Wastewater Collection System Condition Assessment

Summary Report

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May 2019

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Acknowledgements

We appreciate the combined efforts of the entire project team in the development and preparation of the San Marino Wastewater Collection System Condition Assessment. Our project team includes staff from the City and Dudek. The efforts of the following individuals are respectfully and gratefully acknowledged for their contributions to the completion of the evaluations presented in this report:

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Acronyms and Abbreviations

CCTV	closed-circuit television
CIP	Capital Improvement Program
CIPP	cured-in-place pipe
City	City of San Marino
d/D	Depth to Diameter ratio
FOG	fats, oils and grease
FSE	food service establishment
GIS	Geographic Information System
gpd	gallons per day
gpd/acre	gallons per day per acre
gpm	gallons per minute
HP	Horsepower
i.e.	id est (Latin for “that is”)
I/I	inflow and infiltration
LACSD	Los Angeles County Sanitation District
LACDPW	Los Angeles County Department of Public Works
LF	Lineal feet
mgd	million gallons per day
NASSCO	National Association of Sewer Service Companies
PACP	Pipeline Assessment and Certification Program
PDWF	peak dry weather flow
PWWF	peak wet weather flow
PVC	polyvinyl chloride
SSMP	Sewer System Management Plan
SSO	sanitary sewer overflow
VCP	vitrified clay pipe

Executive Summary

This Executive Summary provides highlights from the complete Wastewater Collection System Condition Assessment report, summarizing the key findings and recommendations of each section. The Executive Summary consists of the following sections:

- Key Project Objectives
- Service Area and System Overview
- Condition Assessment Summary
- O&M Programs Evaluation Summary
- Capital Improvement Program Recommendations

ES-1 Key Project Objectives

In April 2018, the City of San Marino (City) retained Dudek to prepare the City's wastewater collection system condition assessment. The goal of this project is to develop a clear understanding of the sewer collection system needs, both existing and future, and establish a management plan that supports those needs.

This 2019 Wastewater Collection System Condition Assessment seeks to address the following key objectives:

- Evaluate collection system condition through CCTV review and observations at pump stations to evaluate condition and identify needed improvements.
- Integrate operations and maintenance programs concurrent with a Sanitary Sewer Management (SSMP) update.
- Develop project costs and prioritize recommended capital improvement program (CIP) projects.

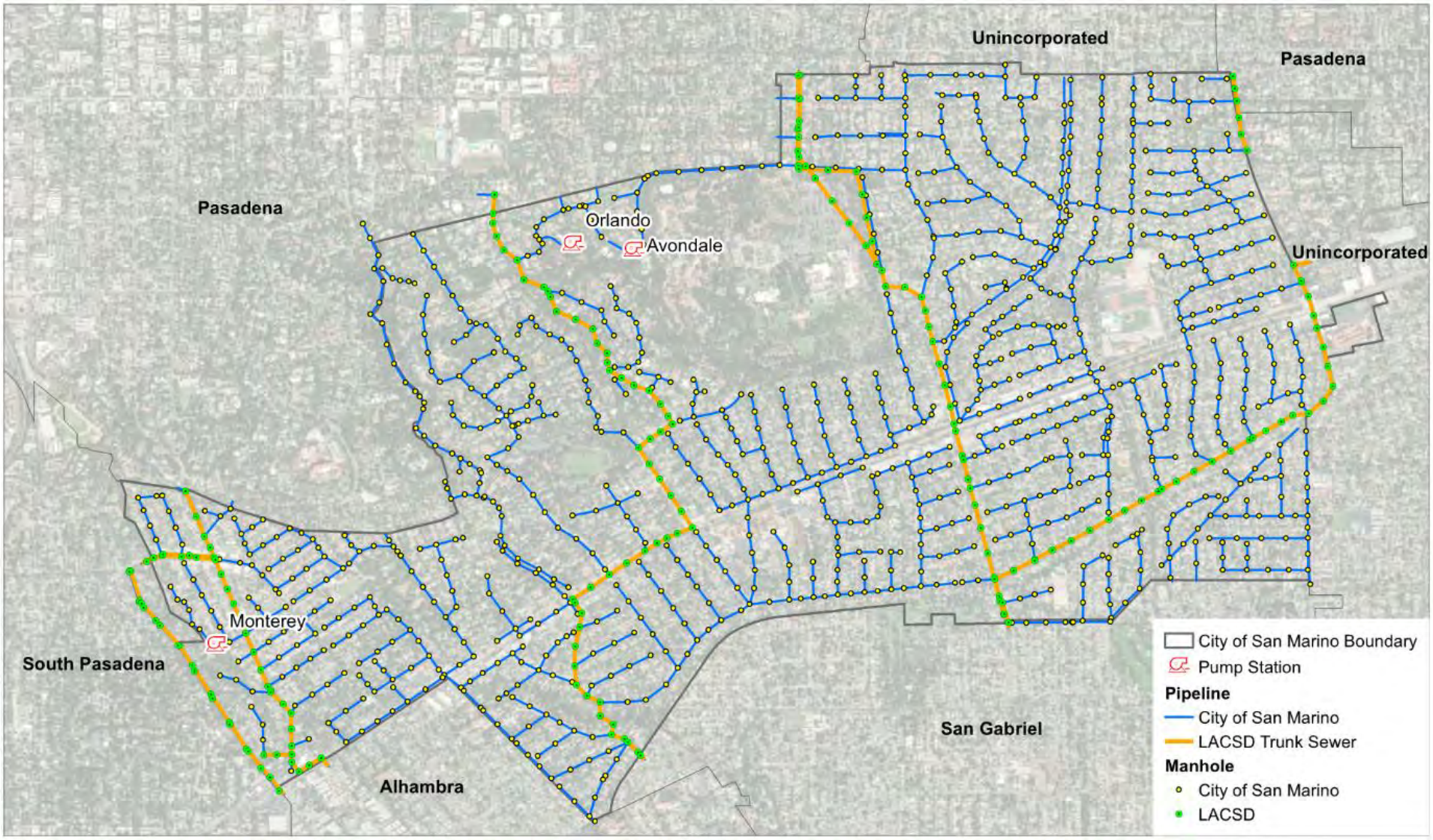
ES-2 Service Area and System Overview

The City of San Marino sewer service area covers approximately 3.8 square miles and is located 10 miles northeast of downtown Los Angeles. The City provides wastewater collection service to the majority of parcels within the City limits through 47.5 miles of gravity sanitary sewer pipelines and three (3) pump stations, as shown in **Figure ES.1**.

All sewage generated within the service area, and sewage passing through the service area from upstream connection points, is ultimately conveyed to Los Angeles County Sanitation District (LACSD) trunk sewers via 45 separate connections. Five (5) LACSD trunk sewers convey wastewater through the City of San Marino providing a continuous point for outfall of City wastewater into the trunk system. LACSD conveys, treats, and disposes of the City's wastewater flows. No sewer treatment takes place within the City service area.

The majority of the City land use is single-family residential (80%). In addition to residential, a large portion of the City contains the Huntington Gardens (19.2 acres or 11%), which is a Specimen Gardens and Arboreta land use type. The remaining 9% is predominantly made up of public facilities, retail/commercial and parks and recreation land use types.

Figure ES.1 - Sewer Collection System



ES-3 Condition Assessment Summary

Between 2015 and 2018, the City undertook a program to CCTV inspect and assess the condition of its gravity sewer mains. Defects, such as structural damage, corrosion, roots, and manhole degradation, were logged by the City and critical repairs addressed during subsequent annual sewer maintenance. The scope of the current pipeline condition assessment effort included review of CCTV inspection videos for 20 miles (433 sewer segments), or approximately 40% of the City's system.

The upstream and downstream manholes shown in the CCTV videos of these 433 sewer segments were also inspected when included in the CCTV videos. Manhole condition defects were found in several manhole troughs or walls. Upstream dead-end manholes with flush tank structures were also identified.

The CCTV video review and pump station inspections lead to recommendations for rehabilitation and repair of pipelines, manholes and pump stations within the City's system. The following **Tables ES-1** through **ES-3** summarize the findings and recommendations from each of those assessments. Results from the condition assessment went towards the development of the CIP recommended in this study.

Table ES.1: Gravity Sewer Condition Assessment Summary

Repair Description	Number of Segments	Quantity
Replace in Place, 8" Pipe	4	717 linear feet
Excavation Point Repair, 8" Pipe	19	19
CIPP Lining,6" or 8" Pipe	286	13.3 miles
In-Situ Point Repair, 8" Pipe	24	30
Trim Intrusion	38	44

Table ES.2: Manhole Condition Assessment Summary

Repair Description	Quantity
Manhole Trough Rehabilitation	63
Manhole Wall Rehabilitation	3
Modify Flush Tank	59

Table ES.3: Pump Station Condition Assessment Summary

Pump Station	Recommendations
Avondale	• Clean out sump and test sump pump and replace as necessary. • Repaint piping. • Construct bypass pump connection. • Test ventilation fan and replace as necessary. • Rehabilitate concrete in wet well. • Replace gasket on control panel enclosure. • Conduct electrical testing to verify if pump motor is overloading. • Setup scheduled maintenance program for pump station.
Orlando	• Install second pump and necessary piping. • Repaint piping. • Construct bypass connection. • Construct new valve vault to accommodate second pump. • Replace control panel to accommodate second pump. • Setup scheduled maintenance program for pump station.
Monterey	• Install second pump and necessary piping. • Construct bypass connection. • Repair minor spalled concrete area in wet well • Construct new dry well vault to accommodate second pump. • Replace control panel to accommodate second pump. • Setup scheduled maintenance program for pump station.

ES-4 O&M Programs Evaluation Summary

During the research and development of this Wastewater Collection System Condition Assessment and the Sanitary Sewer Management Plan (SSMP) update, existing and potential new operations and maintenance (O&M) programs were considered to improve long-term reliability, as well as to satisfy requirements of the SSMP and demonstrate the City's efforts to maintain the collection system and limit risk of sanitary sewer overflows. The following **Table ES-4** provides a summary of each program and the specific operations and maintenance recommendations for the program.

Table ES.4: O&M Programs Evaluation Summary

O&M Program	Recommendations
System Mapping & GIS Updates	• Continued update of the City's sewer GIS using surveyed ground surface elevations and influent and effluent pipeline inverts and diameter data. • Establishment of annual program to attribute and maintain accurate sewer GIS based on corrections identified in the field.
Sewer Pipeline Cleaning and CCTV Inspection	• No additional needs beyond existing program.
Condition Assessment and CIP Development	• Complete condition assessment and CIP development for the remaining 30 miles of collection system pipelines. • Implement a formalized process for regular review of CCTV inspection videos and development of CIP projects on an annual or biennial basis to ensure results of the CCTV video inspection are resulting in necessary system improvements.
Sewer Line Maintenance and Repair	• No additional needs beyond existing program.
FOG Inspection	• Increase FSE inspections to once annually. • Develop public education materials for FSEs regarding FOG best management practices to be distributed to FSEs during annual inspections and make available on the City's website. Given there are only 10 FSEs within the City limits, it is anticipated that current City staff can handle the additional inspection and no additional staffing is required.
Capacity Assurance and I/I Reduction	• Coordination of the installation of 10-11 Smart Covers during a three month period during the wettest months of the year (January through March, per historical rainfall data for the area) to capture response to rain dependent inflow and infiltration (I/I). Long-term goal of effort is the prioritization of basins for further research (smoke testing) and rehabilitation (CIPP lining). Should a significant I/I response be captured, it is recommended the City follow up with flow monitoring for improved measurement and isolation of high I/I areas.
Smoke Testing	• None at this time.
Pipe Lining	• Annual sewer pipeline rehabilitation by in-situ pipe lining at an estimated quantity of approximately 10,000 LF for an additional 10 years following the currently proposed CIP pipe lining program. Majority of pipelines targeted for lining will be 12-inches in diameter or smaller. Annual work is expected to be consolidated into a publicly bid construction contract and require both design engineering and construction management.
Manhole Inspection	• Annual manhole inspection program targeting observing and documenting the condition of manholes at a rate of 20% of the collection system annually. This totals approximately 210 MHs annually.
Manhole Rehabilitation	• Full rehabilitation of approximately 10 manholes annually and partial rehabilitation of approximately 32 manholes annually. The estimated frequency of manholes needing lining or rehabilitation should be re-evaluated annually based on observed trending of needs from manhole inspections.
Pump Station O&M	• Establish an ongoing pump station maintenance contract with a pump contractor to ensure regular maintenance and repair of the City's three (3) sewer lift stations and forcemains.

Table ES.4: O&M Programs Evaluation Summary

O&M Program	Recommendations
Overflow Emergency Response	• Purchase and provide regular training on mini-jetter and vacuum trailer to clear obstructions and capture small contained spill volumes. Purchase absorbent mats and containment pools to have in stock in case of smaller overflows.

ES-5 CIP Recommendations

Recommended projects were ordered based on priority and spread across a period of nine (9) years with a maximum annual CIP project cost of approximately $0.9M for calendar year 2020 and an average of $1.1M over the time period. Operations and maintenance staff costs were spread across a 9-year period and adjusted annually by 2% for inflation. Similarly, service contracts were spread across the 9-year period with a 2% adjustment annually for inflation.

Table ES-5 provides a detailed breakdown of the probable construction and project costs for the recommended gravity sewer rehabilitation and repair projects, as well as the recommended pump station upgrade projects. **Figure ES-2** summarizes in graphical form the various anticipated project and operations costs for the sewer collection system over the next 9-year period. **Table ES-6** provides a summary of the proposed breakdown of cost on an annual basis over the next 9-years.

Recommended CIP projects are shown graphically on **Figure ES-3**.

Table ES-5: Project Cost Summary

Project ID	Project Type	Description/Location	Priority	Probable Construction Cost	Probable Project Cost
Gravity Sewer Rehabilitation and Repair Projects				**Subtotal**	**$9,012,000**
R1	Sewer Rehabilitation and Repair	Open Trench Sewer Repairs at Various Locations	1	$429,000	$600,000
R2	Sewer Rehabilitation and Repair	Manhole Repair and Flush Tank Modification	2	$622,000	$815,000
R3	Sewer Rehabilitation and Repair	Sewer Lining and Repairs in Area 1A	3	$620,000	$812,000
R4	Sewer Rehabilitation and Repair	Sewer Lining and Repairs in Area 1B	3	$881,000	$1,154,000
R5	Sewer Rehabilitation and Repair	Sewer Lining and Repairs in Area 1C	3	$832,000	$1,089,000
R6	Sewer Rehabilitation and Repair	Sewer Lining and Repairs in Area 1D	3	$706,000	$924,000
R7	Sewer Rehabilitation and Repair	Sewer Lining and Repairs in Area 1E	3	$479,000	$627,000
R8	Sewer Rehabilitation and Repair	Sewer Lining and Repairs in Area 2A	3	$411,000	$538,000
R9	Sewer Rehabilitation and Repair	Sewer Lining and Repairs in Area 2B	3	$897,000	$1,174,000
R10	Sewer Rehabilitation and Repair	Sewer Lining and Repairs in Area 2C	3	$976,000	$1,279,000

Project ID	Project Type	Description/Location	Priority	Probable Construction Cost	Probable Project Cost
Pump Station Upgrade Projects				**Subtotal**	**$732,000**
PS1	Pump Station	Avondale PS Upgrades	2	$106,000	$133,000
PS2	Pump Station	Orlando PS Upgrades	2	$227,000	$285,000
PS3	Pump Station	Monterey PS Upgrades	2	$250,000	$314,000
				Total	**$9,744,000**

Figure ES.2 – Annual CIP Project and O&M Cost Summary

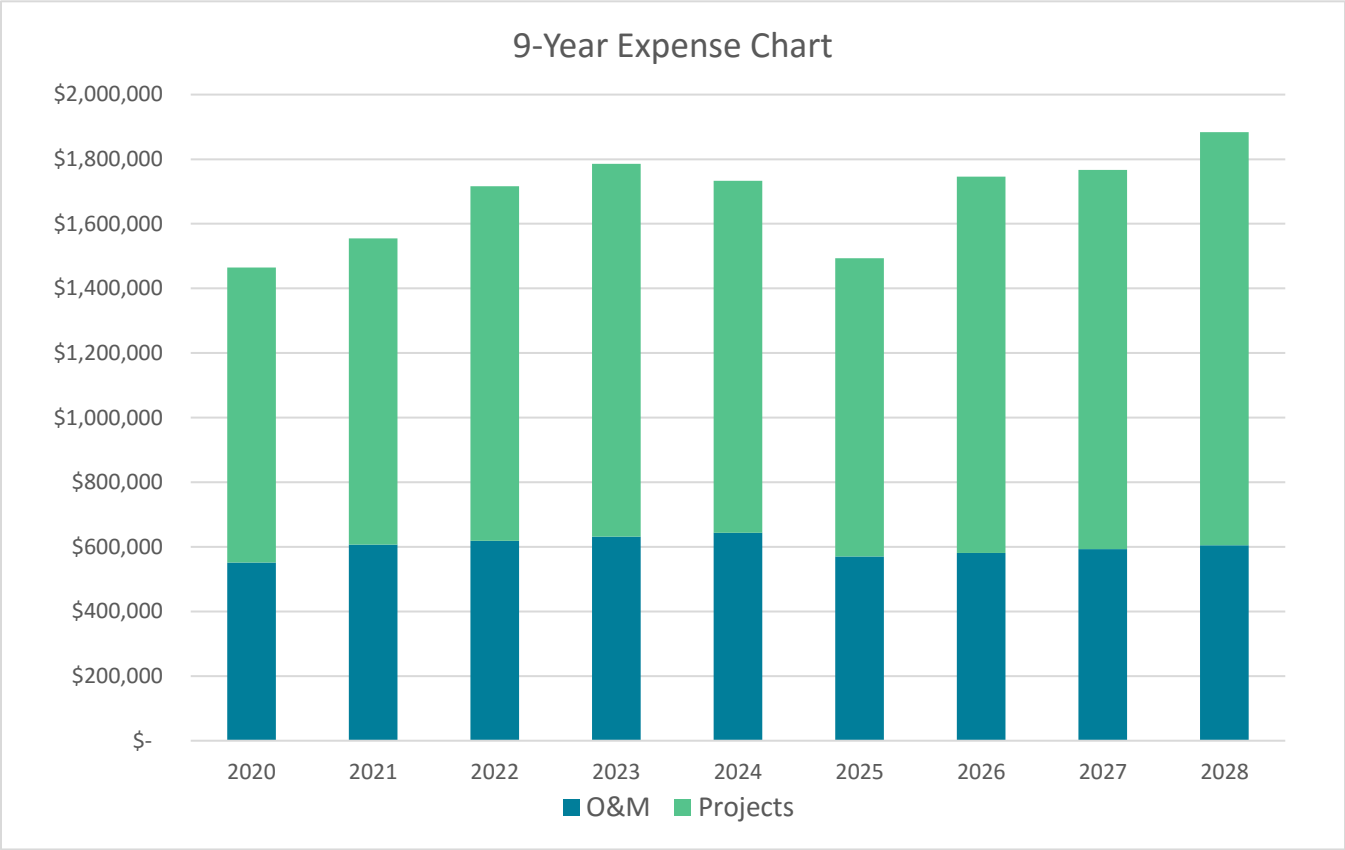
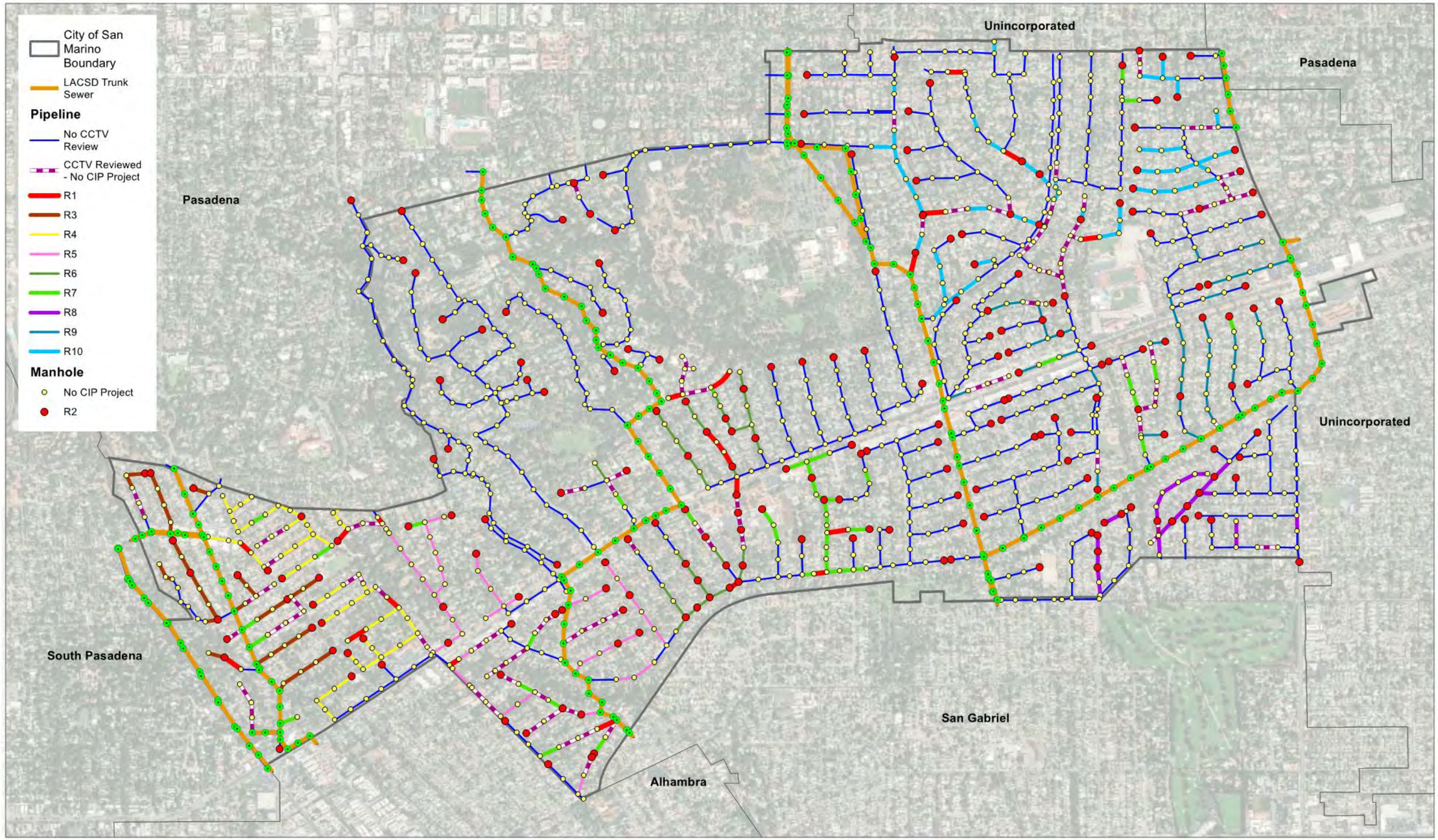


