT STATION





WATER DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N80°0'23"E		45.85'	2" PVC SCH. 40
2	N10°27'52"W		38.81'	2" PVC SCH. 40
3	N80°0'0"E		14.59'	1/2" PVC SCH. 40
4	N78°29'18"E		30.26'	2" PVC SCH. 40
5	VARIES		2.81'	2" PVC SCH. 40

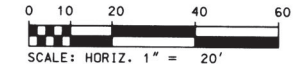
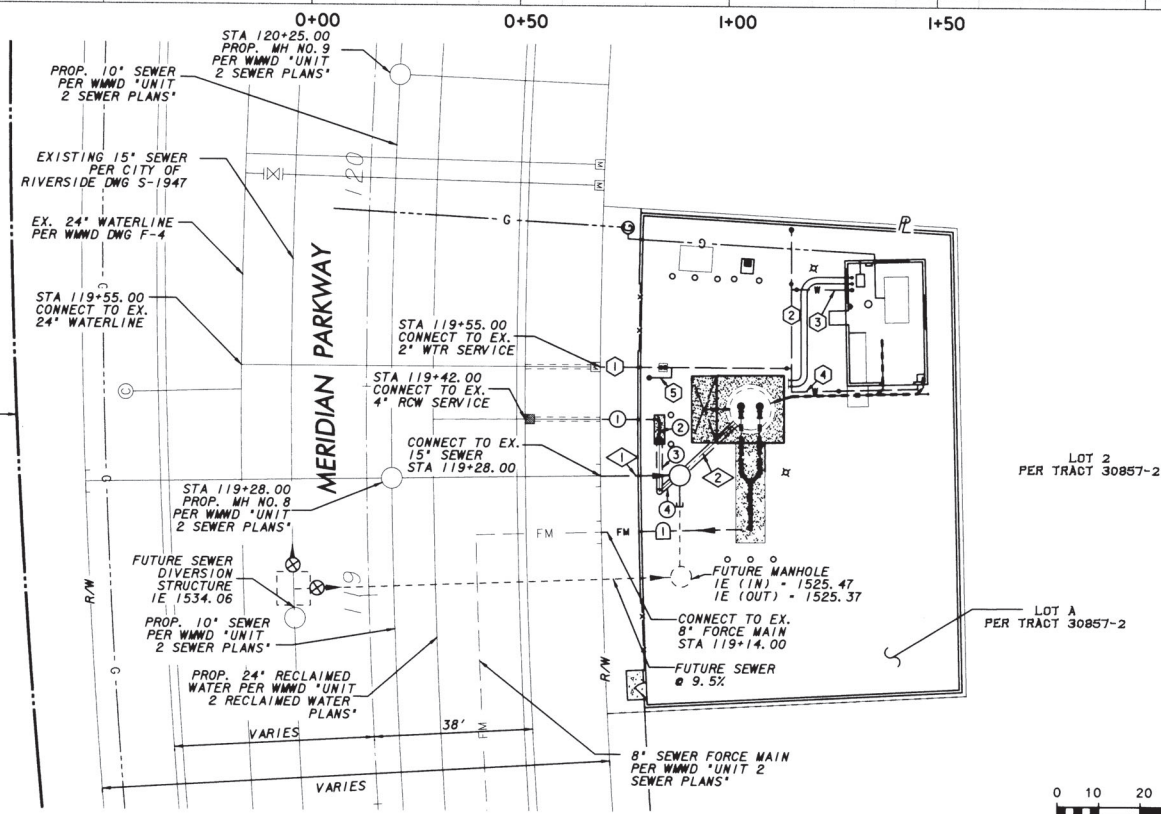
RECLAIMED WATER DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N10°10'39"W		29.93'	4" PVC SCH. 40
2	N79°39'23"E		4.87'	4" PVC SCH. 40
3	N79°39'23"E		12.39'	16" DIP
4	N51°56'20"W		3.72'	16" DIP

\* ALL RECLAIMED WATER SHALL BE INSTALLED WITH RESTRAINED JOINTS  
 \* HORIZONTAL LENGTH MEASURED ONLY, CONTRACTOR TO DETERMINE VERTICAL LENGTH FROM DETAILS IN DRAWINGS

SEWER DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N10°57'37"W		16.50'	15" PVC (SDR-35)
2	N53°28'52"W		15.72'	18" PVC (SDR-35)

FORCE MAIN DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N11°33'04"W		35.79'	8" PVC (CL-150)

\*C-900  
 \*\* ALL FORCE MAIN SHALL BE INSTALLED WITH RESTRAINED JOINTS



NOTE:  
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 Engineering, Planning and Environmental Consultants  
 517 Fourth Avenue - Suite 301 - San Diego, Ca. - 92101  
 Tel: (619) 234-9441 Fax: (619) 234-9433

PREPARED BY:  
*Samuel Lake McWhorter* 9/5/08  
 SAMUEL LAKE MCWHORTER R.C.E. 61788 DATE

**SEWER CERTIFICATION BLOCK**  
 I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the disposed system is adequate at this time to tract the anticipated wastes from the proposed tract.

*Samuel Lake McWhorter* 9/26/08  
 MECHANICAL ENGINEER M-26680 DATE

MARK	REVISIONS	APPR.	DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*Michael J. ...* 9/24/08  
 MECHANICAL ENGINEER M-26680 DATE  
 VOID AFTER ONE YEAR FROM THIS DATE

BENCH MARK:  
 NAIL w/ RCF TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARMON AVENUE. T7981 RCFCD NGVD 29. ELEVATION = 1568.64

**WESTERN MUNICIPAL WATER DISTRICT**  
 P.O. BOX 5286  
 RIVERSIDE, CA. 92517-5286  
 450 ALESSANDRO BLVD  
 RIVERSIDE, CA. 92508  
 (951) 789-5000 (BUS) (951) 780-3637 (FAX)