Table ES-6: Annual CIP Project and O&M Cost Summary

Project ID	Description/Location	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gravity Sewer Rehabilitation and Repair Projects		**$600,000**	**$815,000**	**$812,000**	**$1,154,000**	**$1,089,000**	**$924,000**	**$1,165,000**	**$1,174,000**	**$1,279,000**
R1	Open Trench Sewer Repairs at Various Locations	$600,000								
R2	Manhole Repair and Flush Tank Modification		$815,000							
R3	Sewer Lining and Repairs in Area 1A			$812,000						
R4	Sewer Lining and Repairs in Area 1B				$1,154,000					
R5	Sewer Lining and Repairs in Area 1C					$1,089,000				
R6	Sewer Lining and Repairs in Area 1D						$924,000			
R7	Sewer Lining and Repairs in Area 1E							$627,000		
R8	Sewer Lining and Repairs in Area 2A							$538,000		
R9	Sewer Lining and Repairs in Area 2B								$1,174,000	
R10	Sewer Lining and Repairs in Area 2C									$1,279,000
Pump Station Upgrade Projects		**$314,000**	**$133,000**	**$285,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
PS1	Avondale PS Upgrades		$133,000							
PS2	Orlando PS Upgrades			$285,000						
PS3	Monterey PS Upgrades	$314,000								
	Rehabilitation/Replacement Projects	**$914,000**	**$948,000**	**$1,097,000**	**$1,154,000**	**$1,089,000**	**$924,000**	**$1,165,000**	**$1,174,000**	**$1,279,000**
	O&M Staffing	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
	O&M Service Contracts	**$551,000**	**$606,900**	**$619,038**	**$631,419**	**$644,047**	**$569,928**	**$581,327**	**$592,953**	**$604,812**
	Annual TOTAL	**$1,465,000**	**$1,555,000**	**$1,716,000**	**$1,785,000**	**$1,733,000**	**$1,494,000**	**$1,746,000**	**$1,767,000**	**$1,884,000**

Figure ES.3 – Recommended Pipeline and Manhole Improvements



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1 Introduction

This Wastewater Collection System Condition Assessment report for the City of San Marino (City) evaluates the operation and condition of the existing wastewater collection system within the City of San Marino, and makes recommendations for future system improvements. This introductory section provides background information on the scope and objectives of the Wastewater Collection System Condition Assessment report, the City sewer system and services area, and the contents and organization of the report.

1.1 Background and Project Objectives

In April 2018, the City of San Marino (City) retained Dudek to prepare the City's wastewater collection system condition assessment. The goal of this project is to develop a clear understanding of the sewer collection system needs, both existing and future, and establish a management plan that supports those needs.

This 2019 Wastewater Collection System Condition Assessment seeks to address the following key objectives:

- Evaluate collection system condition through CCTV review and observations at pump stations to evaluate condition and identify needed improvements.
- Integrate operations and maintenance programs concurrent with a Sanitary Sewer Management (SSMP) update.
- Develop project costs and prioritize recommended capital improvement program (CIP) projects.

1.2 Service Area Overview

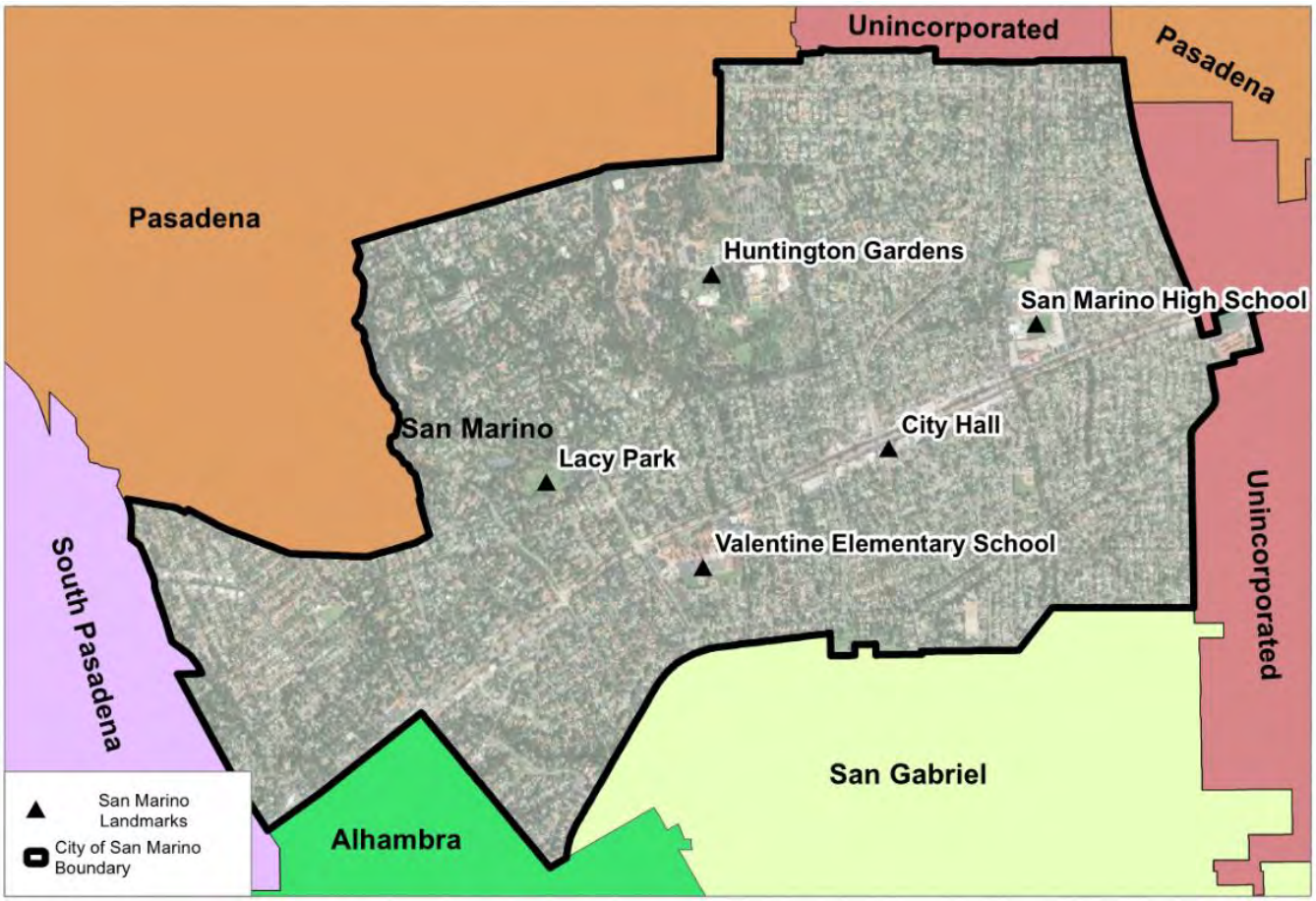
The City of San Marino, located in Los Angeles County, was incorporated in 1913. The U.S. Census Bureau estimates the 2017 population of the City at approximately 13,327. Sewer system collection operation and maintenance is provided by the City Parks and Public Works Department. Sewer treatment is provided by the Los Angeles County Sanitation District (LACSD).

The City of San Marino provides wastewater collection service to the majority of parcels within the City limits through 47.5 miles of gravity sanitary sewer pipelines and three pump stations. The City's wastewater collection system conveys untreated wastewater to the LACSD trunk sewer system via 45 separate connections. Five (5) LACSD trunk sewers convey wastewater through the City of San Marino providing a continuous point for outfall of City wastewater into the trunk system. LACSD conveys, treats, and disposes of the City's wastewater flows.

The City of San Marino sewer service area covers approximately 3.8 square miles and is located 10 miles northeast of downtown Los Angeles. The City is surrounded by several other cities and unincorporated areas of Los Angeles County as shown in **Figure 1.1**. The City (City Hall) is located at an elevation of 558-ft above sea level, with elevation increasing to the north toward the San Gabriel Mountains. Average annual precipitation is 18 inches and most rainfall occurs between November and March.

All sewage generated within the service area, and sewage passing through the service area from upstream connection points, is ultimately conveyed to LACSD trunk sewers for final treatment by LACSD. No sewer treatment takes place within the City service area.

Figure 1.1 - Service Area Boundary



1.3 Summary of Scope of Work

The following are primary tasks completed as part of the research, analysis, assessment and preparation of the Wastewater Collection System Condition Assessment.

- Data Collection and Review
- Condition Assessment
- Recommended Capital Improvement Program (CIP) Projects
- Wastewater Collection System Condition Assessment Report
- Sanitary Sewer Management Plan (SSMP) Update

1.4 Report Organization

The following list summarizes the sections included in this report.

- 1.0 – **Introduction** describes the background, objectives, scope of work, and report organization, key characteristics of the collection system and service area.
- 2.0 – **Existing System Description** summarizes the existing land use and current collection system infrastructure elements.
- 3.0 – **Condition Assessment** provides an evaluation of both the collection system reviews of 20-miles of sewer pipeline CCTV data and an overview of the status of the three City-operated sewer pump stations.
- 4.0 – **Operations and Maintenance (O&M) Programs Evaluation** outlines both existing and proposed operations and maintenance programs as identified both in discussions with the City and as identified in the SSMP Update (Appendix C).
- 5.0 – **Recommendations** are provided to address identified condition assessment issues of the collection and pump station infrastructure and prioritize recommended projects. Additional recommendations associated with long-term operations and maintenance of the collection system are included.

Included as appendices to the report are the following supporting materials:

- Appendix A – CCTV Condition Assessment Review Data
- Appendix B – Pump Station Inspection Notes
- Appendix C – SSMP Update
- Appendix D – CIP Cost Estimate sheets

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2 Existing System Description

This section summarizes the facilities of the City of San Marino wastewater collection system. These facilities include gravity collection sewers, manholes, force mains, and pump stations. Information regarding the existing wastewater collection system facilities was obtained from the City's sewer system Geographic Information System (GIS), previous reports and input from City staff.

The following sections provide information on the following elements of the existing system:

- Sewer Collection System
- Diversion Manholes
- Sewer Pump Stations and Force Mains
- Neighboring Agency Inflow Points
- Outfall Points
- Inter-Agency Agreements
- Sewer Treatment
- Sewer Flow Monitoring
- Sewer Trouble Spots
- Land Use

2.1 Sewer Collection System

The existing sewer collection system is comprised of 47.5 miles of gravity sewer pipelines and three (3) pump stations. The City's GIS is not attributed with pipeline diameter information, though based on CCTV inspection video review, it appears pipe diameters range in size from 6- to 12-inches in diameter. The majority of the pipes appear to be 8-inches in diameter. The most common pipe material appears to be vitrified clay pipe (VCP). A summary of the pipeline diameter and material found in the 20-mile CCTV pipeline review completed for this report is given in **Table 2.1**.

All flows generated within the City are conveyed to the LACSD system for additional conveyance and treatment. There are 45 outfall connections to the LACSD trunk sewer. **Figure 2.1** summarizes the existing sewer collection system infrastructure.

Table 2.1: CCTV Pipeline Information Summary by Diameter and Pipe Material

Pipeline Diameter (inches)	Length of Pipe (feet)	Length of Pipe (miles)	Pipe Material*	Length of Pipe (feet)	Length of Pipe (miles)
6	1,177	0.22	VCP	104,291	19.6
8	102,732	19.5	DIP	624	0.12
10	1,489	0.28	ACP	368	0.07
12	368	0.07	RPM	260	0.05
TOTALS	**105,766**	**20.0**	**TOTALS**	**105,543**	**20.0**

* Pipe material definitions include: vitrified clay pipe (VCP), ductile iron pipe (DIP), asbestos cement pipe (ACP) and reinforced plastic mortar pipe (RPM).

Figure 2.1 - Sewer Collection System



2.2 Diversion Manholes

Diversion Manholes are unique manholes where sewer flow can be conveyed through more than one outlet. Typically, stop logs are used to intentionally block one outlet to force water into an intended downstream path. During the process of investigating the past GIS data and atlas maps, two diversion manholes were identified. **Table 2.2** presents the data gathered at each of the two (2) diversion manholes, with locations shown in **Figure 2.2**.

Table 2.2: Diversion Manholes

ID	Location	City Manhole Number	Main Downstream Outlet Manhole No.	Secondary Downstream Outlet Manhole No.
1	San Marino Ave & Robles Ave	2458	2457	2102*
2	Rose Ave & Woodlawn Ave	2360	2359	2368

* Secondary pipe blocked by brick plug

Figure 2.2 – Diversion Manhole Locations



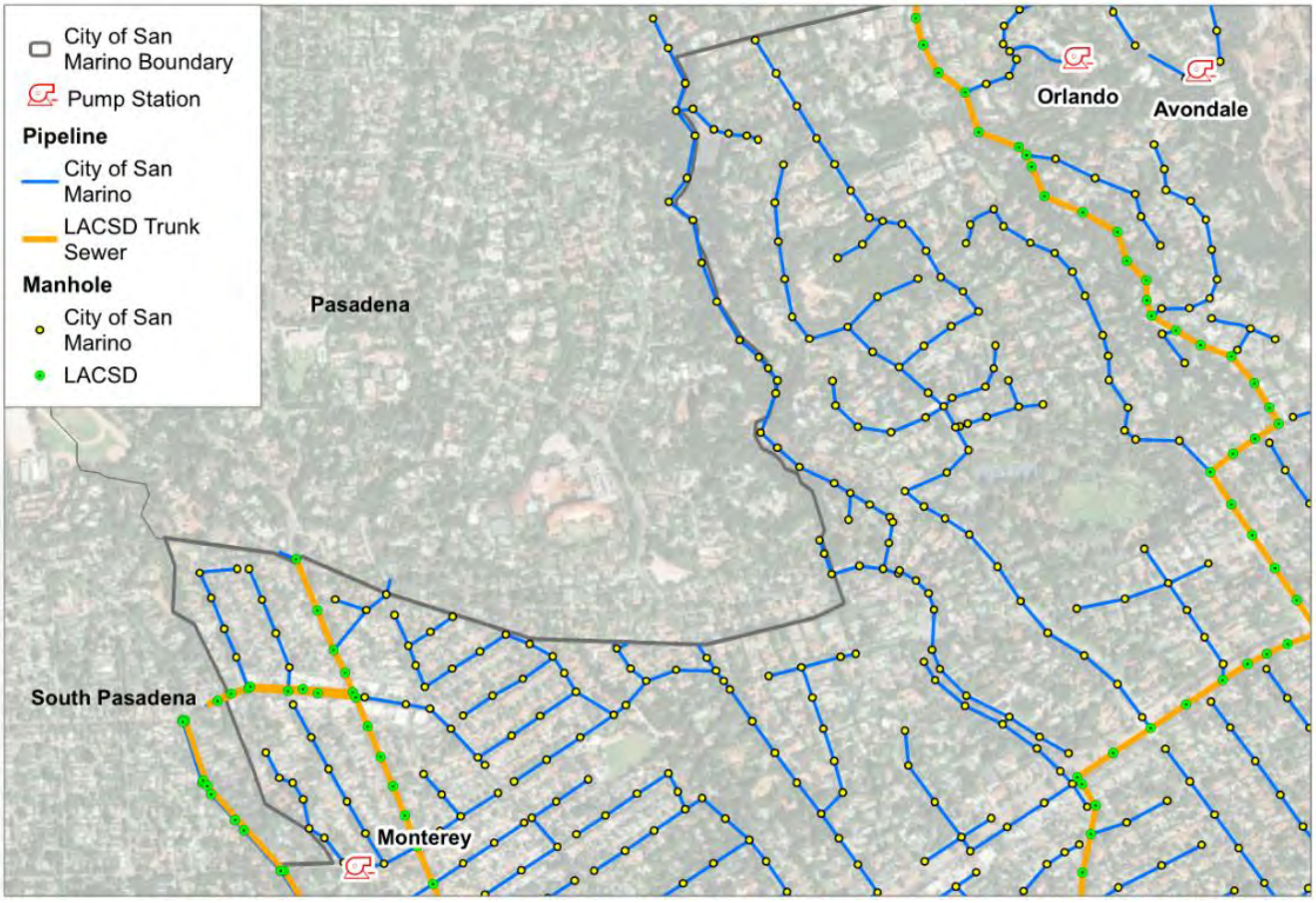
2.3 Sewer Pump Stations

The existing sewer system includes three (3) active, City-owned, operated and maintained sewer pump stations. **Table 2.3** provides general available information on each pump station while **Figure 2.3** shows their location within the system. Each of the three pumps stations have wet wells inside of City manholes. More detailed information for city pump stations is available in Section 3, Condition Assessment.

Table 2.3: Sewer Pump Stations

Name	Location	Wet Well City Manhole Number	No. of Pumps (# duty/# standby)	Pump Capacity (gpm)	Pump Design Head (ft)	Motor Size (HP)
Avondale	1045 Avondale Rd	1109	2 (1 duty / 1 standby)	275	45	10
Orlando	920 Orlando Pl	1094	1 (1 duty / 0 standby)	100	46	5
Monterey	2360 Monterey Rd	1323	1 (1 duty / 0 standby)	100	20	3

Figure 2.3 - Sewer Pump Station Location Map



2.4 Inflow Points

There are 16 connections from upstream agencies to the City of San Marino's sewer system; nine (9) connections from the City of Pasadena and seven (7) connections from LACDPW (in the unincorporated area along and north of San Pasqual Ave from Berkley Ave to San Gabriel Blvd). **Table 2.4** lists the locations, upstream agency, and City of San Marino manhole number of these 16 inlet connections. Locations of each inflow location presented on **Figure 2.4**. At the time of preparing this report, none of the inflow points have historic flow information. As part of the long term operation and maintenance of the collection system, further investigation as to the quantity of sewer flows into the City collection system will provide supporting data as part of potential future investigations as to the location and quantity of inflow and infiltration defect flows.

Table 2.4: Inflow Points

ID	Location	Upstream Agency	City Manhole Number
A	El Molino Ave & Old Mill Road	Pasadena	1298
B	Banning Way & Staats Place	Pasadena	1272
C	1660 Oak Knoll Avenue	Pasadena	1238
D	1120 Old Mill Road	Pasadena	1189
E	Canyon Behind 1415 Circle Drive	Pasadena	1519
F	1200 Encino Drive	Pasadena	1153
G	Canon Drive & Kewen Drive	Pasadena	1129
H	Holladay Road & Orlando Road	Pasadena	1103
I	551 Greenwood Avenue	Pasadena	2604
J	543 Berkeley Avenue	LACDPW	2600
K	560 Sierra Vista Avenue	LACDPW	2114
L	605 Sierra Madre Blvd	LACDPW	2549
M	608 Sierra Madre Blvd	LACDPW	2547
N	Winston Ave and California Blvd	LACDPW	2648
O	574 Santa Anita Avenue	LACDPW	2013
P	546 La Paz Drive	LACDPW	2016

2.5 Outfall Points

Collected sewer flow within the City is conveyed to a series of outflow connection points for eventual treatment by LACSD. Five (5) LACSD trunk sewers traverse through the City. The following **Figure 2.4** displays the location of each LACSD trunk sewer. Below is a brief summary of each trunk sewer.

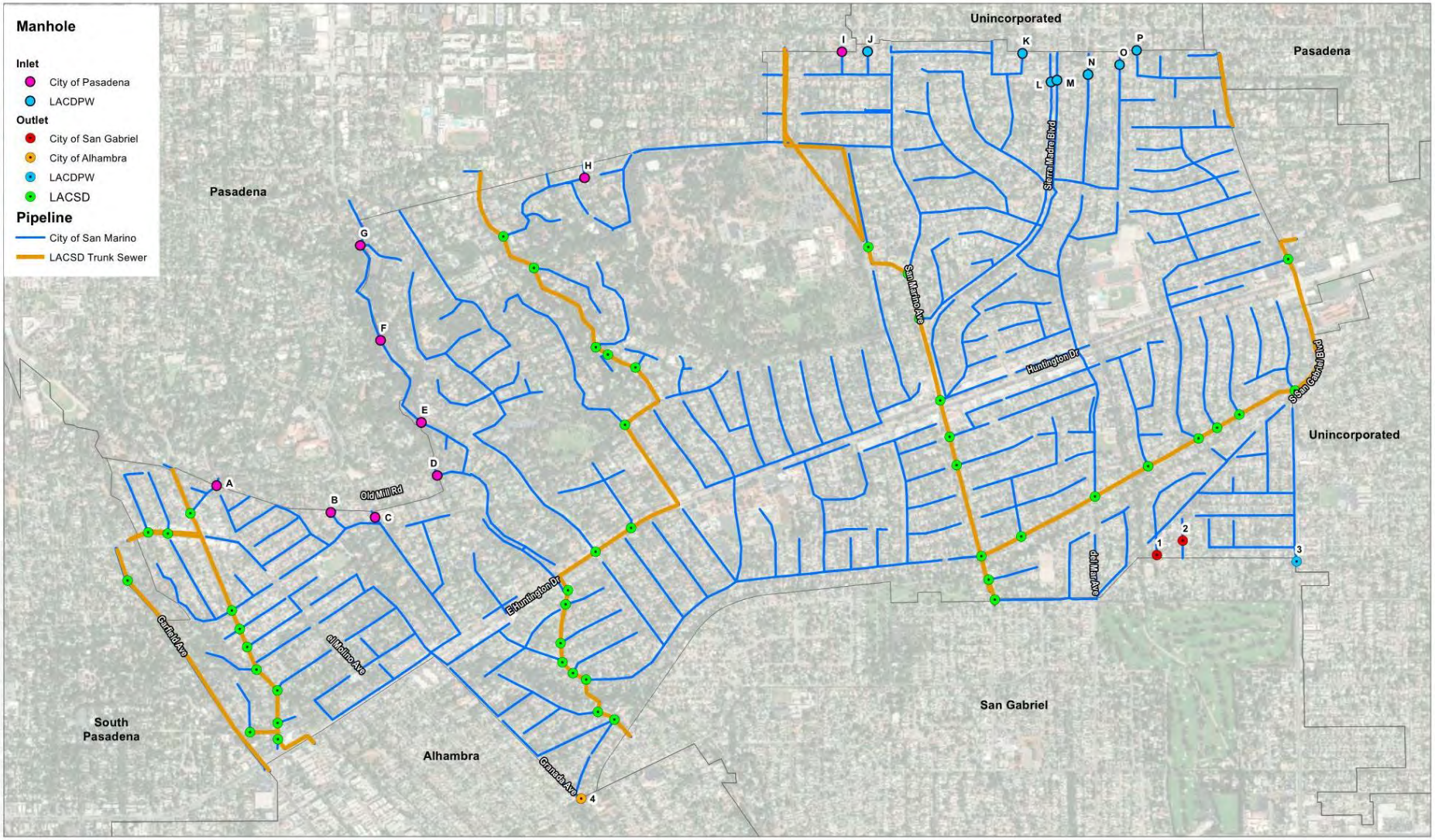
- Two (2) LACSD trunk sewers generally flow in a north to south direction along Garfield (16-inch to 30-inch diameter) and Los Robles Avenues (8-inch to 21-inch diameter).
- One (1) LACSD trunk sewer (middle-west) begins at the intersection of Arden Road and Rosalind Road, traversing south on Rosalind Road and Virginia Road until it heads west onto Huntington Drive (14-inch to 18-inch diameter). It subsequently turns south to parallel Old Mill Road into the City of San Gabriel (16-inch to 20-inch diameter).
- One (1) LACSD trunk sewer (middle-east) begins at the intersection of Homet Road and Allen Avenue, traversing south on Allen Avenue, Oxford Road, Stratford Road, and finally into San Marino Avenue into the City of San Gabriel (12-inch to 15-inch diameter).
- One (1) LACSD trunk sewer is located on the border of the City of San Marino and the unincorporated area of East San Gabriel. This trunk sewer flows south on San Gabriel Blvd, turning southwest on Lorain Road until it merges with the fourth LACSD trunk sewer at San Marino Avenue (24-inch to 30-inch).

There are 45 outfall connections from the City collection system to the LACSD trunk sewers. There are four (4) outflow points to the neighboring agencies of Alhambra, San Gabriel, and LACDPW. Locations of all 49 outfall points are presented in **Figure 2.4**. Similar to the inflow points, no current or historic flow data exists at the outfall points. Without inflow or outflow data, there is no accurate means of estimating the sewer flow generation within the City service area beyond assumed flows based on land use and parcels.

Table 2.5: Outfall Points

Downstream Agency	Number of Connections
LACSD (Garfield Ave)	1
LACSD (Los Robles Ave)	11
LACSD (middle-west)	16
LACSD (middle-east)	9
LACSD (San Gabriel Blvd)	8
City of San Gabriel	2
LACDPW (unincorporated area of East San Gabriel)	1
City of Alhambra	1
TOTAL OUTFALL POINTS	**49**

Figure 2.4 - Sewer Inlet and Outlet Locations



2.6 Inter-Agency Agreements

The LACSD both conveys wastewater into and collects wastewater from the City for downstream treatment. There is no formal agreement between the City of San Marino and the LACSD for wastewater treatment. LACSD charges customers within its overall service area, including City of San Marino, as part of the annual property tax roll for wastewater treatment and maintenance of their infrastructure. Operation and maintenance of sewer infrastructure within the City is the responsibility of the City and has been funded through monthly sewer bills to customers.

There is no known monitoring of inflows from the City into the LACSD trunk sewer system. According to preliminary discussions between the City and LACSD, responsibility and ownership of the collected wastewater transfers from the City to LACSD at the outfall locations. In the event the City chooses to entertain sewer treatment as a means to offset water usage by distribution of treated non-potable recycled water to customers, further investigation and coordination with LACSD is recommended.

No other inter-agency agreements are known to exist between the City of San Marino and either Alhambra, San Gabriel or LACDPW for water passed between agencies.

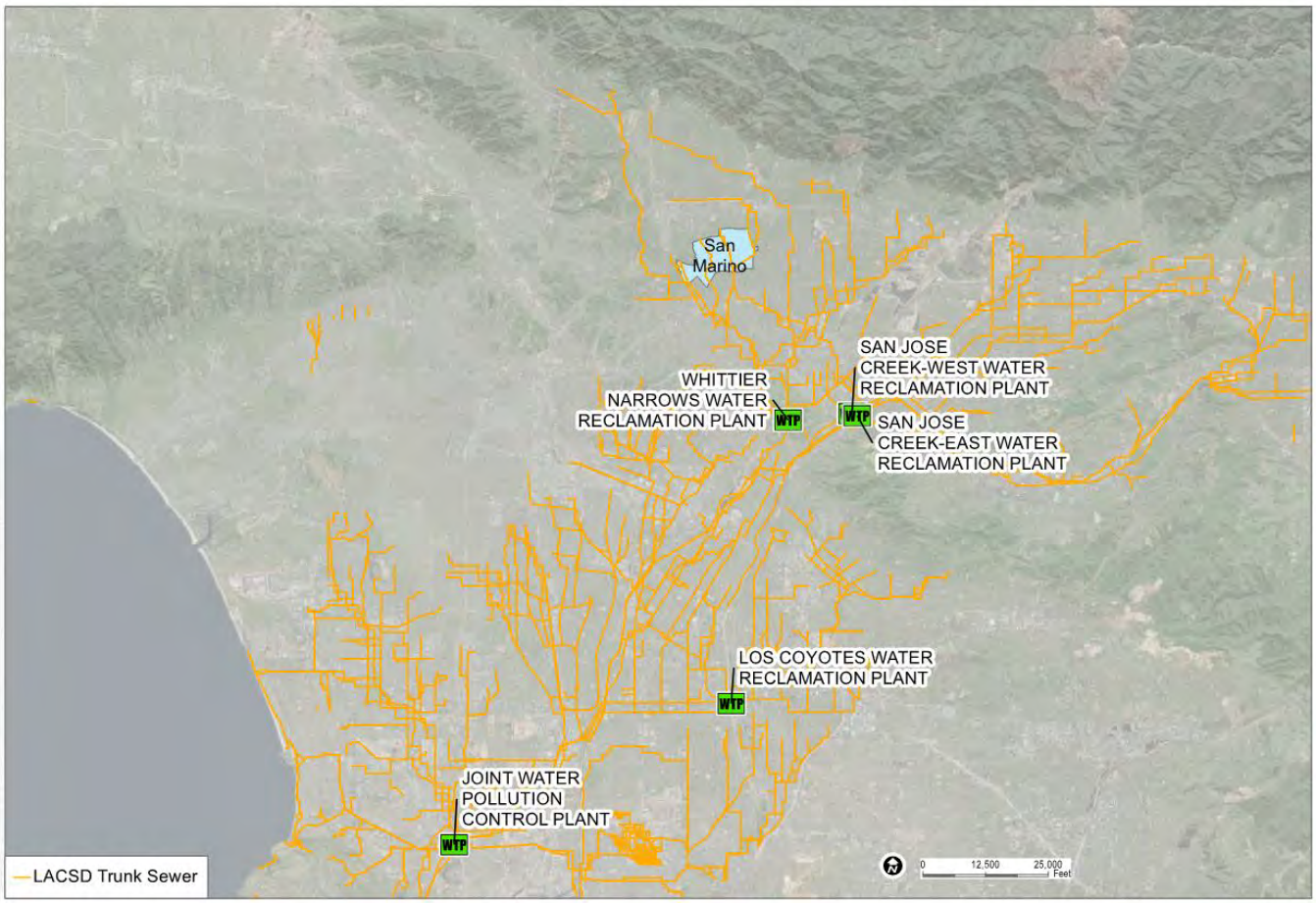
2.6.1.1.1. Sewer Treatment

City sewage is collected and conveyed through the LACSD collection system to one or more LACSD treatment plants. These plants include the following:

- San Jose Creek Water Reclamation Plant (WRP), located in the City of Industry,
- Whittier Narrows WRP, located near the City of South El Monte, and/or
- Los Coyotes WRP, located in the City of Cerritos

The following **Figure 2.5** shows the location of LACSD treatment plants relative to the City of San Marino.

Figure 2.5 - LACSD Treatment Plants



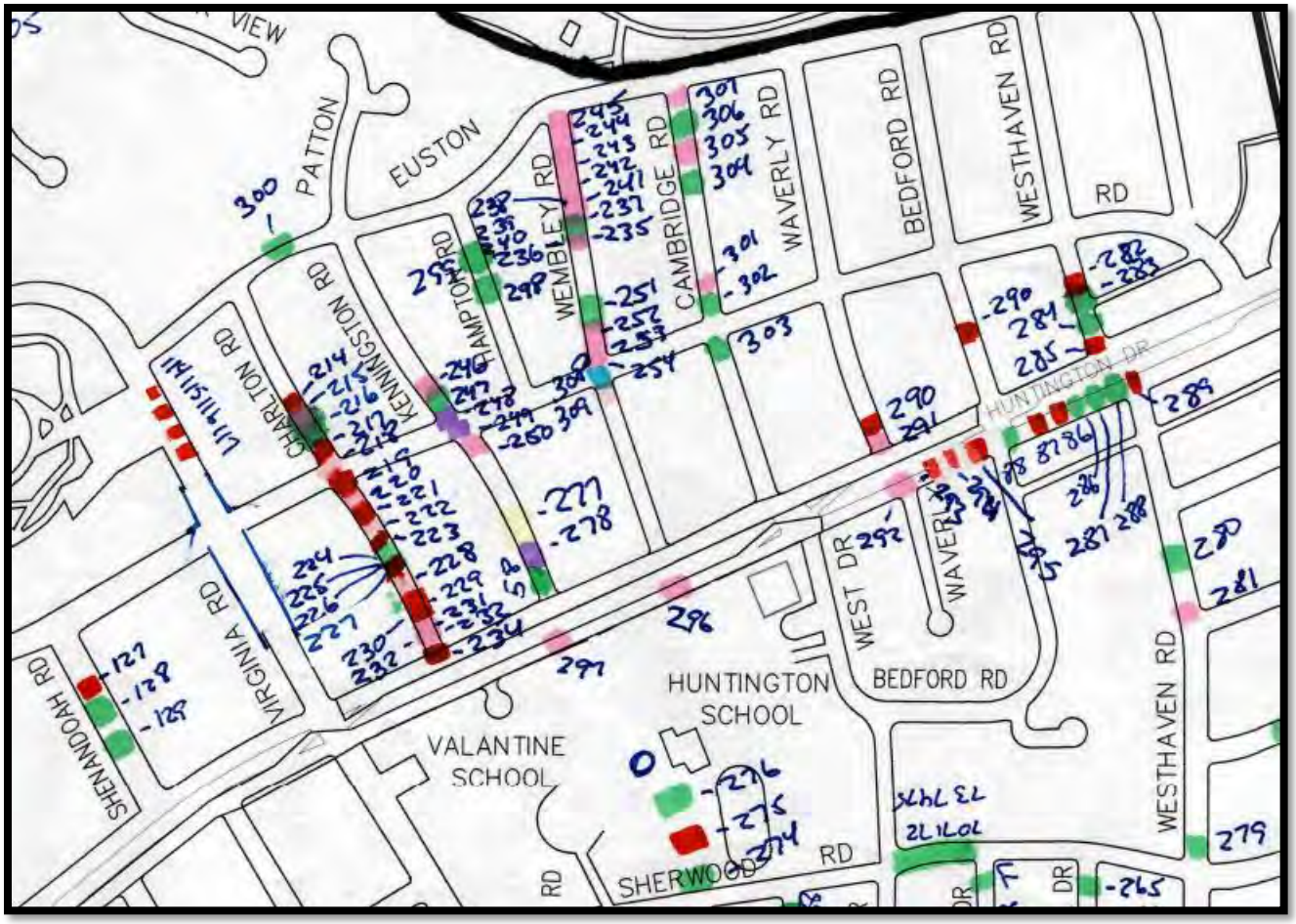
2.7 Sewer Flow Monitoring

Sewer flow monitoring was not performed as part of this study. It is recommended the City perform capacity evaluation using Smart Covers as part of its FY 2019-2020 Operations and Maintenance Program, as defined further in Section 4.6.

2.8 Sewer Trouble Spots

Historical sewer defect data was collected from a City hand-drawn map and used to guide the selection of CCTV videos that were reviewed for this report. Areas with a significant amount of historical defects, such as those in **Figure 2.6**, were prioritized to have their CCTV videos reviewed first.

Figure 2.6 – Example Area with Large Amounts of Historical Sewer Defects



2.9 Land Use

The City of San Marino (City) is approximately 3.8 square miles. The majority of the City land use is single-family residential (80%). In addition to residential, a large portion of the City contains the Huntington Gardens (19.2 acres or 11%), which is a Specimen Gardens and Arboreta land use type.

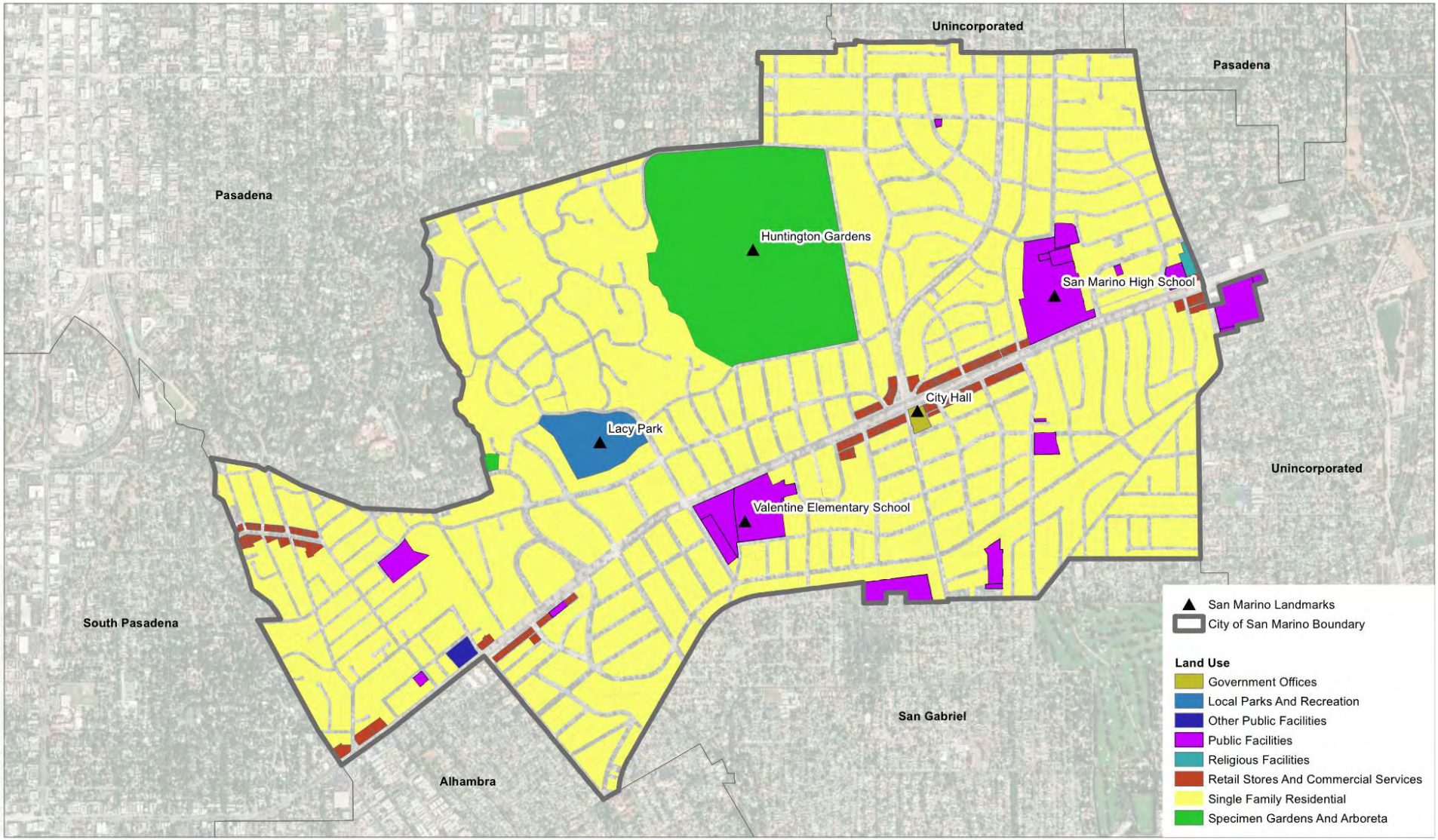
The following **Table 2.6** summarizes the distribution of various land uses within the City. The following **Figure 2.7**, presents a land use map of the City.