**MERIDIAN-UNIT 2**  
 TRACT NO. 30857-2  
**UNIT 2 SEWER LIFT STATION**  
 PLAN AND PROFILE

SHEET NO. 2 OF 22 SHTS  
 DWG. NO.: 1" = 4'

SCALE: HORIZ: 1" = 20' VERT: 1" = 4'

P:\CUTTED - 9/27/08 4:\Users\don\30857\0009\Design\Plans-Pumps\m02-Lift-Sew-02.dgn







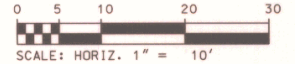


LOT 1 PER TRACT  
30857-2

NOTE:  
 TP- TOP OF CONCRETE PAD GRADE  
 FG- FINISHED GRADE AC PMT OR GRADED SURFACE  
 TF- TOP OF WALL FOOTING  
 TW- TOP OF WALL  
 FL- FLOW LINE  
 FF- FINISHED FLOOR  
 WET WELL ROOF TO BE LEVEL AND SET AT 1544.35

LOT 2 PER TRACT  
30857-2

LOT A  
PER TRACT  
30857-2



SEWER 1267

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 Engineering, Planning and Environmental Consultants  
 517 Fourth Avenue - Suite 301 - San Diego, Ca. - 92011  
 Tel: (619) 234-9411 Fax: (619) 234-9433  
 PREPARED BY: Samuel Lake McWhorter 9/5/06  
 SAMUEL LAKE MCWHORTER R. C. E. 61788 DATE

**SEWER CERTIFICATION BLOCK**  
 I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.  
 Approved by: *Paul Kowalsky* 9/26/06  
 MECHANICAL ENGINEER M-26689 DATE

MARK	REVISIONS	APPR. DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*Paul Kowalsky* 9/26/06  
 MECHANICAL ENGINEER M-26689 DATE  
 VOID AFTER ONE YEAR FROM THIS DATE  
 BENCH MARK:  
 NAIL w/ RCF TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD. AND EASTERLY OF HARMON AVENUE. Z7981 RCFCD NGVD 29. ELEVATION= 1568.64

WESTERN MUNICIPAL WATER DISTRICT  
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 RIVERSIDE, CA. 92517-5286  
 450 ALESSANDRO BLVD  
 RIVERSIDE, CA. 92508  
 (951) 789-5000 (BUS) (951) 780-3837 (FAX) Rev: 2/28/00

MERIDIAN-UNIT 2  
 TRACT NO. 30857-2  
 UNIT 2 SEWER LIFT STATION  
 GRADING PLAN  
 SCALE: HORIZ: 1" = 10'

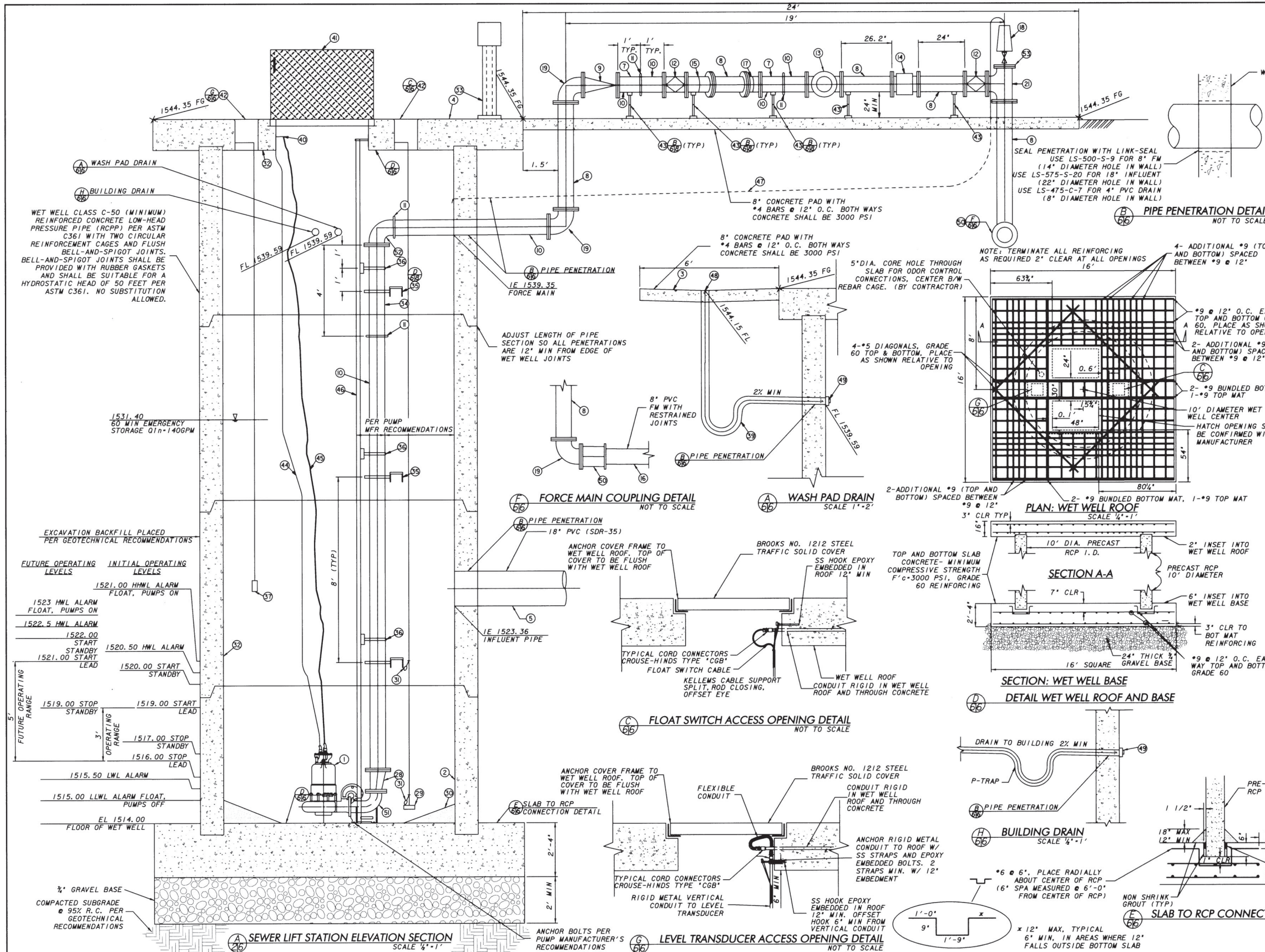
SHEET NO.  
4  
OF 22 SHTS  
DWG. NO.:

PLOTTED: 9/25/2006 K:\merid\005\000009\design\user\pumpsta2\unit2-ff+sw-04.dwg









- NOTES**
- SUBMERSIBLE FLYGT PUMP OR APPROVED EQUAL, 470 GPM @ 53' TDH WITH 10 HP, 1735 RPM, 460 VOLTS/3 PHASE/60 HZ EXPLOSION PROOF MOTOR.
  - 10'-0" DIA REINFORCED CONCRETE WET WELL WITH FIELD APPLIED LINING SYSTEM AS MANUFACTURED BY SANCON OR APPROVED EQUAL.
  - PUMP WASH DOWN PAD
  - CONCRETE WET WELL TOP SLAB
  - 18" PVC SDR-35 INFLUENT SEWER
  - 1" THREADED TAP W/ CORP STOP FOR PORTABLE PRESSURE GAUGE, CENTERED ON THE TOP OF THE PIPE EXTEND 3" ABOVE PIPE
  - 8" DUCTILE IRON SPOOL FLG x FLG
  - 8" SWING CHECK VALVE
  - 8" DIP SPOOL FLG x VICTAULIC
  - 8" VICTAULIC COUPLING, STYLE 77
  - 8" ECCENTRIC PLUG VALVE W/ HAND WHEEL, DEZURIK OR EQUAL
  - 8" x 8" TEE FLG x FLG x FLG W/BLIND FLG FOR TEMPORARY BYPASS CONNECTION
  - 8" SPARKING MAGNETIC FLOW METER FM656 OR APPROVED EQUIVALENT
  - 8" 45° BEND
  - 8" PVC C900 SEWER FORCE MAIN
  - 8" TRUE WYE
  - 2" COMBINATION SEWAGE AIR AND VACUUM VALVE
  - 8" 90° BEND
  - 8" x 8" TEE FLG x FLG x FLG
  - NOT USED ON THIS SHEET
  - 4" x 8" FLG x FLG ECCENTRIC REDUCER
  - SS WEIGHT ATTACHED TO SS CABLE ATTACHED TO 12" EMBEDDED HOOK, ATTACH FLOATS AND WEIGHT TO SS CABLE WITH NYLON TIES PER MANUFACTURERS RECOMMENDATIONS
  - GROUT FILL - SLOPES VARIES, 1.5" MAX HEIGHT, 1.0" MIN HEIGHT
  - MERCURY FLOAT SWITCH
  - FIELD APPLY 125 ml/l OF SANCON 100 ON CONCRETE INTERIOR SURFACE
  - ELECTRIC JUNCTION BOX AND STANCHION FOR PUMP POWER/ CONTROL CABLES, FLOATS, AND TRANSDUCER. SEE DETAIL ON SHEET 14. SEE SHEET 10 FOR EXACT LOCATION OF WET WELL ROOF.
  - 8" DIP SPOOL FLG x VICTAULIC - 4" MIN LENGTH
  - SS SUPPORT FOR FORCE MAIN, DETAIL D SHT B
  - 8" INTERMEDIATE GUIDE RAIL SUPPORT BRACKET PER FLYGT PART NUMBER 14-58 44 46
  - MILLTRONICS ECHOMAX XRS-5 ULTRASONIC LEVEL TRANSDUCER. SET ELEVATION 1524.00 INITIALLY FOR CALIBRATION. INSTALL W/ RIGID CONDUIT AND SUBMERGENCE SHIELD.
  - NOT USED ON THIS SHEET
  - 4" ABS DRAIN PIPING OPENING FROM PUMP WASH DOWN PAD TO WET WELL WITH P-TRAP
  - SS CONTROL CABLE MOUNTING BRACKET PER DETAIL ON SHEET 14
  - FLYGT ACCESS COVER MODEL FLDT-6AOSH-RS-RPC, SINGLE LEAF ALUMINUM COVER WITH DOUBLE GATE WITH STAINLESS STEEL HARDWARE, ODOR SUPPRESSIVE RIMSEAL GASKET AND DEBRIS GASKET, CLEAR OPENING - 30" x 48" CONFIRM HATCH OPENING SIZE WITH MANUFACTURER (300 #/SF LOADING)
  - 12" SQUARE OPENING IN CONCRETE TOP WITH CAST IRON RING AND BROOKS CB12/2 FRAME AND SOLID COVER FOR FLOAT SWITCH AND LEVEL TRANSDUCER
  - ADJUSTABLE PIPE SUPPORT, DETAIL B SHT B
  - SYNTHETIC RUBBER POWER AND CONTROL CABLE TO PUMP, HANG ON SUPPORT WITH STAINLESS STEEL KELLUM GRIPS AND LOOP CABLE OVER SUPPORT
  - LIFTING CABLE - TO FOLLOW THE SPECIFICATIONS FROM FLYGT LIFTING CABLE PART NUMBER 14-58 75 15, MIN LENGTH 50'
  - GUIDE RAIL PER FLYGT'S SPECIFICATIONS.
  - 2" AIR VALVE DRAIN (AVD) PIPING, SLOPES AT 2X TO WET WELL. PIPE AND FITTINGS SHALL BE SCH 40, 3/16 ST. STL.
  - 4" DROP INLET WITH GRATE
  - 4" FLAP VALVE
  - 8" FLANGED COUPLING ADAPTER FULLY RESTRAINED
  - 4" DIA STD CLASS 125 C. I. PUMP DISCHARGE ELBOW PER PUMP MFR SPECS.
  - 8" 90° BEND FL X VICTAULIC
  - BLIND FLANGE WITH 2" THREADED OUTLET AND 2" BALL VALVE