Table 2.6: Land Use Summary

Land Use Type	Number of Parcels	Area (acres)	Percentage of Total City Area
Single Family Residential	4,492	139.9	80%
Specimen Gardens And Arboreta	2	19.3	11%
Public Facilities	23	8.9	5%
Retail Stores and Commercial Services	143	3.0	2%
Local Parks and Recreation	1	2.4	1%
Other Public Facilities	1	0.3	0.2%
Religious Facilities	1	0.2	0.1%
Government Offices	1	0.2	0.1%

Typically for master planning, the subject service area is partially built out and future land use mapping provides a guide for the location and density of future growth to predict sewer flow generation. For the City of San Marino, the city is considered fully built out. Future changes in population and density will be made organically as redevelopment slowly occurs, typically converting from non-residential developments to mixed use developments. Currently mixed use residential/commercial occupies 2% of the City area. For this analysis, the effective change in sewer flows as a result of redevelopment are considered insignificant as part of this system-wide capacity analysis. Therefore, further evaluation into the specific land use types, densities per acre of equivalent dwelling units (EDUs) and the estimated flow per EDU is considered not essential for future system capacity analysis.

Figure 2.7 – Land Use



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3 Condition Assessment

This section includes the methodology, findings, and recommendations for the condition assessments performed on gravity sewers, manholes, and pump stations between June and August 2018.

3.1 Gravity Sewer and Manhole Condition Assessment

Between 2015 and 2018, the City undertook a program to CCTV inspect and assess the condition of its gravity sewer mains. Defects, such as structural damage, corrosion, roots, and manhole degradation, were logged by the City and critical repairs addressed during subsequent annual sewer maintenance. The City also maintains a graphical log of defects found during routine sewer cleaning and the inspection by operations staff. Repairs of significant defects are performed by sewer pipeline subcontractors. The scope of the current pipeline condition assessment effort included review of CCTV inspection videos for 20 miles (433 sewer segments), or approximately 40% of the City's system. The locations of the assessed gravity mains are shown on **Figure 3.1**.

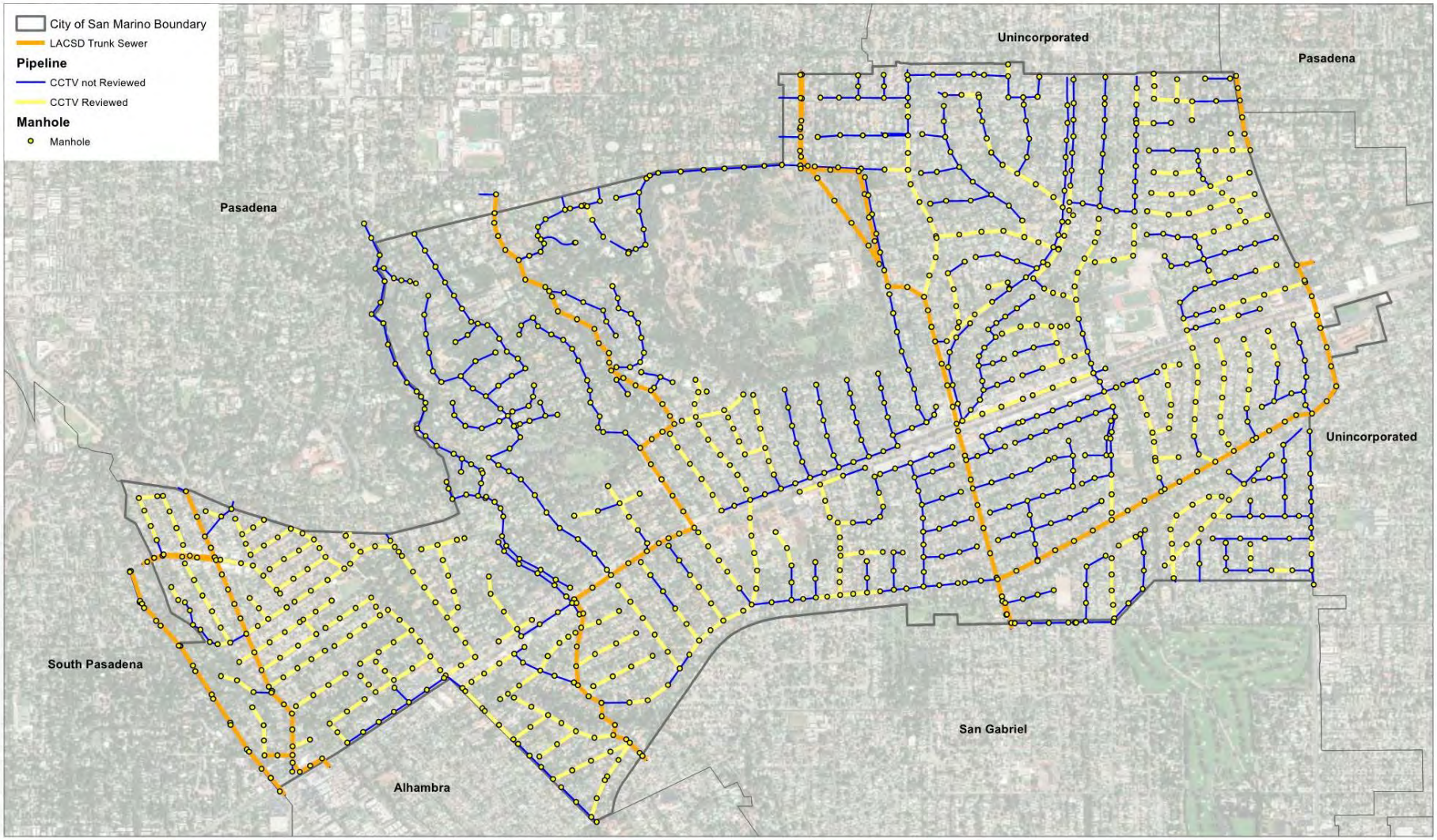
The upstream and downstream manholes shown in the CCTV videos of these 433 sewer segments were also inspected when included in the CCTV videos. Manhole condition defects were found in several manhole troughs or walls. Upstream dead-end manholes with flush tank structures were also identified.

The following sections provide a discussion of:

- The methodology for conducting condition assessment of gravity sewers and manholes, including a description of types of defects and common rehabilitation/repair options.
- Findings, and recommendations for rehabilitation and repair concluded from the condition assessment.

Prioritization and budget-level cost estimates for recommended condition related CIP projects are developed in Section 5.

Figure 3.1 - 2018 Gravity Sewer Condition Assessment Locations



3.1.1 Methodology

Condition assessment of each of the 433 sewer segments (20 miles) proceeded in the following manner:

1. Review of CCTV inspection videos provided by the City
2. Logging of pipe and lateral data and observed defects
3. Identification of recommended repairs
4. Preparation of planning-level opinion of construction costs for identified repairs (Section 5.4)

To assess pipeline and manhole condition and make repair and rehabilitation recommendations, it is critical to understand the options available for the various types of defects to be encountered. Therefore, this section provides background on:

- Common rehabilitation and repair methods for pipelines and manholes.
- Common pipeline defects, the impacts of the defect, and what method(s) are typically used to repair each defect.
- Flush tank structures and how to modify them.

3.1.1.1 Rehabilitation and Repair Methods

Common pipeline rehabilitation and repair methods to address defects include:

- **Replace in Place:** Excavation and replacement of the entire segment from manhole to manhole.
- **Excavation Point Repair:** Replacement of a short segment of pipe by open trench construction to address a severe defect. Dresser style couplings for connections to the existing pipe are recommended to reduce the potential for differential settlement. May also include replacement of a lateral connection with the sewer main.
- **CIPP Lining:** Cured-In-Place Pipe (CIPP) lining of entire segment from manhole to manhole. CIPP lining constructs a new pipe within an existing pipe using the existing pipe as a mold. The liner is made from a resin-saturated felt tube that is inverted into the pipe between manholes and cured using steam or hot water. The resulting pipe is as strong as the original "host" pipe and has an expected useful life in excess of 50 years.
- **In-situ Point Repair:** Trenchless/in-situ repair of a single defect, typically 4-feet in length or less, using a CIPP short liner.
- **Trim Intrusion:** Laterals or other objects that are intruding into a pipe can catch debris and impede the flow of sewage. These intruding elements should be trimmed by a robotic trimming device to prevent blockages.

Common manhole rehabilitation and repair methods include:

- **Manhole Trough Rehabilitation:** Repair of broken or degraded trough using high-performance cementitious repair product.
- **Manhole Wall Rehabilitation:** Repair of manhole with root intrusion or concrete corrosion using high-performance cementitious repair product or epoxy/polyurethane for minor to moderate deterioration or cured-in-place manhole liner for severe deterioration.
- **Modify Flush Tank:** Convert dead-end upstream flush tank structures to dead end manholes by removing concrete floor and flush tank components and pouring new floor to allow operations and maintenance crews to access dead-end pipes from these manholes.

During the assessment, in-situ (i.e. trenchless) rehabilitation/repair methods were recommended wherever appropriate given the nature and severity of the defect(s) observed to reduce project costs and impacts to the public and environment.

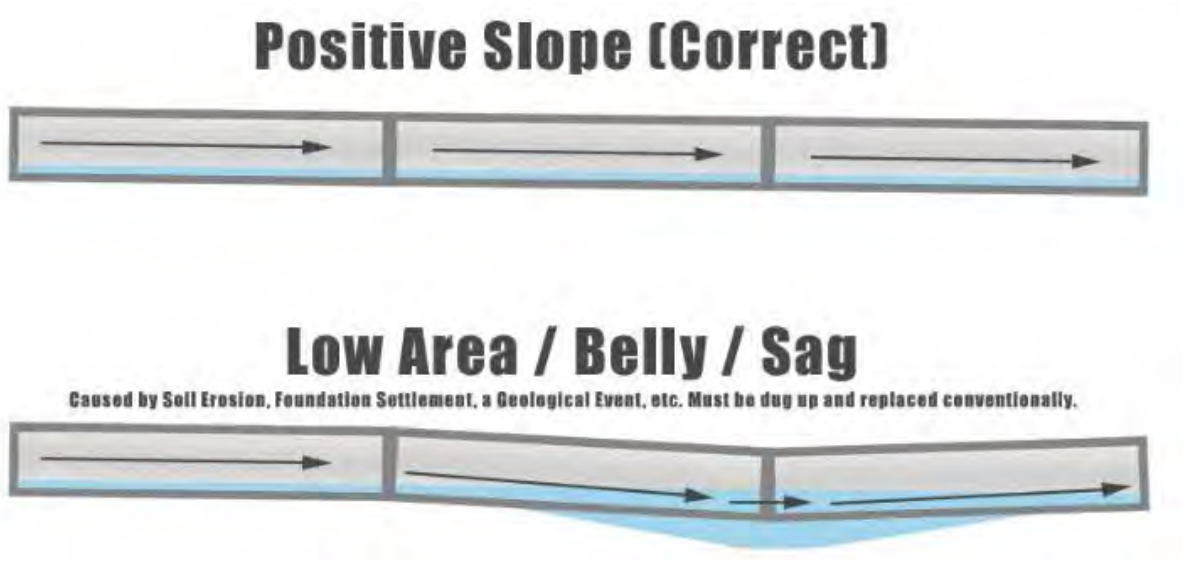
3.1.1.2 Defects by Severity

This section defines the modified NASSCO's Pipeline Assessment Certification Program (PACP) defects identified in this condition assessment and specifies the best ways to rehabilitate or repair them, in order of most severe to least severe.

1. **Offset Joint or Sag**

   Definition: When the joints in a pipe are not properly aligned, the ends of two pipe segments, called joints, form an offset joint. Offset joints can range from small (less than 0.75-inch offset) to large (greater than 1.5-inches). A sag in a sewer line is a low area often caused by geological events such as soil erosion, foundation settlement, earthquakes or by human error such as poor soil compaction or poor installation, shown in **Figure 3.2**. A sag can cause an offset joint.

   Figure 3.2 – Example of Sag



   Problems Caused by Defect: A sag can cause a pooling of water with low velocity where sediment and other debris can settle. A buildup of debris in a sag can cause a blockage or backup. Joints can be offset from each other so much that exfiltration, infiltration, root intrusion and cracking occur at that junction.

   Rehabilitation/Repair Method: Sags can only be fixed by excavating the entire length of the sag and installing new pipe with proper soil bedding/foundation and alignment. Since sags usually encompass multiple pipe segments (around 20 linear feet or more) and the price to replace in place the entire pipe is similar to excavating 20 linear feet or more of pipe, it is recommended that pipes with sags be replaced in place.

   Small to medium (up to approximately 1-inch offset) offset joints can be lined over to prevent exfiltration, infiltration and root intrusion without blocking sewage flow. Large offset joints can be lined over if the upstream pipe segment is above the downstream pipe segment and the sideways offset will not block flow. Otherwise, the large offset joint should be excavated and replaced with pipe in proper alignment.

2. Broken or Hole

Definition: When pieces of pipe are displaced or fractured at least ½ pipe thickness the pipe and, usually, held together by the friction edges of the broken pieces, that pipe is considered "Broken". When a broken pipe also has a piece of pipe missing and soil or a void are visible, that pipe has a "Hole".

Problems Caused by Defect: Broken pipes or pipes with holes can:

- Collapse
- Have pieces break off into the pipe and cause blockage
- Allow exfiltration
- Allow infiltration
- Allow root intrusion

Rehabilitation/Repair Method: Excavation and replacement of a broken pipe or hole is needed if:

- The pipe or pipe pieces are likely to collapse into the pipe and block flow
- The broken pieces protrude more than 1-inch into the pipe
- The hole is more than 3-inches in diameter

Otherwise, it may be feasible to line over the broken pipe or hole and still maintain adequate liner thickness.

3. Obstacle Obstructions

Definition: When an object blocks 20% or more of pipe area, it is an obstacle obstruction. Examples include a break-in lateral, lateral liner, or utility line, protruding through the pipe wall, joint, or lateral that have the potential to block sewage flow. An object, such as broken pipe piece or rock, inside the pipe can also be an obstacle obstruction.

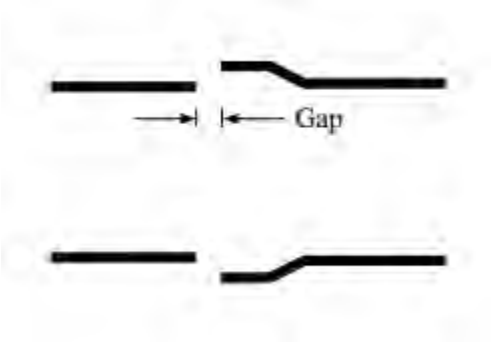
Problem Caused by Defect: Object blocks flow. The blockage causes sewage to back up in pipe, leading to sanitary sewer overflow (SSO) upstream of object.

Rehabilitation/Repair Methods: Utility lines should be identified (e.g. electrical, gas, water line) and rerouted out of the sewer line through excavation. If a non-utility object is protruding through the wall, joint or lateral, it can be trimmed by a robotic trimming device to a length that doesn't block sewage flow. Objects sitting inside the pipe should be cleaned out of the pipe.

4. Joint Separation

Definition: A joint where there is a physical gap between two pipe segments, as shown in **Figure 3.3,** is considered a separated joint. For a separation to be considered "medium", the segments are not touching and separated by up to one pipe wall thickness (usually about 1-inch). Soil outside the pipe can be seen. "Large" separations are defined as a gap greater than one pipe wall thickness.

Figure 3.3 – Example of Joint Separation



Problems Caused by Defect: A joint separation can allow exfiltration, infiltration, and root intrusion to occur at that junction.

Rehabilitation/Repair Method: Medium and large joint separations can be lined over provided nothing is protruding into the sewer pipe through the separated area. If something is protruding, excavation and replacement of the pipe near the separation is usually required.

5. **Fracture**

Definition: A cracked pipe that is visibly open, as displayed in **Table 3.1**, is consider to be a pipe with a fracture. Fractures are separated into the following four (4) categories:

- Circumferential – around the circumference of the pipe
- Longitudinal – down the length of the pipe
- Spiral – helically around the pipe in a corkscrew pattern
- Multiple – a combination of the three types above

Problems Caused by Defect: A fracture can allow exfiltration, infiltration, and root intrusion to occur at that junction. A fracture can also turn into a broken pipe.

Rehabilitation/Repair Method: Fractures can be lined over.

6. **Crack**

Definition: A break in the sewer pipe that is visible on the surface, not visibly open, and the pieces of pipe are still in place, as presented in **Table 3-1**. Cracks also come in the same four (4) categories as fractures.

Problem Caused by Defect: A crack can turn into a fracture.

Rehabilitation/Repair Method: Cracks can be lined over.

Table 3.1: Example of Crack versus Fracture

Crack	Fracture
	

7. **Roots**

   Definition: Plants' roots can intrude into sewer pipes in multiple ways. Root defects are assign into categories by size and entry location, as defined in **Table 3.2**.

Table 3.2: Root Defect Categories

Size	Entry Locations
Fine – less than ¼ inch diameter roots	Barrel – roots enter through hole or fracture in side of pipe
Medium – ¼ to 1 inch	Lateral – roots seen inside lateral
Ball – a group of roots (usually form circular pattern in a lateral)	Connection – roots seen in joint/connection between break-in lateral and main sewer line
Tap – 1 inch or larger roots	Joint – roots enter pipe through separation or holes in joints

   Problem Caused by Defect: Roots can block flow. The blockage causes sewage to back up in pipe, leading to sanitary sewer overflow (SSO) upstream of object.

   Rehabilitation/Repair Method: Roots can be trimmed and lined over.

3.1.1.3 Flush Tanks

Flush tanks, as shown in **Figure 3.4**, exist at the upstream manhole of dead-end pipelines in San Marino. Automatic flush tanks were installed when the pipes were originally built to facilitate the periodic flushing of the downstream mains with potable water to remove debris and stagnant sewage.

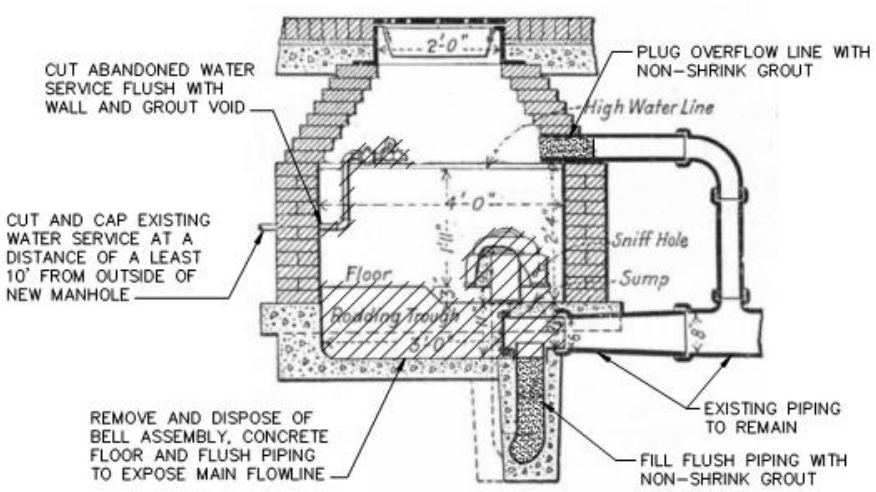
Automatic flush tanks consist of:

- A tank – to hold the potable water
- An inflow pipe – to allow water to enter the main sewer line

- An overflow pipe – to provide relief from the tank in case the intake fails to stop after sufficiently filling the tank
- A bell type arrangement along with a U-tube is provided at the bottom. The bell has a sniff hole.

Flush tanks prevent maintenance crews from accessing the adjacent pipe from the dead end manhole, making maintenance of the adjacent pipe difficult. It is recommended that flush tanks be modified per the details shown in **Figure 3.4**.

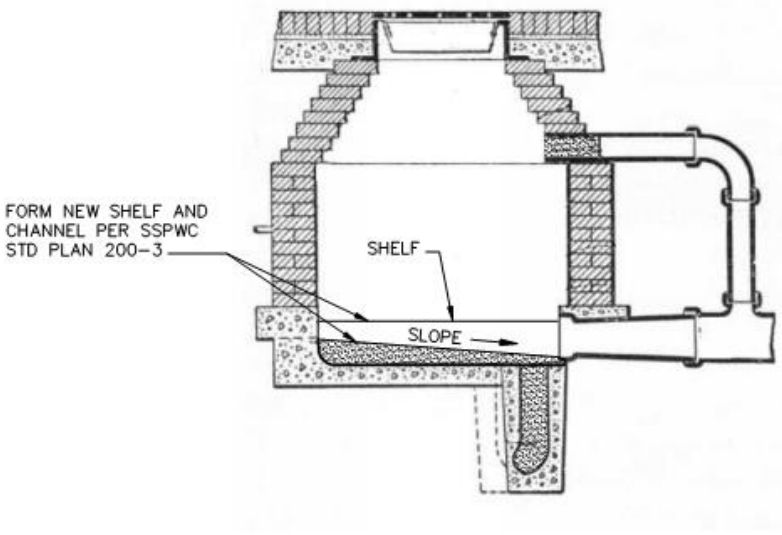
Figure 3.4 – Flush Tank Modification



NOTES:

1. EXISTING FLUSH TANK CONFIGURATION SHOWN IS APPROXIMATE AND BASED ON VISUAL INSPECTION OF SOME EXISTING STRUCTURES. ACTUAL CONDITIONS MAY VARY SLIGHTLY FROM STRUCTURE TO STRUCTURE.
2. AFTER REMOVAL OF EXISTING CONCRETE FLOOR AND FLUSH TANK COMPONENTS, PREPARE BOTTOM OF STRUCTURE BY HIGH PRESSURE WATER BLASTING TO REMOVE DETERIORATED CONCRETE, DIRT, OIL, GREASE, ETC. CAPTURE ALL DEBRIS.

DEMOLITION AND PREPARATION



MODIFICATIONS OF EXISTING FLUSH TANK STRUCTURE

NOT TO SCALE

2 VAR

3.1.2 Findings and Recommendations

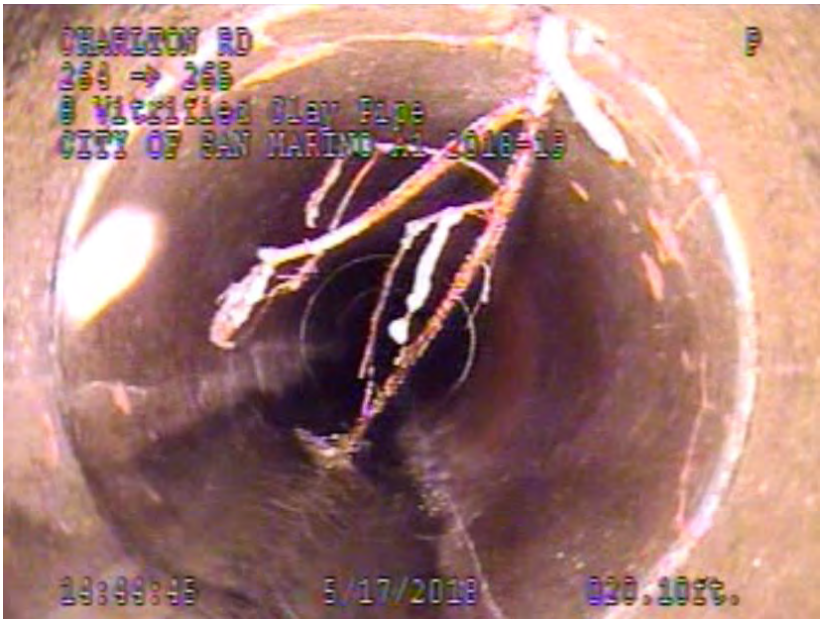
A log of pipe and lateral data, observations, defects, recommended repairs, and estimated repair costs for each of the 433 City of San Marino pipes assessed are included in the table in **Appendix A** and summarized below.

3.1.2.1 Findings

This section summarizes the most common defects found during inspection of the CCTV of the 433 City of San Marino gravity sewer pipes.

The most common defect found was roots at joints, followed closely by cracks or fractures at joints. Some cracks and fracture at joints occurred because roots were also intruding at joints, as shown by the example in **Figure 3.5**.

Figure 3.5 – Example of Medium Root Intrusion at Joint with Cracks at Joint



Roots ranged in size from fine to tap (**Figure 3.6, 3.7**) and frequently occurred in adjacent joints (**Figure 3.8**).

Figure 3.6 – Example of Fine Root Intrusion at Joint



Figure 3.7 – Example of Tap Root Intrusion at Joint



Figure 3.8 – Example of Root Intrusion at Adjacent Joints



Other common defects included:

- Intruding objects (usually laterals or lateral liners), **Figure 3.9**
- Offset Joints or Sags, **Figure 3.10 and 3.11**
- Broken pipe or Holes in the pipe, **Figures 3.12** and **3.13**

Figure 3.9 – Example of Intruding Lateral with Roots



Figure 3.10 – Example of Large Offset Joint



Figure 3.11 – Example of Sag

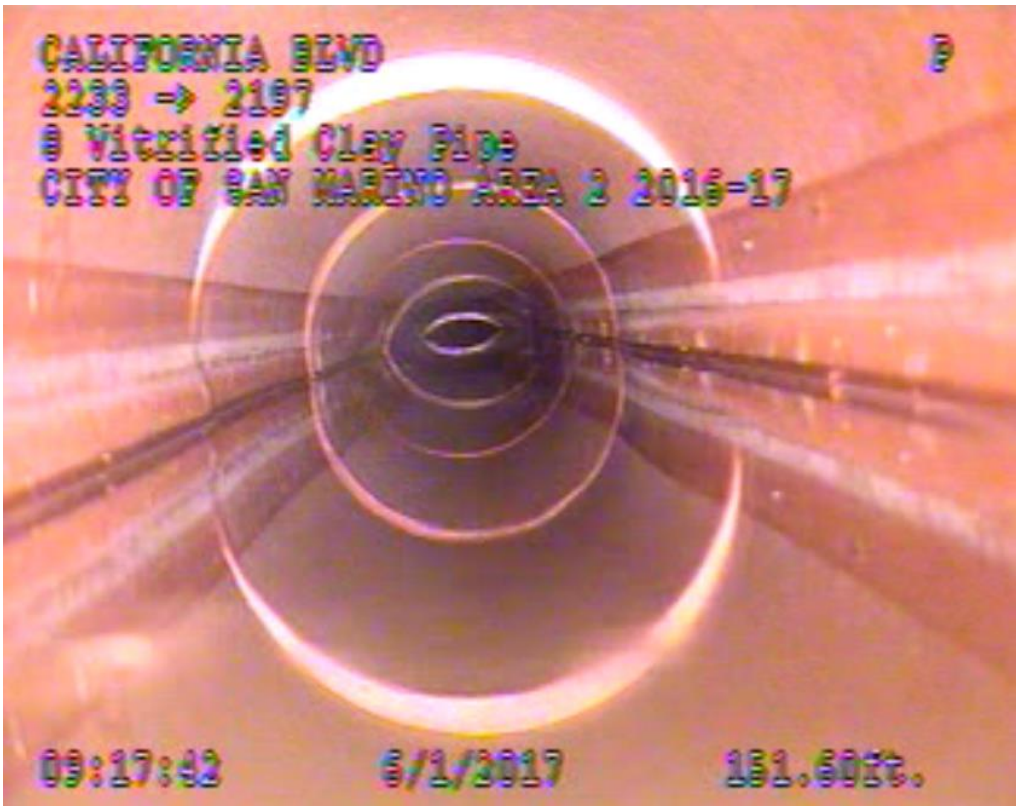


Figure 3.12 – Example of Broken Pipe



Figure 3.13 – Example of Broken Pipe with Hole



3.1.2.2 Recommendations

The rehabilitation and repair methods from the previous section were assigned to each pipe segment (except the 77 defect-free pipelines for which no repair was recommended) during the condition assessment process using the methodology outlined above.

Quantities of each rehabilitation/repair method recommended are summarized in **Table 3.3**. Some pipe segments had more than one rehabilitation/repair method assigned (e.g. excavation point repair then CIPP lining on same pipeline). More detail on the groupings and locations of recommended projects is presented in Section 5.

Table 3.3: Gravity Sewer Condition Assessment Summary

Repair Description	Number of Segments	Quantity
Replace in Place, 8" Pipe	4	717 linear feet
Excavation Point Repair, 8" Pipe	19	19
CIPP Lining,6" or 8" Pipe	286	13.3 miles
In-Situ Point Repair, 8" Pipe	24	30
Trim Intrusion	38	44

CIPP Lining was the most common rehabilitation/repair method because root intrusion, cracks and fractures were the most common defects found.

For pipes with less than two (2) root intrusion or crack defects, In-Situ Point Repair was the preferred rehabilitation/repair method to create a new barrier between the soil and the interior of the pipe. For pipes with more than two (2) root intrusion defects and the three (3) or more root intrusion defects located on either ends of the pipe segment, CIPP Lining was the preferred rehabilitation/repair method. CIPP Lining the entire length of the pipe is comparable in price to multiple spread out In-Situ Point Repairs, but CIPP Lining the entire pipe provides the extra benefit of preventing future root intrusion on the full pipe length (not just near the In-Situ Point Repairs). CIPP Lining was also preferred over extra maintenance to cut and remove roots because extra maintenance doesn't as significantly reduced the risk of roots blocking sewage flow as CIPP Lining.

Manholes were only inspected when the CCTV camera entered them during the videoing of the sewer pipe between the manholes in question. Manholes Trough and Wall Rehabilitation was recommended for inspected manholes that had items (e.g. broken bench that redirects flow, brick that fell off of wall, etc.) that could cause a backup of sewage flow and potentially an overflow (SSO)). Due to the high number of manholes found to require repair, it is recommended that the City establish a regular manhole inspection program, as discussed further in Section 4.10. The number of City of San Marino manholes needing rehabilitation or repair per the manhole rehabilitation/repair methods are summarized in **Table 3.4**.

Flush tanks were also identified during the condition assessment. It is recommended that upstream dead-end flush tanks be modified so that maintenance crews can better access the pipes downstream of the flush tanks.

Table 3.4: Manhole Condition Assessment Summary

Repair Description	Quantity
Manhole Trough Rehabilitation	63
Manhole Wall Rehabilitation	3
Modify Flush Tank	59

3.2 Pump Station Condition Assessment

The scope of the current condition assessment effort includes inspection of the three (3) City-owned pump stations (i.e., Avondale, Orlando, and Monterey) and development of recommended improvements to improve operations and reliability.

3.2.1 Methodology

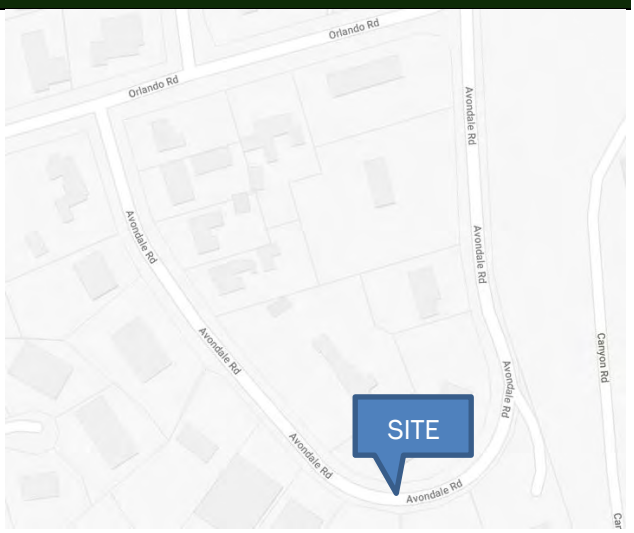
The Avondale, Orlando, and Monterey Pump Stations were investigated on August 2018. Dudek observed the condition of the site, mechanical components, structures, and electrical components. Dudek also interviewed City staff regarding the pump stations' condition, history, failures, and staff preferences. The pump stations were in operation during inspections and wet wells were not entered. The wet wells for all three pump stations were observed from ground level. The dry well for Monterey was not able to be observed because the lid was locked.

3.2.2 Findings and Recommendations

The following tables provide pump station information, a description of the pump station condition and recommendations associated with each condition found. Full pump station inspection notes can be found in **Appendix B**.

Table 3.5: Avondale Sewer Pump Station Condition Assessment Summary

Description
Dry-well duplex pump station off side of Avondale Rd.

Site Photograph	Location Map
	

Design Information
Owner: City of San Marino, Park and Public Works Department Flow rate capacity: 275 gallons per minute (gpm) Design Head: 45 feet Pump manufacturer/model: ESSCO 4X12TF 7 VANE 10.875”DIA. Number of pumps: 2 (1 duty + 1 standby) Emergency storage volume: 0 gallons Motor size: 10 HP Power type: 240 volt, 3 phase

Site Condition	Recommendations
• Site observed to be in good condition	• None
Mechanical Condition	**Recommendations**
• Pumps and piping are reported to be in acceptable condition • Sump pump likely not operational due to dry well sump being filled with dirt. The dirt covers the pump. • Peeling paint on piping • No bypass pump connection exists. • Condition of ventilation fan unknown.	• Clean out sump and test sump pump and replace as necessary. • Repaint piping. • Construct bypass pump connection. • Test ventilation fan and replace as necessary.
Structural Condition	**Recommendations**
• Wet well and dry well observed from surface. • Dry well observed to be in good condition.	• Rehabilitate concrete in wet well.

Table 3.5: Avondale Sewer Pump Station Condition Assessment Summary

• Exposed aggregate and spalling concrete in wet well.	
Electrical Condition	**Recommendations**
• Deteriorating gasket on control panel enclosure. • One of the pumps will sometimes not start and the other pump shows many more run hours after 1 week. Operator will reset the pump at control panel to alleviate the problem and get the pump to start. Cause of pump not starting is unknown.	• Replace gasket on control panel enclosure. • Conduct electrical testing to verify if pump motor is overloading.
General Recommendations	
• Setup scheduled maintenance program for pump station.	

Table 3.6: Orlando Sewer Pump Station Condition Assessment Summary

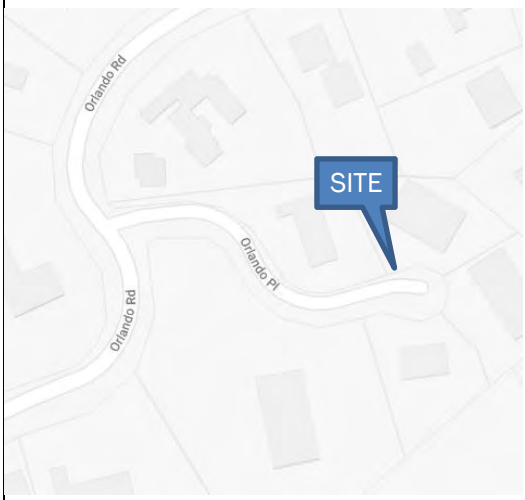
Description	
Simplex submersible pump station in Orlando Pl.	
Site Photograph	**Location Map**
	

Table 3.6: Orlando Sewer Pump Station Condition Assessment Summary

Design Information

Owner: City of San Marino, Park and Public Works Department
Flow rate capacity: 100 gpm
Design Head: 46 feet
Pump manufacturer/model: ESSCO 493 8V 7.75" DIA. CURVED
Number of pumps: 1 (1 duty + 0 standby)
Emergency storage volume: 0 gallons
Motor size: 5 HP
Power type: 240 volt

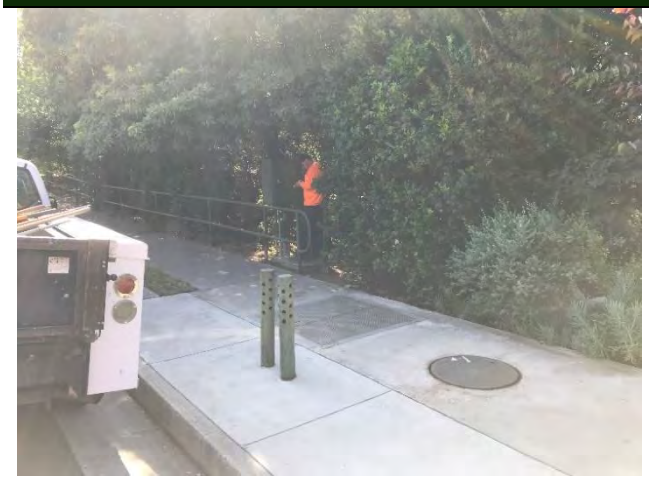
Site Condition	Recommendations
• Pump station is in road	• None
Mechanical Condition	**Recommendations**
• Pump and piping are reported to be in acceptable condition • No standby pump exists. • Peeling paint on piping. • No bypass pump connection.	• Install second pump and necessary piping. • Repaint piping. • Construct bypass connection.
Structural Condition	**Recommendations**
• Wet well and valve vault observed from surface to be in good condition.	• Construct new valve vault to accommodate second pump.
Electrical Condition	**Recommendations**
• No gasket on control panel enclosure. • Electrical components are reported to be in acceptable condition.	• Replace control panel to accommodate second pump.
General Recommendations	
• Setup schedule maintenance contract for pump station.	

Table 3.7: Monterey Sewer Pump Station Condition Assessment Summary

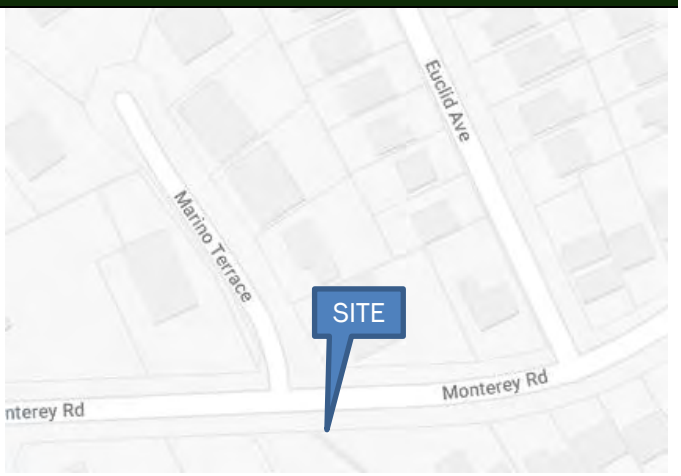
Description

Dry well simplex pump station in sidewalk of Monterey Rd.

Site Photograph



Location Map



Design Information

Owner: City of San Marino, Park and Public Works Department
Flow rate capacity: 100 gpm
Design Head: 20 feet
Pump manufacturer/model: ESSCO 4X12TF-3-6
Number of pumps: 1 (1 duty + 0 standby)
Emergency storage volume: 0 gallons
Motor size: 3 HP
Power type: 230V, AC, 1 phase

Site Condition	Recommendations
• Good	• None

Mechanical Condition	Recommendations
• Pump and piping are reported to be in acceptable condition. • No standby pump exists. • No bypass pump connection.	• Install second pump and necessary piping. • Construct bypass connection.

Structural Condition	Recommendations
• Wet well and dry well observed from service. • Dry well observed to be in good condition. • Minor spalled concrete on wet well.	• Repair minor spalled concrete area in wet well. • Construct new dry well vault to accommodate second pump.

Electrical Condition	Recommendations
• Electrical components are reported to be in acceptable condition.	• Replace control panel to accommodate second pump.

General Recommendations

- Setup scheduled maintenance program for pump station.

4 O&M Programs Evaluation

During the research and development of this Wastewater Collection System Condition Assessment and the Sanitary Sewer Management Plan (SSMP) update, existing and potential new operations and maintenance programs were considered to improve long-term reliability, as well as to satisfy requirements of the SSMP and demonstrate the City's efforts to maintain the collection system and limit risk of sanitary sewer overflows. The following section provides a summary of each program and the specific operations and maintenance needs of the program.

4.1 System Mapping and GIS Updates

A requirement of the SSMP is the maintenance of up-to-date maps of the collection system. Electronic mapping in a geographic information system (GIS) based system is the most effective way to maintain updated mapping of the system as it provides a central repository for system information. The City is currently in the process of creating a complete and fully attributed sewer GIS. Currently, basic information such as pipeline diameter, material type, installation date and pipe slope are missing for most elements, which are necessary for a complete and fully attributed GIS.

As part of the completion of the fully attributed GIS program, it is recommended that the City standardize their manhole and pipeline numbering so that CCTV and manhole inspection reports utilize the same identification numbers as the City's GIS. Consistency in labeling will improve completeness in tracking system deficiencies and improvements.