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PREPARED BY: Samuel Lake McWhorter R.C.E. 61788 DATE: 9/22/08

**SEWER CERTIFICATION BLOCK**  
 I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.

MECHANICAL ENGINEER M-26589 DATE: 9.24.08

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:

MECHANICAL ENGINEER M-26589 DATE: 9.24.08

VOID AFTER ONE YEAR FROM THIS DATE

BENCH MARK: NAIL W/ RCP TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD. AND EASTERLY OF HARMON AVENUE. 27961 RCFCD NGVD 29. ELEVATION: 1568.64

WESTERN MUNICIPAL WATER DISTRICT  
 P.O. BOX 5286  
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 RIVERSIDE, CA. 92508  
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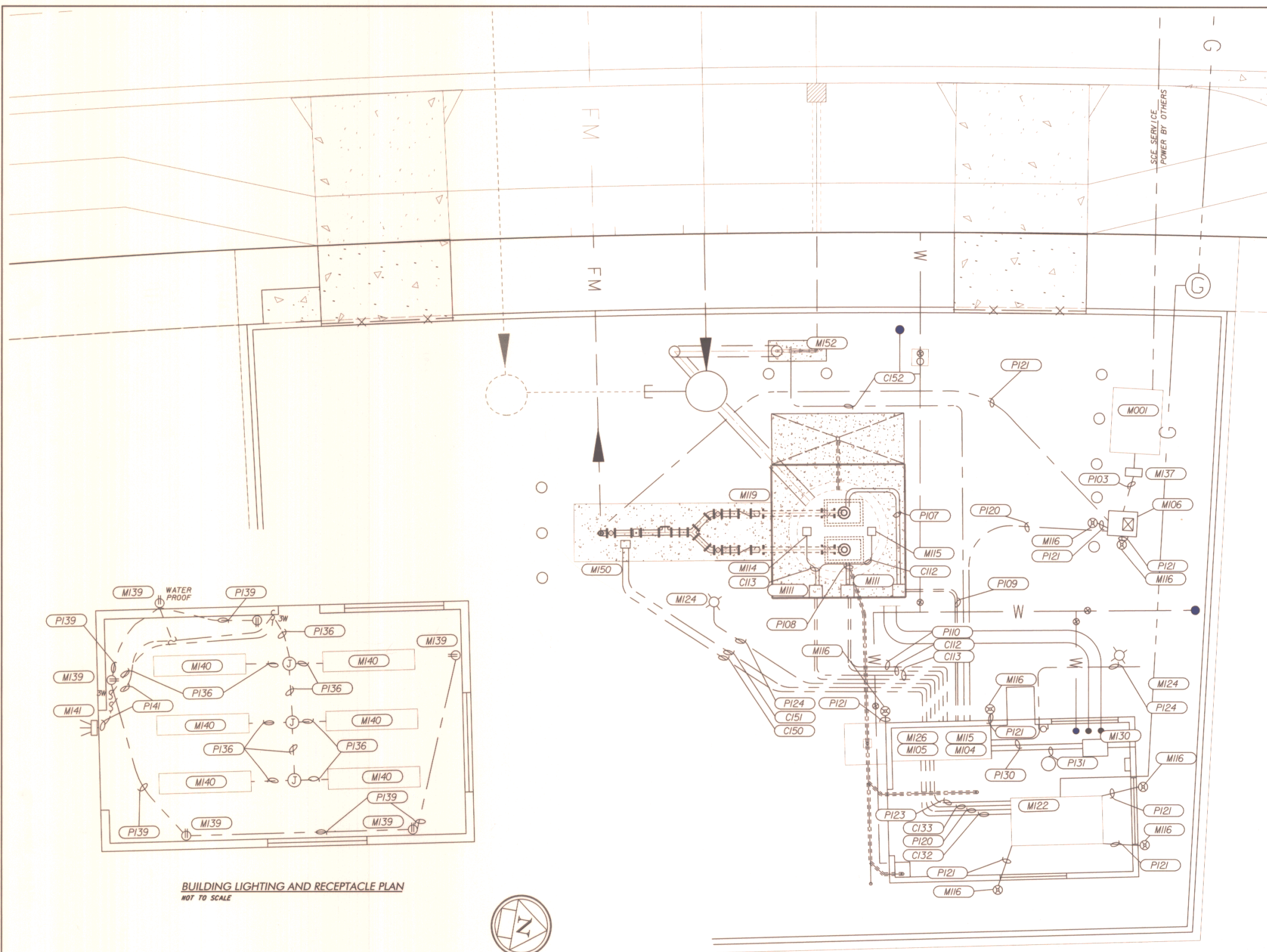
Meridian-Unit 2  
 Tract No. 30857-2

UNIT 2 SEWER LIFT STATION  
 WET WELL  
 SECTIONS AND DETAILS

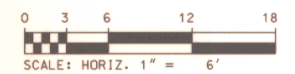
SHEET NO. 6  
 OF 22 SMTS  
 DWG. NO.:



WP 03 02 11 0002/04 400 01-045-1417-001



**BUILDING LIGHTING AND RECEPTACLE PLAN**  
NOT TO SCALE



**UNIT 2 SEWER LIFT STATION  
ELECTRIC NOTES**

- (MO01) UTILITY TRANSFORMER (INSTALLED BY OTHERS)
- (PI03) 4" CONDUIT ONLY - CONDUCTORS BY UTILITY CO.
- (MI04) MOTOR CONTROL CENTER 'MCC' - SEE ELEVATION ON SHEET E-5, & CONTROL DIAGRAM ON SHEET E-4
- (MI05) 200A, 3P, AUTO TRANSFER SWITCH 'ATS' FURNISHED BY MCC SUPPLIER.
- (MI06) S.C.E. APPROVED SERVICE METER MAIN PEDESTAL SEE SHEET E-5 FOR ELEVATION. 200A, 3PH, 4W 277/480V., COOPER-BEELINE \*CMP4111MCH1/M042K
- (PI07) 3" C. (1) 3/4"-8, 1"8GRD & 2" C (1) 5/8"-14 CABLES, 1"12 GRD. (CABLES SHALL BE CONTINUOUS AND UNSPLICED BETWEEN SUBMERSIBLE PUMP AND WET WELL JUNCTION BOX). PUMP #1
- (PI08) 3" C. (1) 3/4"-8, 1"8GRD & 2" C (1) 5/8"-14 CABLES, 1"12 GRD. (CABLES SHALL BE CONTINUOUS AND UNSPLICED BETWEEN SUBMERSIBLE PUMP AND WET WELL JUNCTION BOX). PUMP #2
- (PI09) 3" C. 3 \*8 (PUMP POWER) AND 1 \*8 BARE GROUND; AND 2" C. 5 \*12 (PUMP CONTROL) AND 1 \*12 BARE GROUND, 'PUMP #1'
- (PI10) 3" C. 3 \*8 (PUMP POWER) AND 1 \*8 BARE GROUND; AND 2" C. 5 \*12 (PUMP CONTROL) AND 1 \*12 BARE GROUND, 'PUMP #2'
- (MI11) JUNCTION BOX SIZE. SEE DETAIL SHEET E-6.
- (CI12) 3/4" C. WITH MILTRONICS TRANSDUCER CABLE (NO SPLICE), 1"12 GRD.
- (CI13) 3/4" C. 2"14 SUBMERSIBLE (FLOAT) CABLES. (NO SPLICE), 1"12 GRD
- (MI14) FLOAT SWITCHES - HIGH LEVEL ALARM AND LOW LEVEL PUMP SHUT DOWN CONTROL.
- (MI15) MILTRONICS ULTRASONIC LEVEL TRANSDUCER SEE DETAIL SHEET E-6
- (MI16) GROUND ROD & WELL SEE DETAIL SHEET E-6.
- (MI19) ALL ELECTRICAL WORK IN THE WET WELL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NEC ARTICLE 500, CLASS 1, DIVISION 1.
- (PI20) (1) 3" C., (4) \*3/0 & (1) \*1/0 GRD., THWN, CU.
- (PI21) 3/4" C. W/ (1) \*2 AWG CU GROUND BOND
- (MI22) STAND-BY NATURAL GAS ENGINE DRIVEN GENERATOR SET, OLYMPIAN 6100FS, RATE 100 KW, C.BPF, 480/277V, 3 PHASE, 4W, COMPLETE W/ SOUND ATTENUATION, BATTERY CHARGER AND 1000W COOLANT HEATER
- (PI23) 1-1/2" C., (4) \*12 & (1) \*12 GRD., THWN, CU TO PANEL 'B', 120VAC POWER FOR BATTERY CHARGER, GENERATOR PANEL & (1) 240V COOLANT HEATER.
- (MI26) PROVIDE PANEL 'B' IN 'MCC' ASSEMBLY, PANEL 'B' SHALL HAVE 14 CKTS WITH BKRS AS SHOWN IN SCHEDULE.
- (CI32) 3/4" C., (2) \*12 AND (1) \*12 GRD. (GENERATOR STATUS)
- (CI33) 3/4" C., (2) \*12 AND (1) \*12 GRD. (GENERATOR START)
- (PI30) 3/4" C. 4"16 AWG CABLE ODOR CONTROL COMM (ODOR CONTROL UNIT STATUS) 1"12 GRD
- (PI31) 3/4" C. 2"10 AWG, 1"10 GROUND ODOR CONTROL POWER
- (PI32) NOT USED
- (MI50) FLOW METER SENSOR AND FLOW METER SIGNAL CONVERTER AT FLOW METER
- (CI50) 3/4" C. 2"12, 1"12 GRD (FLOW METER POWER)
- (CI51) 3/4" C. RS485 2"16 AWG TWISTED CABLE, 1"12 GRD.
- (PI24) 2" C. 2 \*12 (LIGHT), 2 \*12 (RECEPTACLE), 1"12 GRD.
- (MI24) POLE MOUNTED LIGHT FIXTURE, SEE DETAIL SHEET E-6
- (MI30) ODOR CONTROL UNIT
- (MI37) NO. 5 PULL BOX FOR UTILITY SERVICE CONNECTION
- (MI38) BUILDING LIGHT SWITCH
- (PI36) 3/4" C. 2"12 (BUILDING LIGHT), 1"12 GRD
- (MI39) DUPLEX RECEPTACLE (WATER PROOF TYPE WHERE INDICATED)
- (PI39) 3/4" C. 2"12 (RECEPTACLE), 1"12 GRD
- (MI40) BUILDING INTERIOR LIGHT FIXTURE. SEE LIGHTING FIXTURE SCHEDULE TYPE B ON SHEET 9.
- (CI52) 3/4" C. 2"12 (RECLAIMED WATER VALVE SOLENOID), 1"12 GRD
- (MI52) SOLENOID ACTIVATED CLA-VAL
- (PI40) 3/4" C. 2"8 (BUILDING ELECTRICAL SUBPANEL), 1"8 GRD
- (MI41) BUILDING EXTERIOR LIGHT FIXTURE. SEE LIGHTING FIXTURE SCHEDULE TYPE C ON SHEET 9
- (PI42) 3/4" C. 2"12 (BUILDING EXTERIOR LIGHT), 1"12 GRD

SEWER1270

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Tel: (619) 234-9411 Fax: (619) 234-9433

PREPARED BY: *Steven Chan*  
STEVEN CHAN R.E.E. 15107 DATE: 9-5-08

**SEWER CERTIFICATION BLOCK**  
I certify that the design of the Sewer System in Tract No. 30857-2 is in accordance with the Sewer System expansion plans of Western Municipal Water District of Riverside County, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract.