Rather than using as-built drawings for the development of the elevations of pipe inverts and pipeline diameters, which may be illegible or of varying datums, a more cost effective method would be to gather critical data using more current and accurate methods. It is recommended a surveyor be hired to capture ground surface elevations, as well as inlet and outlet pipeline diameters and inverts for the City's 1,055 manholes. CCTV data would be used for confirmation, as needed. Available as-built plans would be used for pipeline installation dates to track the age of the infrastructure. With update of 20 percent of the system annually, the City's GIS would be fully attributed within five years.

It is additionally recommended the City formalize a system to collect and update the sewer GIS based on corrections noticed by field or CCTV inspection crews to ensure the City's mapping system is kept accurate and up-to-date.

Operations and Maintenance Needs: Continued update of the City's sewer GIS using surveyed ground surface elevations and influent and effluent pipeline inverts and diameter data. Establishment of annual program to attribute and maintain accurate sewer GIS based on corrections identified in the field.

4.2 Sewer Pipeline Cleaning and CCTV Inspection

The City operates and maintains 47.5 miles of sewer collection system pipelines. In the SSMP, preventative maintenance of a collection system generally refers to sewer pipeline cleaning and CCTV inspection. The City has a current pipeline maintenance contract that includes both cleaning and CCTV with a pipeline cleaning contractor. A log of areas within the collection system that have historic issues related to either the rapid build-up of FOG (fats, oils, grease) and/or the accumulation of roots entering the sewer pipelines through laterals, joints, or cracks

has been maintained. These areas, referred to as enhanced maintenance areas, or "hot spots", have required more frequent cleaning of pipelines to protect against the potential for forming blockages. There are approximately 8,000 LF of known areas of historic tree root infestation or FOG that requires a greater level of effort for pipeline cleaning. These areas are cleaned every six months.

The target for completion of sewer pipeline cleaning and CCTV inspection is to address the cleaning and inspection of all pipelines on a biannual basis, which is currently being performed. As improvement projects are completed that address existing root and pipeline integrity issues, the extent of "hot spots" is expected to reduce.

Operations and Maintenance Needs: No additional needs beyond existing program.

4.3 Condition Assessment and CIP Development

Condition assessment consists of the visual inspection of CCTV data to identify defects. While the City currently fulfills its goal of 50% of the system CCTV inspected each year, the CCTV data has not been regularly and consistently evaluated for determination of improvement needs and development of the CIP. Utilizing this data to correct defects is necessary to comply with the rehabilitation and replacement component of the SSMP.

Condition assessment and CIP development was performed for 20 miles of the City's 50-mile system as part of this project. It is recommended the City assess the remaining 30 miles over the next two years to complete a full evaluation of the system. On an ongoing basis, it is recommended the City establish a formalized process for regular review of inspection videos to ensure necessary system improvements and being made.

Operations and Maintenance Needs: Complete condition assessment and CIP development for the remaining 30 miles of collection system pipelines. Additionally, a formalized process for regular review of CCTV inspection videos and development of CIP projects is needed on an annual or biennial basis to ensure results of the CCTV video inspection are resulting in necessary system improvements.

4.4 Sewer Line Maintenance and Repair

Because the City does not perform in-house maintenance and repair of the sewer collection system, it is important that a contract be established with a pipeline contractor to ensure timely repairs of pipelines and manholes occur. A new pipeline maintenance and repair contract has been recently established to satisfy the need for maintenance and repair of pipeline and manholes, which includes overflow emergency response and repair situations.

Operations and Maintenance Needs: No additional needs beyond existing program.

4.5 FOG Inspection

The City currently experiences fats, oils and grease (FOG) buildup in some areas of the collection system near restaurants. These areas are included in the City's Enhanced Maintenance Area list for more frequent pipeline cleaning. The updated SSMP (**Appendix C**) provides a detailed description of the FOG control program requirements.

The specific elements recommended to improve the City's FOG program are outlined in the SSMP. To maintain the program, annual inspection of existing grease removal devices are recommended, in addition to distributing information on FOG best management practices, confirming the proper design/installation of equipment, maintenance requirements, and reporting requirements. With an increase in the inspection and enforcement for

proper installation/operation of grease removal devices, the additional cleaning necessary for high-risk pipelines may be reduced.

Operations and Maintenance Needs: Increase FSE inspections to once annually. Development of public education materials for FSEs regarding FOG best management practices to be distributed to FSEs during annual inspections and made available on the City's website. Given there are only 10 FSEs within the City limits, it is anticipated that current City staff can handle the additional inspection and no additional staffing is required.

4.6 Capacity Assurance and I/I Reduction

Capacity assurance and inflow and infiltration (I/I) reduction are important components of an SSMP. The City's system is built-out; therefore, a hydraulic model of the collection system is not necessary to evaluate capacity. However, a program to evaluate capacity and reduce I/I is necessary.

There are two methods the City could employ to assess system capacity and I/I – sewer flow monitoring and installation of Smart Covers. Both methods allow for the monitoring of flow depths during dry and wet weather events. Smart Covers are a very effective method to gather depth of flow and flow variation information at a relatively low cost. Flow monitoring could be utilized at a later date to confirm or further isolate potential I/I issues, if needed. Based on our analysis of the basins in the City's system, it is recommended that 10 to 11 Smart Covers be installed for a three month period from January through March 2020 with the goal of capturing a significant storm event and assess the relative rainfall dependent I/I peaking and assess capacity at key locations in the system.

Operations and Maintenance Needs: Coordination of the installation of 10-11 Smart Covers during a three month period during the wettest months of the year (January through March, per historical rainfall data for the area) to capture response to rain dependent inflow and infiltration. Long-term goal of effort is the prioritization of basins for further research (smoke testing) and rehabilitation (CIPP lining).

4.7 Smoke Testing

A common source of defect rainwater entering the sewer collection system is by illicit connections, most commonly storm drains. The most appropriate means for locating storm drain or other illicit connections the sewer system is through the process of smoke testing. Implementation of a smoke testing program would follow behind the identification of a sewer basin that exhibits a larger response to rain infiltration during flow monitoring. Smoke testing would be utilized within a small subsection of the City and would identify areas where repairs are required to correct defects and illicit connections. As locations of significant I/I are unknown at this time, smoke testing is a method that should be considered if I/I is found to be a concern for the City at a future time.

If a smoke test is planned, it is important to coordinate with the local fire department and develop a proactive public notice program as smoke may enter private residences and potentially set off smoke alarms. This can be prevented if residents dump water into the drains and fixtures of their building (enough to fill drain p-traps, the S-shape curvature or elbow in the residential pipe typically found under sinks) prior to smoke testing.

Operations and Maintenance Needs: None at this time.

4.8 Pipe Lining

Section 3 of this report provides recommendations for the rehabilitation of identified pipeline defects. The majority of the defects are recommended to be addressed using in-situ cured-in-place pipe lining. Projecting this

inspection continues to the rest of the system, the quantity of defects identified is expected to continue in a similar concentration as presented in Figure 5.2. Inspection of the 20 miles of pipeline performed for this study resulted in roughly two-thirds of pipelines requiring lining, or 13 miles. Extrapolating this rate into the rest of the system predicts that an additional 20 miles of pipeline may likely require pipe lining. With an anticipated large number of additional defects to be identified over the planned CCTV condition assessment program (see section 4.3 above), the City should consider setting aside annual funds to support the anticipated rehabilitation needs.

Operations and Maintenance Needs: Annual sewer pipeline rehabilitation by in-situ pipe lining at an estimated quantity of approximately 10,000 LF for an additional 10 years following the currently proposed CIP pipe lining program. Majority of pipelines targeted for lining will be 12-inches in diameter or smaller. Annual work is expected to be consolidated into a publicly bid construction contract and require both design engineering and construction management.

4.9 Manhole Inspection

There are approximately 1,055 sanitary sewer manholes within the sewer collection system. While not critical to the conveyance of wastewater, they represent a significant investment to provide access to maintain the collection system. During the on-going sewer CCTV inspection program (Section 4.2) crews will be entering the sewer pipeline through the majority of manholes, but often will be pass the camera through downstream manholes. To ensure that manhole condition is maintained, a separate manhole inspection program is proposed utilizing an outsourced service. This service will use specialized equipment to efficiently document the condition of each manhole and ideally identify defects that can be repaired before a failure. Inspection is recommended to be conducted on 5-year intervals complimenting the pipeline inspection program.

Operations and Maintenance Needs: Annual manhole inspection program targeting observing and documenting the condition of manholes at a rate of 20% of the collection system annually. This totals approximately 210 MHs annually.

4.10 Manhole Rehabilitation

In support of manhole inspection above (Section 4.10), as defects occur, rehabilitation will be needed. This operation and maintenance program sets aside an annual funding source for the rehabilitation of manholes. An estimated 1% of manholes observed annually will require rehabilitation in the form of a full cured-in-place liner. An estimated 3% of manholes observed annually will require concrete mortar patching near the ring or rehabilitation of the manhole trough.

Operations and Maintenance Needs: Full rehabilitation of approximately 10 manholes annually and partial rehabilitation of approximately 32 manholes annually. The estimated frequency of manholes needing lining or rehabilitation should be re-evaluated annually based on observed trending of needs from manhole inspections.

4.11 Pump Station O&M

The age of the existing pumps is unknown, but the pumps are expected to need replacements in the next ten (10) years. Currently, an operations staff member visits each pump station site one (1) time per week and fills wet well with water to verify that the pumps turn on. There is no other maintenance reportedly performed or equipment inspected at these pump stations. Historically, a maintenance contract has been maintained with a pump station contractor to maintain and/or repair pump stations and forcemains. That pump station maintenance contract has since lapsed. It is recommended a pump station maintenance contract be reinstated to ensure proper functioning and timely repairs of the pump stations within the system to avoid sewer overflows.

Operations and Maintenance Needs: Establish an ongoing pump station maintenance contract with a pump contractor to ensure regular maintenance and repair of the City's three (3) sewer lift stations and forcemains.

4.12 Overflow Emergency Response

During an overflow situation, City staff only has the capabilities and equipment to contain smaller spills. Outside contractors are used to capture spill volumes and clear the obstruction, though often City staff are first on the scene and, with the right equipment, could potentially rectify smaller emergencies if they had the proper equipment on hand. For improved emergency response, it is recommended the City acquire one mini-jetter and one vacuum trailer to clear obstructions and capture smaller contained spill volumes. It is also recommended the City obtain other spill containment items to have in stock in case of overflows, including absorbent mats and containment pools.

Operations and Maintenance Needs: Purchase and provide regular training on mini-jetter and vacuum trailer to clear obstructions and capture small contained spill volumes. Purchase absorbent mats and containment pools to have in stock in case of smaller overflows.

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5 Recommendations

This section incorporates the identified improvements of previous sections into a recommended list of capital improvement program (CIP) projects and O&M programs. The CIP projects are subsequently prioritized by the level of sewer failure risk posed if the project is not competed. The estimated costs of the gravity sewer CIP projects, pump station improvements and O&M programs are also given.

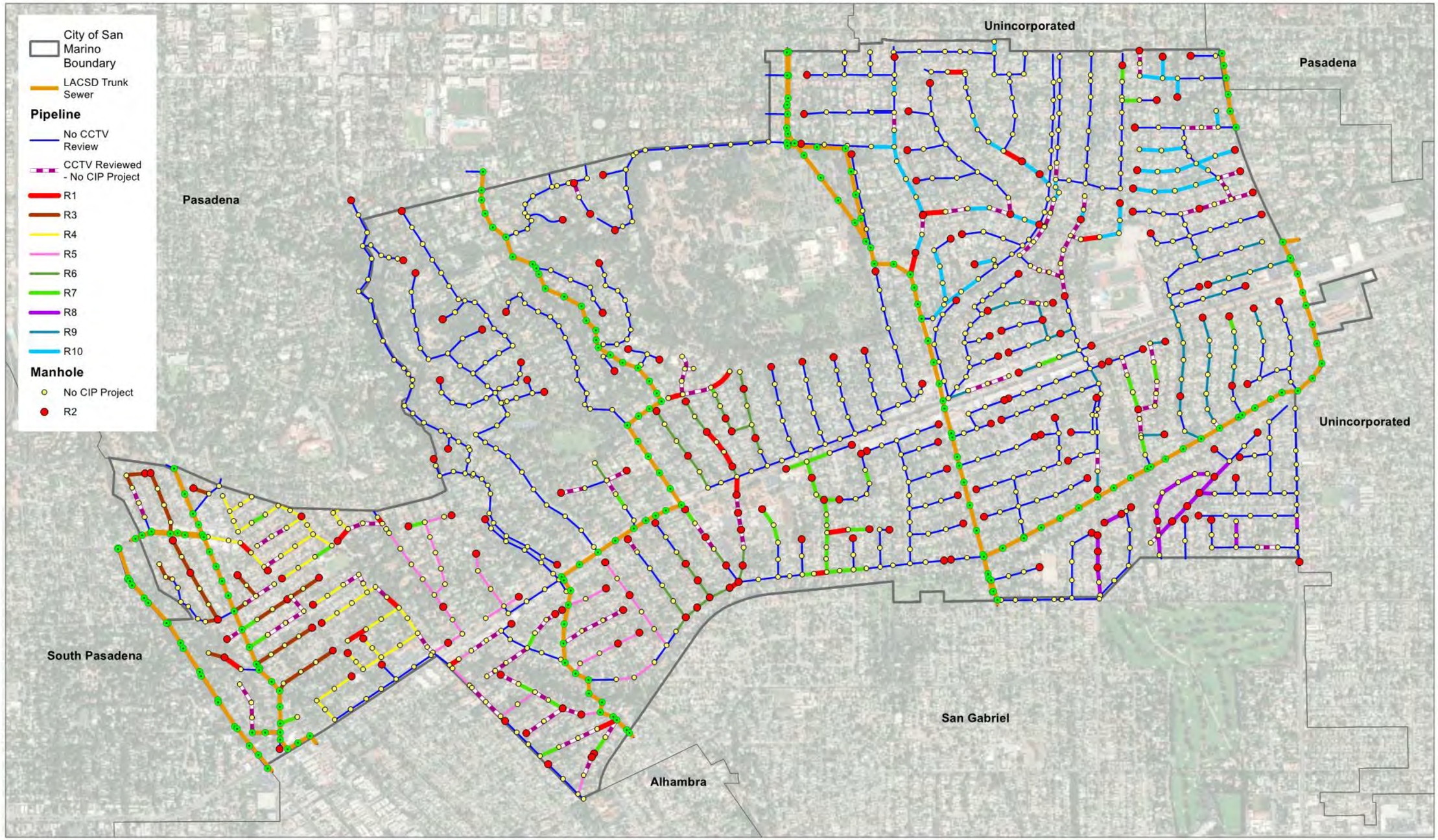
5.1 Gravity Sewer CIP Projects

The gravity sewer (i.e. gravity main and manhole) CIP projects were developed by grouping improvements by their rehabilitation/repair method. After the development of the CIP projects, the projects were prioritized based on a high, medium and low priority approach that took into consideration the level of sewer failure risk the project poses if not competed. The list of gravity sewer CIP projects in **Table 5.1** is the result of this prioritization. Highest priority improvements were group in to Project R1; medium priority improvements in Project R2; and low priority improvements in Projects R3 through R10. Locations of projects are shown graphically on **Figure 5.1**.

Table 5.1: Gravity Sewer Rehabilitation and Repair

Project ID	Description
R1	Pipeline Repair/Replacement. Project includes four (4) full segment pipeline replacement (717 LF) and 19 excavated point repairs at various locations. Improvements are recommended due to the severity of the internal condition of the pipeline.
R2	Manhole Repair and Flush Tank Modification. Project includes location and modification of all City dead-end manholes (approximately 80 assumed). The 3 manhole walls and 63 manhole troughs identified in this condition assessment also shall be rehabilitated.
R3	Sewer Lining – Area 1A. Project includes a collection of 35 pipeline segments with a combined length of approximately 7,700 LF identified as in need of internal cleaning and lining to address structural or other risk factors.
R4	Sewer Lining – Area 1B. Project includes a collection of 50 pipeline segments with a combined length of approximately 11,000 LF identified as in need of internal cleaning and lining to address structural or other risk factors.
R5	Sewer Lining – Area 1C. Project includes a collection of 40 pipeline segments with a combined length of approximately 10,600 LF identified as in need of internal cleaning and lining to address structural or other risk factors.
R6	Sewer Lining – Area 1D. Project includes a collection of 35 pipeline segments with a combined length of approximately 9,000 LF identified as in need of internal cleaning and lining to address structural or other risk factors.
R7	Pipeline Repair and Lining. Project includes combination of internal CIPP lining of approximately 4,400 LF of pipeline in Area 1E and 30 locations that require in-situ point repair throughout the City.
R8	Sewer Lining – Area 2A. Project includes a collection of 25 pipeline segments with a combined length of approximately 5,100 LF identified as in need of internal cleaning and lining to address structural or other risk factors.
R9	Sewer Lining – Area 2B. Project includes a collection of 45 pipeline segments with a combined length of approximately 11,000 LF identified as in need of internal cleaning and lining to address structural or other risk factors.
R10	Sewer Lining – Area 2C. Project includes a collection of 50 pipeline segments with a combined length of approximately 12,400 LF identified as in need of internal cleaning and lining to address structural or other risk factors.

Figure 5.1 – Recommended Pipeline and Manhole Improvements



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Project R1 consists of the most severe pipeline defects (highest priority) that require excavation and replacement of pipe. Pipelines in this category have structural deficiencies, fractures and/or joint offsets that present a heightened risk of pipe collapse and/or sewer overflow. Project R1 is recommended to be completed within the next two years. **Tables 5.2** and **5.3** provide detail on the four replace in place pipelines and 19 excavation point repair pipelines, respectively, recommended for Project R1.