*Paul Hensley* 9.24.08  
MECHANICAL ENGINEER M-26589 DATE

MARK	REVISIONS	APPR.	DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
*Paul Hensley* 9.24.08  
MECHANICAL ENGINEER M-26589 DATE  
VOID AFTER ONE YEAR FROM THIS DATE

BENCH MARK:  
NAIL w/ RCFC TAG AT THE SOUTHEAST CORNER OF PARKING LOT LYING NORTHERLY OF VAN BUREN BLVD., AND EASTERLY OF HARBOR AVENUE. Z7981 RCFCD NGVD 29. ELEVATION= 1566.64

WESTERN MUNICIPAL WATER DISTRICT  
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450 ALESSANDRO BLVD  
RIVERSIDE, CA. 92508  
(951) 788-5000 (BUS) (951) 788-3837 (FAX) Rev: 2/28/00

Meridian-Unit 2  
Tract No. 30857-2  
**UNIT 2 SEWER LIFT STATION**  
**ELECTRICAL PLAN**

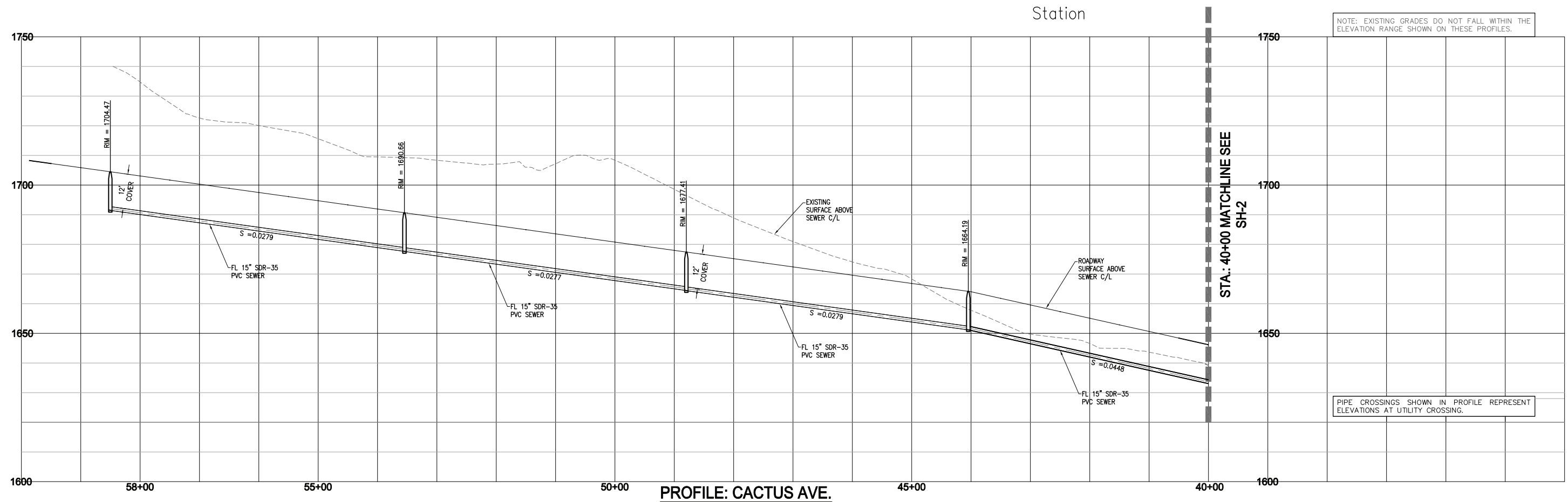
SHEET NO. 10  
OF 22 SHTS  
DWG. NO.: E-2

SCALE: HORIZ: 1" = 10' VERT: N/A

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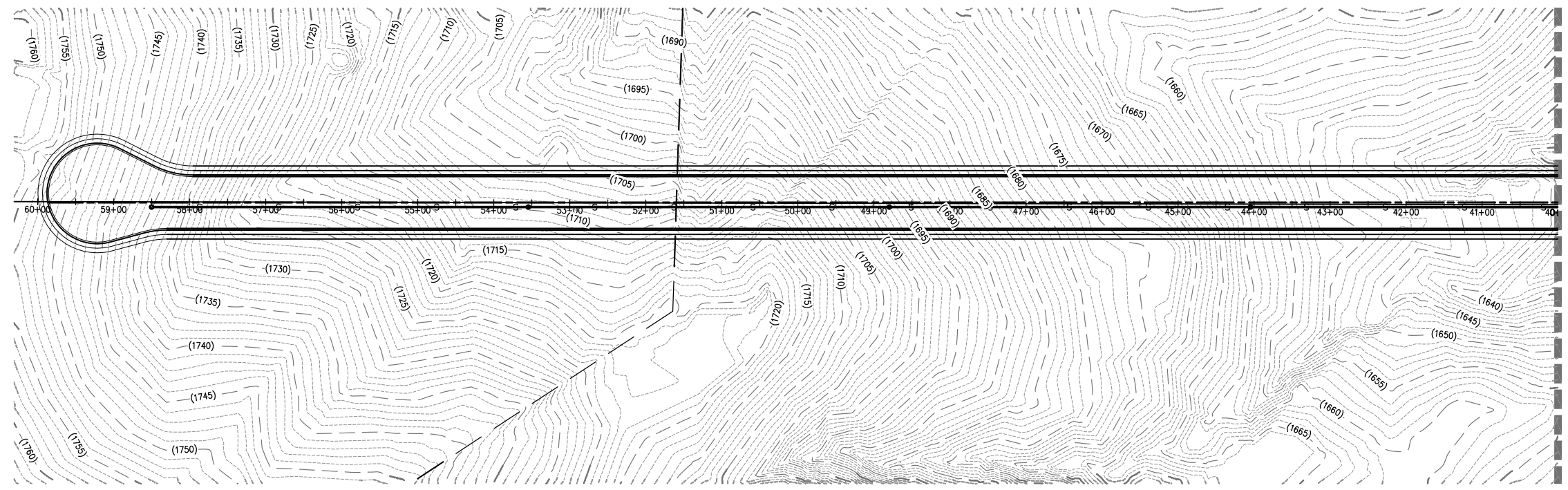


August 01, 2018 02:06:09pm M:\2017\17-300 Lewis Meridian West\EXH\EXH157 - Future Cactus Sewer EXT\17-300\_SWE\XH157\_Cactus\_Extension.dwg

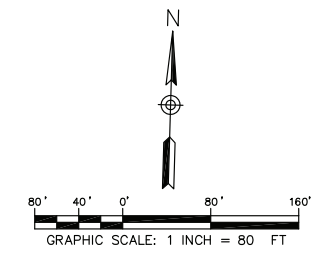


NOTE: EXISTING GRADES DO NOT FALL WITHIN THE ELEVATION RANGE SHOWN ON THESE PROFILES.