Table 5.2: Project R1 – Replace in Place Pipelines

Manhole		Location	Pipe			Findings
Upstream ID	Downstream ID		Diameter (inch)	Length (ft)	Material	
2097	2107	Canterbury Rd	8	300	VCP	Multiple sags
2124	2126	California Blvd	8	210	VCP	Abandoned CCTV due to large sag
2126	2125	California Blvd	8	50	VCP	Abandoned CCTV due to large sag
1370	1625	Huntington Dr (South Alley)	8	157	VCP	64 LF sag in pipe
			Total	**717**		

Table 5.3: Project R1 – Excavation Point Repair Pipelines

Upstream ID	Downstream ID			
1428	1420	Roxbury Rd	Large offset joint	Excavation point repair to replace section of pipe with offset joint & reinstate drop connection
1282	1283	El Molino Ave	Large offset joint; Fractures throughout pipe	Excavation point repair to replace section of pipe with offset joint, then CIPP line entire length of pipe
1238	1237	S. Oak Knoll Ave	One 3 LF pipe segment of corroded cast iron pipe	Excavation point repair to replace cast iron section of pipe with VCP
1269	1270	Monterey Rd	15 LF sag	Excavation point repair to replace section of pipe with sag
2455	LACSD Trunk Sewer MH	San Marino Ave	10 LF sag; Multiple Fractures at a Single Joint	Excavation point repair to replace section of pipe with sag, then CIPP line entire length of pipe (because it is near other pipe that needs CIPP lining)
2458	2102	Robles Ave	Upstream end of pipe blocked by brick structure	Excavation point repair to replace section of pipe with brick structure
2643	2044	Robles Ave	Large offset joint; Multiple Fractures at a Single Joint; Fine Roots at a Single Joint	Excavation point repair to replace section of pipe with offset joint, then CIPP line entire length of pipe (because it is near other pipe that needs CIPP lining)
1591	1531	Valentine Elementary School	Hole with soil visible; Small offset joint	Excavation point repair to replace section of pipe with hole, then CIPP line entire length of pipe (because it is near other pipe that needs CIPP lining)
1469	1453	Lorain Rd	Broken pipe; Intruding lateral; Fine roots in joints throughout	Excavation point repair to replace section of broken pipe and trim intruding lateral, then CIPP line entire length of pipe
1481	1661	Lorain Rd	5 LF and 15 LF sags; Fine roots in joints throughout	Excavation point repair to replace section of pipe with sags, then CIPP line entire length of pipe
1626	1245	Granada Ave	3 LF sag	Excavation point repair to replace section of pipe with sag & reconnect lateral
1248	1247	Wilson Ave	Hole with soil visible; Medium roots in joints throughout	Excavation point repair to replace section of pipe with hole, then CIPP line entire length of pipe

Table 5.3: Project R1 – Excavation Point Repair Pipelines

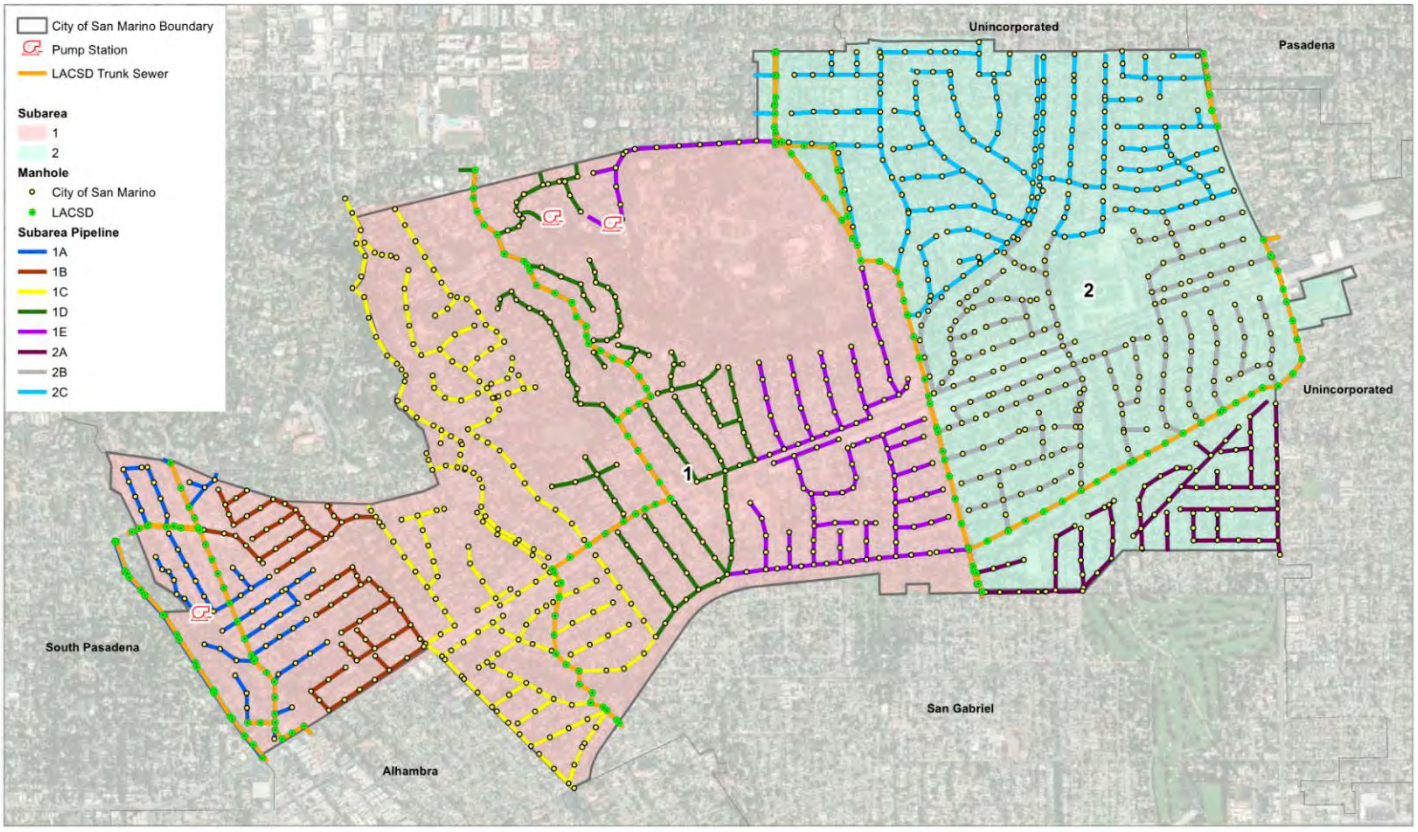
Upstream ID	Downstream ID			
1341	1340	Ashbourne Dr	Hole with soil visible; Fine roots in joints throughout	Excavation point repair to replace section of pipe with hole & reinstate drop connection, then CIPP line entire length of pipe
1024	1023	Kensington Rd	Broken pipe; Intruding lateral; Fine roots in joints throughout	Excavation point repair to replace section of broken pipe & trim intruding lateral, then CIPP line entire length of pipe
1023	1692	Kensington Rd	Multiple Fractures and Medium roots at a Single Joint	Excavation point repair to replace section of pipe with fractures and root intrusion
1692	1022	Kensington Rd	6 LF sag; Intruding lateral	Excavation point repair to replace section of pipe with sag & trim intruding lateral
1042	1041	Euston Rd	Hole with soil visible	Excavation point repair to replace section of pipe with hole
1674	1040	Euston Rd	Large offset joint	Excavation point repair to replace section of pipe with offset joint
1503	1484	Sherwood Rd	Broken Pipe; Fine roots in joints throughout	Excavation point repair to replace section of broken pipe, then CIPP line entire length of pipe

Note: All pipelines listed are 8-inch VCP.

Project R2 consists of the medium priority improvements focused on modification of all flush tanks within the system as well as rehabilitation of manholes identified as needing rehabilitation during the condition assessment. Modification of flush tanks would allow for easier in-situ (no excavation) rehabilitation and cleaning maintenance of the pipelines adjacent to manholes currently containing flush tanks. While the exact count of flush tanks is unknown, based on the number of dead end manholes, 80 flush tanks are estimated to be in the City's system. A total of 66 manholes were identified in the condition assessment as in need of rehabilitation. Due to the large number of defects observed in manholes adjacent to pipelines during the CCTV assessment for this condition assessment, a thorough inspection of all City manholes with a 360-degree camera crew is recommended as an ongoing O&M project to continue to identify manhole rehabilitation needs. Quantity assumptions for Project R2 are listed in **Table 5.1**.

The low priority projects (Projects R3 through R10) contain pipeline defects that require in-situ rehabilitation (cured-in-place pipe lining and in-situ point repair) that were considered as having the lowest risk of pipeline collapse and/or sewer overflow. There was a total of approximately 71,000 LF (13.3 miles) of pipeline that contained defects that required in-situ rehabilitation. It is recommended that this work be done in phases. Breaking up the in-situ rehabilitation work into eight (8) projects (Projects R3 through R10) by location in the City produced a set of projects that each cost approximately $1M. The eight (8) City subareas of these projects are shown in **Figure 5.2**; five (5) subareas of Area 1 and three (3) subareas of Area 2.

Figure 5.2 – Subareas of City of San Marino



5.2 Pump Station Improvements

Site visits with operations staff were conducted at each of the three City-owned and operated sewer pump stations in August 2018. The following **Table 5.4** provides a summary of the recommended improvements at each station.

Table 5.4: Pump Station Improvements

Project ID	Description
PS1	Avondale Pump Station Improvements, including: constructing bypass pump connection, rehabilitating wet well, and replacing sump pump and fan.
PS2	Orlando Pump Station Improvements, including: installing standby pump, constructing bypass pump connection, modification of valve vault, and replacing control panel.
PS3	Monterey Pump Station Improvements, including: installing standby pump, constructing bypass pump connection, modification of dry well, and replacing control panel.

5.3 O&M Sewer Programs

This section outlines the recommended sewer operations and maintenance programs based on the O&M programs evaluation performed in Section 4.0. The following **Table 5.5** provides a summary of the recommended O&M programs to be newly established by the City. Note that these programs would be in addition to the City's existing O&M program expenditures.

Table 5.5: O&M Sewer Programs

Project ID	Description
M1	System Mapping and GIS Updates – outsourced, performed annually
M2	Condition Assessment and CIP Development – outsourced, performed biennially after first two years of completing full system (remaining 30 miles over 2 years)
M3	Capacity Assurance and I/I Reduction – outsourced,11 Smart Covers for 3 months in Winter 2020 to assess system capacity and identify wet weather defect flows
M4	Pipe Lining – outsourced, 10,000 LF annually for 10 years following the proposed CIP projects
M5	Manhole Inspection – outsourced, 210 MHs annually (20% of system annually)
M6	Manhole Rehabilitation – outsourced, 10 MHs lined, 32 MHs repaired annually
M7	Pump Station Annual Service Contract O&M – outsourced, 3 pump stations annually
M8	Overflow Emergency Response Equipment – one-time acquisition of mini-jetter and vacuum trailers

5.4 Project Cost Summary

The following **Table 5.6** provides a summary of probable construction and project costs associated with each of the above recommended capital improvement projects. A detailed tabulation of each projects cost elements in included in **Appendix D**.

Table 5.6: Project Cost Summary

Project ID	Project Type	Description/Location	Priority	Probable Construction Cost	Probable Project Cost
Gravity Sewer Rehabilitation and Repair Projects				**Subtotal**	**$9,012,000**
R1	Sewer Rehabilitation and Repair	Open Trench Sewer Repairs at Various Locations	1	$429,000	$600,000
R2	Sewer Rehabilitation and Repair	Manhole Repair and Flush Tank Modification	2	$622,000	$815,000
R3	Sewer Rehabilitation and Repair	Sewer Lining and Repairs in Area 1A	3	$620,000	$812,000
R4	Sewer Rehabilitation and Repair	Sewer Lining and Repairs in Area 1B	3	$881,000	$1,154,000
R5	Sewer Rehabilitation and Repair	Sewer Lining and Repairs in Area 1C	3	$832,000	$1,089,000
R6	Sewer Rehabilitation and Repair	Sewer Lining and Repairs in Area 1D	3	$706,000	$924,000
R7	Sewer Rehabilitation and Repair	Sewer Lining and Repairs in Area 1E	3	$479,000	$627,000
R8	Sewer Rehabilitation and Repair	Sewer Lining and Repairs in Area 2A	3	$411,000	$538,000
R9	Sewer Rehabilitation and Repair	Sewer Lining and Repairs in Area 2B	3	$897,000	$1,174,000
R10	Sewer Rehabilitation and Repair	Sewer Lining and Repairs in Area 2C	3	$976,000	$1,279,000
Pump Station Upgrade Projects				**Subtotal**	**$732,000**
PS1	Pump Station	Avondale PS Upgrades	2	$106,000	$133,000
PS2	Pump Station	Orlando PS Upgrades	2	$227,000	$285,000
PS3	Pump Station	Monterey PS Upgrades	2	$250,000	$314,000
				Total	**$9,744,000**

5.5 O&M Program Cost Summary

The Operations and Maintenance programs address a large portion of the daily needs of the collection system. The City already contracts out sewerline cleaning, CCTV inspection and emergency sewer overflow response and repair to a pipeline contractor. Our evaluation found that additional O&M programs are necessary for the City to maintain fully functional operation of an aging collection system and to comply with requirements of the SSMP. It is anticipated that a majority of the system is over 50 years old, with some pipe being up to 100 years old. Investment now in the maintenance of the system will pay off in extending the life and reducing the risks associated with an aging system, such as pipe collapse, that could lead to sewer overflows and more costly repairs.

The following **Table 5.7** summarizes the anticipated equipment investment costs for newly established annual service contracts to facilitate the above recommended operations and maintenance programs. These programs would be above and beyond existing City O&M program expenditures.

Table 5.7: O&M Summary Table

Program ID	Program	Description	Labor Assumption	Equipment Assumption	Service Assumption	Annual Labor Cost	Annual Equipment/ Service Cost	Annual Cost
Recommended Operations and Maintenance Programs								
M1	Sewer Mapping and GIS Updates	GIS Update (Performed Annually over 5 years) and $2.6k Annual GIS License Fee	-	-	Update GIS with projects from previous year and 1/5th of City with standard GIS IDs, pipeline diam/invert		$87,000	$87,000
M2	Condition Assessment and CIP Development	Pipeline CCTV assessment for remainder of system (30 miles over 2 years) and formalized process for continued assessment	-	-	15 miles of CCTV review & CIP dev't per year at $4,000/mile	-	$60,000	$60,000
M3	Capacity Assurance and I/I Reduction	Sewer Flow Monitoring using Smart Covers (11 basins)	-	-	11 Smart Covers for 3 Months at $4000 per Cover	-	$44,000	$44,000
M4	Pipe Lining	Annual Sewer Pipe Lining starting in 2028	-	-	10,000LF Lined Annual at $75/LF	-	$750,000	$750,000
M5	Manhole Inspection	Annual Manhole Inspection/Assessment (210/yr)	-	-	210 MH at $100/ea	-	$21,000	$21,000
M6	Manhole Rehabilitation	Annual Manhole Rehabilitation: (10 Lined, 32 Rehab/yr)	-	-	10 MH at $6k/ea, 32 MH at $1.5k/ea	-	$108,000	$108,000
M7	Pump Station Annual Service Contract O&M	Annual Pump Station O&M	-	-	3 stations at $25k/PS	-	$75,000	$75,000
M8	Overflow Emergency Response	One-time purchase of mini-jetter and vacuum trailer for improved emergency response	-	1 Mini-jetter and 1 Vacuum Trailer at $100k ea	-	-	$200,000	$200,000
					TOTAL		$1,345,000	$1,345,000

5.6 Recommended CIP Cost Schedule

Recommended projects were ordered based on priority and spread across a period of nine (9) years with a maximum annual CIP project cost of approximately $0.9M for calendar year 2020 and an average of $1.1M over the time period. Operations and maintenance staff costs were spread across a 9-year period and adjusted annually by 2% for inflation. Similarly, service contracts were spread across the 9-year period with a 2% adjustment annually for inflation.

The following **Figure 5.3** summarizes the various anticipated project and operations costs for the sewer collection system over the next 9-year period. On the following page, **Table 5.8** provides a detailed summary of the breakdown of cost on an annual basis over the next 9-years.

Figure 5.3 – Annual CIP Project and O&M Cost Summary

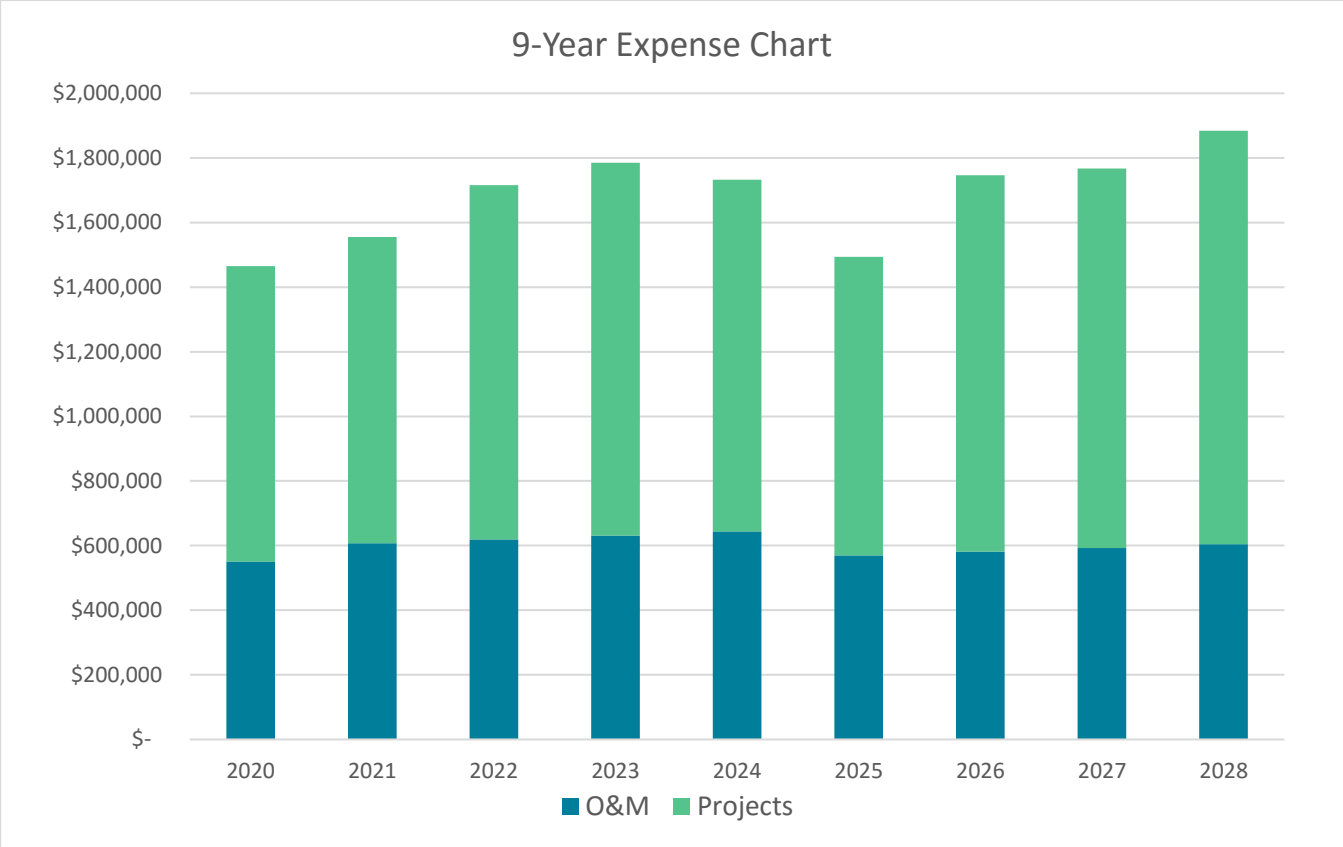


Table 5.8: Annual CIP Project and O&M Cost Summary Table

Project ID	Description/Location	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gravity Sewer Rehabilitation and Repair Projects		**$600,000**	**$815,000**	**$812,000**	**$1,154,000**	**$1,089,000**	**$924,000**	**$1,165,000**	**$1,174,000**	**$1,279,000**
R1	Open Trench Sewer Repairs at Various Locations	$600,000								
R2	Manhole Repair and Flush Tank Modification		$815,000							
R3	Sewer Lining and Repairs in Area 1A			$812,000						
R4	Sewer Lining and Repairs in Area 1B				$1,154,000					
R5	Sewer Lining and Repairs in Area 1C					$1,089,000				
R6	Sewer Lining and Repairs in Area 1D						$924,000			
R7	Sewer Lining and Repairs in Area 1E							$627,000		
R8	Sewer Lining and Repairs in Area 2A							$538,000		
R9	Sewer Lining and Repairs in Area 2B								$1,174,000	
R10	Sewer Lining and Repairs in Area 2C									$1,279,000
Pump Station Upgrade Projects		**$314,000**	**$133,000**	**$285,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
PS1	Avondale PS Upgrades		$133,000							
PS2	Orlando PS Upgrades			$285,000						
PS3	Monterey PS Upgrades	$314,000								
	Rehabiltation/Replacement Projects	**$914,000**	**$948,000**	**$1,097,000**	**$1,154,000**	**$1,089,000**	**$924,000**	**$1,165,000**	**$1,174,000**	**$1,279,000**
	O&M Staffing	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
	O&M Service Contracts	**$551,000**	**$606,900**	**$619,038**	**$631,419**	**$644,047**	**$569,928**	**$581,327**	**$592,953**	**$604,812**
	Annual TOTAL	**$1,465,000**	**$1,555,000**	**$1,716,000**	**$1,785,000**	**$1,733,000**	**$1,494,000**	**$1,746,000**	**$1,767,000**	**$1,884,000**