PIPE CROSSINGS SHOWN IN PROFILE REPRESENT ELEVATIONS AT UTILITY CROSSING.



**PLAN: CACTUS AVE.**



**NOTE:**  
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**CAUTION!!**  
LOCATION OF EXISTING UTILITIES ON THESE PLANS ARE APPROXIMATE AND SHALL BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION.



**CONCEPTUAL LAYOUT FOR DESIGN PLANNING ONLY**

PREPARED BY:  
**dlrc Engineering, Inc.**  
Civil Engineering/Land Surveying/Land Planning  
160 S. Old Springs Road  
Suite 210  
Anaheim Hills, CA 92808  
714-685-6860

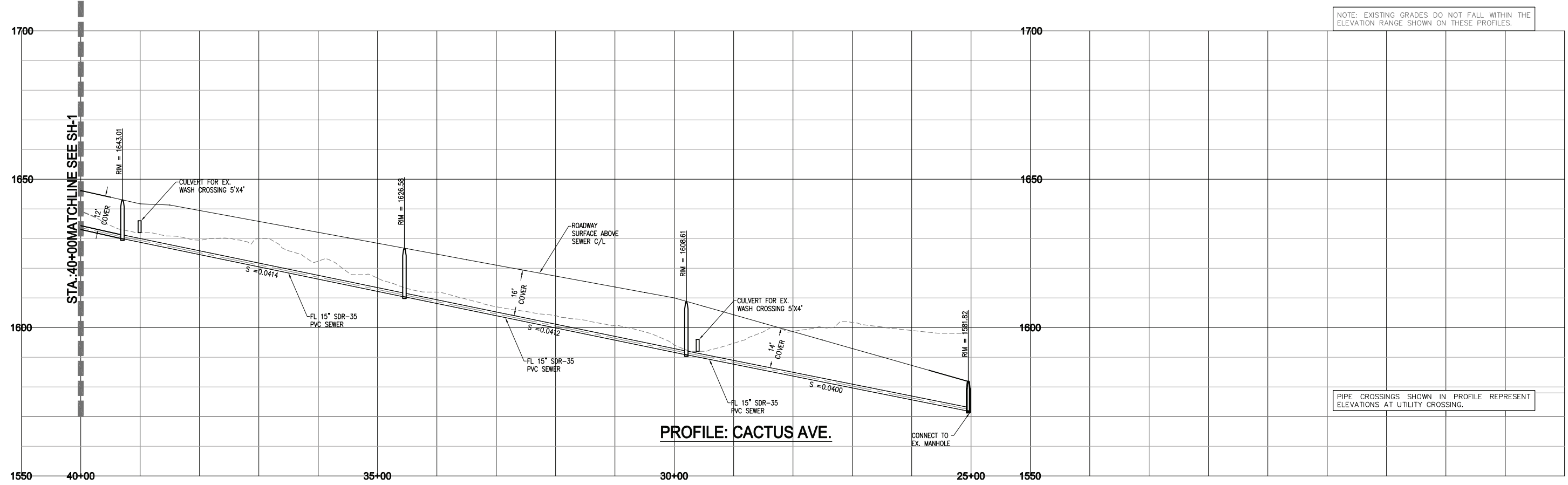
MARK	REVISIONS	APPR.	DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
  
DEREK KAWAH, DIRECTOR OF ENGINEERING, C-54253 DATE VOID AFTER ONE YEAR FROM THIS DATE  
  
BENCHMARK:  
A STANDARD U.S.C. & G.S. BRASS DISC STAMPED "Z 1143 1961" IN A CONCRETE POST ALONG THE A.T.S.F. RAILROAD SOUTH OF VAN BUREN BOULEVARD, RIVERSIDE COUNTY SURVEYORS POINT ID 600-43-68 DATUM: NOV/29 ADJ. 1971 ELEVATION 1532.70

WESTERN MUNICIPAL WATER DISTRICT  
  
14205 MERIDIAN PARKWAY  
RIVERSIDE, CA. 92518  
  
(951) 571-7100 (BUS) (951) 571-0590 (FAX)

<b>MERIDIAN - WEST CAMPUS TRACT NO. 37107</b> FUTURE SEWER EXHIBIT <b>CACTUS AVE. SEWER</b> <b>STA.: 25+02.47 TO STA.: 20+50</b> SCALE: HORIZ: 1"=80' VERT:		SHEET NO. <b>1</b> OF 2 SHTS DWG. NO.:
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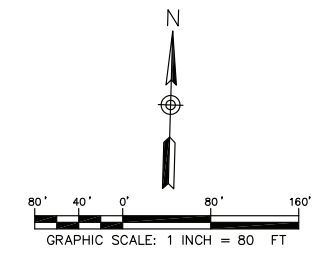
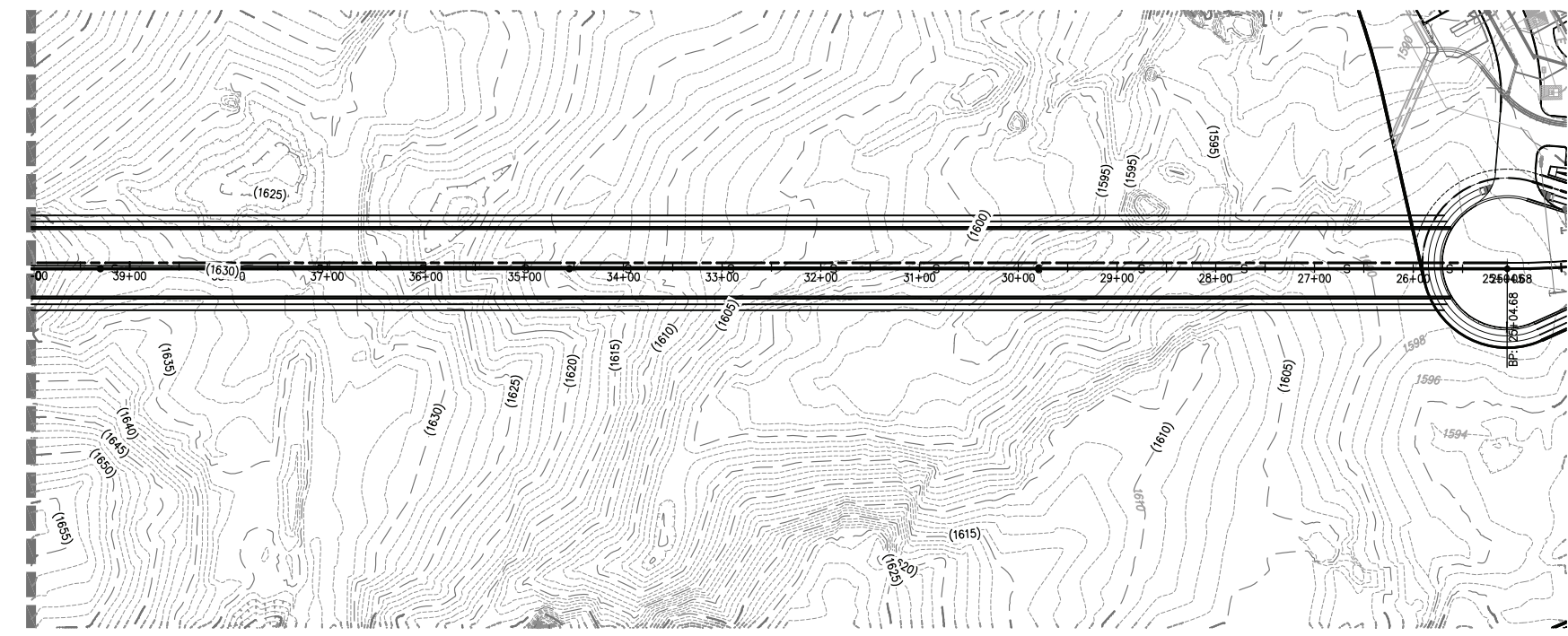
August 01, 2018 02:13:44pm M:\2017\17-300 Lewis Meridon West\EXH\EXH157 - FUTURE CACTUS SEWER EXT\17-300\_S\EXH157\_Cactus Extension.dwg



NOTE: EXISTING GRADES DO NOT FALL WITHIN THE ELEVATION RANGE SHOWN ON THESE PROFILES.

PIPE CROSSINGS SHOWN IN PROFILE REPRESENT ELEVATIONS AT UTILITY CROSSING.

STA.: 40+00 MATCHLINE SEE SH-1



**PLAN: CACTUS AVE.**

**CAUTION!!**  
LOCATION OF EXISTING UTILITIES ON THESE PLANS ARE APPROXIMATE AND SHALL BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION.

**NOTE:**  
THE DESIGN AND CONSTRUCTABILITY OF THE PROJECT AS WELL AS THE ACCURACY OF FIGURES ARE THE RESPONSIBILITY OF THE DESIGN ENGINEER. PLAN CHECK SERVICES BY W.M.W.D. WILL BE LIMITED TO THE ADHERENCE OF THE DISTRICT STANDARDS, MATERIALS, QUANTITIES AND SIZE OF FACILITIES, AS THEY RELATE TO THE SERVICE DEMANDS OR APPROVED MASTER PLAN. DELIVERY OF WATER TO THE IMPROVEMENTS SHOWN ON THESE PLANS IS DEPENDENT UPON COMPLETION OF THE PIPING PROPOSED AS PART OF OTHER PHASES OF THIS TRACT AND/OR OTHER ADJACENT TRACTS.



**CONCEPTUAL LAYOUT FOR DESIGN PLANNING ONLY**

PREPARED BY:  
**dlrc Engineering, Inc.**  
Civil Engineering/Land Surveying/Land Planning  
160 S. Old Springs Road  
Suite 210  
Anaheim Hills, CA 92808  
714-685-6860

MARK	REVISIONS	APPR.	DATE

APPROVED BY WESTERN MUNICIPAL WATER DISTRICT FOR CONSTRUCTION:  
DEREK KAWAI, DIRECTOR OF ENGINEERING, C-54253 DATE VOID AFTER ONE YEAR FROM THIS DATE  
BENCHMARK: A STANDARD U.S.C. & G.S. BRASS DISC STAMPED "Z 1143 1961" IN A CONCRETE POST ALONG THE A.T.S.F. RAILROAD SOUTH OF VAN BUREN BOULEVARD, RIVERSIDE COUNTY SURVEYORS POINT ID 600-43-68 DATUM: NOV-29 ADJ. 1971 ELEVATION 1532.70

WESTERN MUNICIPAL WATER DISTRICT  
14205 MERIDIAN PARKWAY  
RIVERSIDE, CA. 92518  
(951) 571-7100 (BUS) (951) 571-0590 (FAX)

<b>MERIDIAN - WEST CAMPUS TRACT NO. 37107</b> FUTURE SEWER EXHIBIT <b>CACTUS AVE. SEWER</b> STA.: 25+02.47 TO STA.: 20+50 SCALE: HORIZ: 1"=80' VERT:		SHEET NO. <b>2</b> OF 2 SHTS DWG. NO.:
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