Appendix A

CCTV Condition Assessment Review Data

SAN MARINO SEWER CCTV
CONDITION ASSESSMENT REVIEW DATA

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1B	Afton Rd	8	VCP	1426	1427	302	6	1	US	HMD	302' - Flush Tank		4' - TFC 2:00 34' - TFA 10:00 44' - TFA 2:00 70' - TFA 10:00 80' - TFA 2:00 106' - TFC 10:00 114' - TFC 2:00 139' - TFC 10:00 150' - TFC 2:00 175' - TFA 10:00 186' - TFA 2:00		MODIFY FLUSH TANK
1B	Afton Rd	8	VCP	1427	1424	303	5	1	DS	HMD			6' - TFC 2:00 27' - TFA 10:00 36' - TFA 2:00 62' - TFC 10:00 73' - TFC 2:00 96' - TFC 10:00 109' - TFA 2:00 132' - TFA 10:00 143' - TFC 2:00 169' - TFC 10:00 179' - TFA 2:00 205' - TFC 10:00 213' - TFC 2:00 253' - TFC 2:00		NO REPAIR
1B	Roxbury Rd	8	VCP	1428	1420	284	3	1	DS	HMD	282' - Pipe to Drop MH (DS MH 651)	280' - Large offset joint	11' - TFC 2:00 14' - TFA 10:00 47' - TFA 2:00 50' - TFC 10:00 86' - TFC 10:00 119' - TFC 10:00 144' - TFA 10:00 156' - TFC 10:00 189' - TFC 10:00 228' - TFC 10:00	280' to 283' - Fix offset joint and reinstate drop connection	EXCAVATION POINT REPAIR
1B	Roxbury Rd	8	VCP	1429	1428	285	5	1	DS	HMD			15' - TFC 10:00 26' -TFC 2:00 51' - TFC 10:00 87' - TFA 10:00 94' - TBA 2:00 97' - TFC 2:00 123' - TFC 10:00 156' - TFC 10:00 167' - TFA 2:00 192' - TFA 10:00 228' - TFC 10:00 239' - TFA 2:00 259' - TFC 2:00 262' - TFC 10:00		NO REPAIR
1D	Charlton Rd	8	VCP	1031	1032	246	5	1	US	AAC/HMD	246' - FLUSH TANK	23' - CL 208', 220' - RF 239'-245' - DS	55' - TFA 2:00 95' - TFA 10:00 147' - TFA 2:00 193' - TFA 10:00 239' - TBI 12:00	239' - Trim intruding lateral 239'-245' - Clean	MODIFY FLUSH TANK TRIM INTRUSION CLEAN & CIPP
1D	Charlton Rd	8	VCP	1032	1033	278	6	1	DS	AAC/HMD		RF at multiple joints 266' - RM, FM	6' - TFA 2:00 39' - TFA 10:00 103' - TFA 2:00 137' - TFD 10:00 (roots) 204' - TFA 2:00 231' - TFD 10:00 (roots)	266' - CIPP POINT REPAIR	CLEAN & CIPP
1D	Charlton Rd	8	VCP	1033	1034	275	4	1	DS	AAC/HMD		RM at multiple joints FM at multiple joints 21', 109', 218', 220', 254' - FC	32' - TFA 2:00 47' - TFD 10:00 241' - TFA 2:00 259' - TFA 10:00		CLEAN & CIPP
1D	Charlton Rd	8	VCP	1034	1035	277	6	1	DS	AAC/HMD		RF at multiple joints RM at multiple joints FM at multiple points 25' - HSV	51' - TBD 2:00 69' - TFD 10:00 143' - TFA 2:00 158' - TFA 10:00 235' - TFA 2:00 250' - TFA 10:00		CLEAN & CIPP
1C	Courtland Ave	8	VCP	1209	1208	241	5	1	DS	AAC/HMD		RF at multiple joints FM at multiple joints 149'-152'- FL	11' - TFD 10:00 (roots) 32' - TFC 2:00 46' - TFD 10:00 (roots) 88' - TFD 10:00 (roots) 91' - TFC 2:00 139' - TFD 10:00 (roots) 142' - TFA 2:00 194' - TFC 2:00 199' - TFC 10:00	Clean & CIPP	CLEAN & CIPP
1C	Courtland Ave	8	VCP	1210	1209	232	4	1	US	AAC/HMD		RF at multiple joints 91', 105' - RM	18' - TFC 10:00 20' - TFD 2:00 (roots) 69' - TFC 10:00 71' - TFA 2:00 119' - TFA 10:00 122' - TFC 2:00 170' - TFC 10:00 172' - TFA 2:00 220' - TFC 10:00 223' - TFC 2:00	Clean & CIPP	CLEAN & CIPP

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1B	Doresta Rd	8	VCP	1281	1293	223	8	1	DS	LIP/AAC/HMD	SECOND VIDEO IN OTHER DIRECTION (SEE ROW 20). No manhole at 214'. Point of overlap only.	RF at multiple joints 68', 74' - RM 68' - FC	6' - TBD 2:00 39' - TFC 2:00 66' - TFA 2:00 81' - TFC 10:00 90' - TFC 2:00 111' - TFA 10:00 114' - TFA 2:00 140' - TFC 10:00 143' - TFA 2:00 161' - TFA 10:00 164' - TFC 2:00 191' - TFC 2:00 193' - TFA 10:00		TRIM INTRUSION CLEAN & CIPP
1B	El Molino Ave	8	VCP	1282	1283	214	4	1	DS	AAC/HMD		127' - Small offset joint 133' - FM 187' - Medium offset joint 190' - Large offset joint 191' - FL 194' - FC	49' - TFC 2:00 54' - TBA 2:00 61' - TFC 10:00 76' - TFC/TFD (roots) 2:00 102' - TFC 2:00 126' - TFC 10:00 132' - TFA (grease) 2:00 159' - TFC 10:00 192' - TFD (roots) 2:00	187' to 193'- EXCAVATION POINT REPAIR	EXCAVATION POINT REPAIR CLEAN & CIPP
1B	Mission St	8	VCP	1299	1282	160	0	1	DS	AAC/HMD		30',51' - RF 78' - HSV	6' - TFC 2:00 24' - TFC 10:00 (RML) 41' - TFC 2:00 56' - TFC 10:00 (RFL) 68' - TFC 2:00 88' - TFC 10:00 98' - TFC 2:00 125' - TFC 2:00 151' - TFC 10:00	78' - CIPP POINT REPAIR	CLEAN & CIPP
1B	Mission St	8	VCP	1300	1299	272	10	1	DS	AAC/HMD		7' - Pipe stabbed directly into tap. Exposed soil 36' - Pipe stabbed directly into tap. Minor intrusion RF at multiple joints 43' - HSV 96'-98' - RM 219' - BSV	7' - TFD 10:00 22' - TFC 10:00 36' - TFI/TFD 2:00 39' - TFC 10:00 60' - TFC 2:00 62' - TFC 10:00 77' - TFC 2:00 79' - TFA 10:00 97' - TFC 2:00 99' - TFC 10:00 121' - TFC 2:00 123' - TFC 10:00 137' - TFD 2:00 (roots) 140' - TFA 10:00 161' - TFD 2:00 (roots) 164' - TFC 10:00 179' - TFC 2:00 181' - TFA 10:00 199' - TFC 2:00 201' - TFC 10:00 218' - TFA 2:00 221' - TFD 10:00 (roots) 223' - TBI 10:00 242' - TFC 10:00 251' - TFC 2:00 262' - TFC 10:00	43', 219', 97' - CIPP POINT REPAIR	CLEAN & CIPP
1D	Charlton Rd	8	VCP	1035	1593	276	6	1	DS	AAC/HMD		15', 119', 122', 217', 271' - FM Multiple CC at joints 256', 271' - RF	47' - TFA 2:00 65' - TFA 10:00 140' - TFA 2:00 151' - TFA 10:00 192' - TBD 12:00 (roots) 234' - TFC 10:00 237' - TFA 2:00		CLEAN & CIPP
1A	El Molino Ave	8	VCP	1266	1267	276	3	1	DS	AAC/HMD			66' - TFC 10:00 68' - TFC 2:00 98' - TFC 10:00 101' - TFA 2:00 158' - TFA 2:00 (TP buildup) 185' - TFC 2:00 188' - TFI 10:00 215' - TFC 10:00 217' - TFC 2:00 241' - TFC 2:00	188' - TRIM INTRUSION	TRIM INTRUSION
1A	Doresta Rd	8	VCP	1281	1293			1	US	AAC/HMD	SECOND DIRECTION OF SAME PIPE. Camera couldn't pass intruding lateral @9'		6' - TFC 2:00 9' - TFI 10:00	9' - TRIM INTRUSION	TRIM INTRUSION (US FLOW DIRECTION)
1B	Fleur Dr	8	VCP	1284	1286	222	7	1	US	AAC/HMD		RF at multiple joints	12' - TFC 2:00 18' - TFC 10:00 44' - TFC 2:00 50' - TFA 10:00 68' - TFA 2:00 (grease) 77' - TFC 10:00 97' - TFC 2:00 109' - TFA 10:00 127' - TFD 2:00 (grease, wye broken) 136' - TFA 10:00 156' - TFC 2:00 159' - TFC 10:00 177' - TFA 2:00 187' - TFA 10:00 218' - TFC 10:00		NO REPAIR

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1B	Fleur Dr	8	VCP	1285	1274	277	7	1	DS	AAC/HMD		11', 18', 266', 272' - RF	26' - TFC 10:00 29' - TFA 2:00 50' - TFC 10:00 53' - TBI 10:00 55' - TFC 2:00 82' - TFA 10:00 85' - TFA 2:00 111' - TFC 10:00 114' - TFC 2:00 141' - TFA 10:00 143' - TFC 2:00 167' - TFC 10:00 173' - TFA 2:00 197' - TFC 10:00 203' - TFA 2:00 226' - TFC 10:00 229' - TFC 2:00	53' - TRIM INTRUSION	TRIM INTRUSION CLEAN & CIPP
1B	Fleur Dr	8	VCP	1286	1285	268	10	1	DS	AAC/HMD	Small solids buildup @ MH 516 channel	3' - CC 63' - CL RF at multiple joints	7' - TFC 2:00 22' - TFA 10:00 40' - TFA 2:00 42' - TFC 10:00 63' - TFC 2:00 65' - TFC 10:00 83' - TBA 10:00 95' - TFA 2:00 104' - TFC 10:00 122' - TFC 10:00 124' - TFA 2:00 (grease) 154' - TFC 2:00 157' - TFA 10:00 181' - TFA 2:00 186' - TFC 10:00 207' - TFC 2:00 213' - TFA 10:00 234' - TFA 10:00 236' - TFA 2:00 260' - TFC 10:00 263' - TFC 2:00		CLEAN & CIPP
1A	Carlaris Rd	8	VCP	1288	1289	241	10	1	US	AAC/HMD		234' - RBL (Extends into side of pipe)	5' - TFA 10:00 24' - TFA 2:00 39' - TFC 10:00 51' - TFA 2:00 62' - TFC 10:00 68' - TBA 10:00 74' - TFC 2:00 92' - TFC 10:00 104' - TFC 2:00 119' - TFC 10:00 134' - TFA 2:00 (grease) 142' - TFA 10:00 163' - TFA 2:00 (grease) 172' - TFC 10:00 193' - TFC 2:00 202' - TFA 10:00 216' - TFC 2:00 231' - TFA 10:00 233' - TFD 2:00 (roots)	234' - CLEAN & CIPP	CLEAN
1A	Carlaris Rd	8	VCP	1289	1290	248	9	1	DS	AAC/HMD		13' -19' - CL	7' - TFC 10:00 22' - TFD 2:00 (roots) 40' - TFA 10:00 45' - TFC 2:00 67' - TFC 10:00 76' - TFA 2:00 97' - TFC 10:00 106' - TFC 2:00 124' - TFA 10:00 (grease) 135' - TFA 2:00 153' - TFC 10:00 159' - TFC 2:00 183' - TFA 10:00 186' - TFA 2:00 210' - TFC 10:00 216' - TFC 2:00 240' - TFA 10:00 243' - TFA 2:00		NO REPAIR
1B	Carlaris Rd	8	VCP	1290	1276	247	5	1	DS	AAC/HMD		140', 241' - RF	23' - TFC 10:00 26' - TFC 2:00 47' - TFA 10:00 50' - TFC 2:00 77' - TFA 2:00 80' - TFD 10:00 (roots) 107' - TFC 2:00 119' - TFC 10:00 140' - TFA 2:00 152' - TFC 10:00 169' - TFD 2:00 (roots) 203' - TFC 10:00 205' - TFC 2:00		CLEAN & CIPP

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1B	Doresta Rd	8	VCP	1292	1291	222	8	1	DS	AAC/HMD		RF at multiple joints 76' - FM, RM 191' - FM	19' - TFC 2:00 24' - TFC 10:00 42' - TFD 2:00 (roots) 54' - TFA 10:00 75' - TFC 2:00 78' - TFC 10:00 95' - TFA 2:00 107' - TFA 10:00 131' - TFD 2:00 (roots) 136' - TFD 10:00 (roots) 154' - TFC 2:00 163' - TFC 10:00 181' - TFA 2:00 184' - TFC 10:00 205' - TFC 2:00 217' - TFD 10:00 (roots)		CLEAN & CIPP
1B	Doresta Rd	8	VCP	1293	1292	222	8	1	DS	AAC/HMD		37' - FC	24' - TFA 2:00 27' - TFC 10:00 48' - TFC 2:00 53' - TFA 10:00 80' - TFC 2:00 83' - TFA 10:00 107' - TFA 2:00 110' - TFC 10:00 133' - TFC 2:00 139' - TFC 10:00 160' - TFA 2:00 163' - TFA 10:00 189' - TFA 2:00 192' - TFA 10:00 213' - TFC 2:00 216' - TFC 10:00	37' - CIPP POINT REPAIR	CIPP POINT REPAIR
1B	Ardmore Rd	8	VCP	1294	1279	182	4	1	DS	AAC/HMD		72' - FOG Buildup RF at multiple joints	5' - TFA 12:00 23' - TFA 12:00 29' - TFC 12:00 50' - TFC 12:00 59' - TFA 12:00 83' - TFC 12:00 92' - TFC 12:00 109' - TFD 12:00 (roots) 124' - TFC 12:00 130' - TFC 12:00 148' - TFC 12:00		CLEAN & CIPP
1B	Ardmore Rd	8	VCP	1295	1294	183	8	1	US	AAC/HMD	Debris in manhole 526	RF at multiple joints	4' - TFA 12:00 24' - TFC 12:00 30' - TFC 12:00 54' - TFC 12:00 56' - TFA 12:00 77' - TFC 12:00 83' - TFD 12:00 (roots) 106' - TFD 10:00 (roots) 109' - TFD 2:00 (roots) 132' - TFC 2:00 135' - TFC 10:00 156' - TFC 2:00 159' - TFA 10:00 177' - TFD 2:00 (roots) 179' - TBD 2:00 (roots)		CLEAN & CIPP
1A	Wilson Ave	8	VCP/Cast Iron	1342	1618	130	1	1	DS	AAC/HMD	59' - Material Change to Cast Iron 107' - Material Change to VCP	59' - 107' - Severe Corrosion	40' - TFA 10:00 57' - TFC 10:00		CLEAN & CIPP
1C	Chelsea Rd	8	VCP	1205	1204	266	6	1	US	AAC/HMD	266' - Flush Tank	249' - Debris in pipe	18' - TFC 2:00 21' - TFC 10:00 21' - TBA 2:00 (grease) 59' - TFC 10:00 121' - TFC 2:00 126' - TFC 10:00 131' - TBA 10:00 167' - TFC 10:00 229' - TBA 9:00 247' - TFA 2:00 257' - TFA 10:00 259' - TBA 12:00		MODIFY FLUSH TANK CLEAN & CIPP
1B	S. Oak Knoll Ave	8	VCP	1235	1236	75	1	1	DS	AAC/HMD		28', 48' - FC	24' - TFA 2:00	28', 48'- CIPP POINT REAPIR over fracture	CIPP POINT REPAIR
1C	S. Oak Knoll Ave	8	VCP	1236	1240	283	4	1	DS	AAC/HMD		RF at multiple joints 94', 152', 155', 274' - FC	9' - TFC 10:00 11' - TFC 2:00 47' - TFC 10:00 50' - TFC 2:00 80' - TBA 2:00 98' - TFA 10:00 100' - TFC 2:00 148' - TFC 10:00 151' - TFC 2:00 199' - TFA 10:00 202' - TFC 2:00 214' - TBA 2:00 250' - TFC 10:00 252' - TFC 2:00		CLEAN & CIPP
1B	S. Oak Knoll Ave	8	VCP	1237	1235	85	2	1	DS	AAC/HMD	Light grease on the bottom of the pipe. Fine roots in joints throughout.		52' - TFA 12:00 78' - TFA 12:00		CLEAN
1B	S. Oak Knoll Ave	8	VCP/Cast Iron	1238	1237	121	4	1	US	AAC/HMD	118' - Material Change to Cast Iron	RF at multiple joints 118' - 120' - Severe Corrosion	3' - TFA 6:00 (drop connection) 6' - TFA 6:00 (drop connection) 41' - TFA 2:00 92' - TFC 10:00 94' - TFA 2:00 115' - TFC 2:00	118' - EXCAVATION POINT REPAIR and replace Cast Iron with VCP	EXCAVATION POINT REPAIR

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1C	S. Oak Knoll Ave	8	VCP	1240	1241	283	5	1	DS	AAC/HMD		248', 254', 261', 270'- RF	18' - TFA 10:00 21' - TFC 2:00 69' - TFC 10:00 72' - TFA 2:00 81' - TBA 10:00 120' - TFC 10:00 122' - TFC 2:00 171' - TFC 10:00 173' - TFC 2:00 221' - TFD 10:00 (roots) 224' - TFA 2:00 272' - TFC 10:00 274' - TFC 2:00		CLEAN & CIPP
1C	S. Oak Knoll Ave	8	VCP	1241	1242	284	3	1	DS	AAC/HMD		7', 268', 274' - CM RF at multiple joints 237' - FC 278' - FM	39' - TFA 10:00 42' - TFC 2:00 87' - TFC 10:00 92' - TFD 2:00 (roots) 140' - TFC 10:00 143' - TFC 2:00 191' - TFC 10:00 194' - TFA 2:00 (grease) 242' - TFC 10:00 244' - TFC 2:00	237', 278' - CIPP POINT REPAIR	CLEAN & CIPP
1B	Monterey Rd	8	VCP	1270	1271	227	8	1	DS	AAC/HMD		Light grease throughout run	10' - TFC 12:00 46' - TFC 12:00 64' - TFC 12:00 75' - TFA 12:00 (grease) 86' - TFA 12:00 (grease) 97' - TFC 12:00 99' - TFC 12:00 126' - TFC 12:00 132' - TFC 12:00 150' - TFA 12:00 152' - TFA 12:00 179' - TFD 12:00 (roots) 182' - TFA 12:00 199' - TFA 12:00 205' - TFA 12:00		CLEAN
1B	Monterey Rd	8	VCP	1271	1237	246	1	1	DS	AAC/HMD		Light grease throughout run 132' - CC	9' - TFC 12:00 14' - TFC 12:00 38' - TFC 12:00 44' - TFA 12:00 65' - TFC 12:00 101' - TFC 12:00 107' - TFC 12:00 139' - TFC 12:00 145' - TFC 12:00 181' - TFC 12:00 209' - TFC 12:00		CLEAN
1A	La Mirada Ave	8	VCP	1331	1332	252	9	1	DS	HMD		6' - CM at Joint 208' - RMJ 227' - RFJ	6.5' - TFC 10:00 9.5' - TFC 2:00 37' - TFC 10:00 39.5' - TFA 2:00 57' - TFA 10:00 60' - TFC 2:00 90' - TFA 10:00 92.5' - TFA 2:00 111' - TFC 10:00 113' - TFC 2:00 140' - TFC 10:00 142' - TFA 2:00 160' - TFA 10:00 163' - TFC 2:00 190' - TFA 10:00 192 - TFC 2:00 209.5' - TFA 12:00 234' - TFA 2:00 239' - TFC 10:00		CLEAN & CIPP
1A	La Mirada Ave	8	VCP	1332	16 0260	254	10	1	DS	HMD		28' - RFJ 249' - FMJ 2:00 to 7:00	9' - TFA 12:00 40' - TFA 2:00 (RBL) 42' - TFA 10:00 (RML) 60' - TFA 12:00 (RML) 87' - TFA 2:00 90' - TFA 10:00 110' - TFA 12:00 141' - TFC 2:00 144' - TFA 10:00 161' - TFA 12:00 185' - TFC 2:00 190' - TFA 10:00 220' - TFC 10:00 250' - TDA 6:00 (Drop Connection)	249' - CIPP Point Repair over FMJ	CIPP POINT REPAIR

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1A	Plymouth Rd	8	VCP	1334	16 0259	304	8	1	DS	HMD		100' - CMJ 100' - RFJ 109' - RFJ 132' - RFJ 150' - RFJ 179' - RFJ 297' - CMJ 3:00 to 9:00 300' - FMJ 12:00 to 12:00	31' - TFA 12:00 (RML) 51' - TFC 10:00 54' - TFA 2:00 77.5' - TFA 12:00 102' - TFC 10:00 105' - TFA 2:00 122' - TFA 12:00 (RML) 151' - TFC 10:00 155' - TFC 2:00 172.5' - TFA 12:00 203' - TFC 10:00 205' - TFA 2:00 (RBL) 220' - TFA 10:00 239' - TFC 2:00 257' - TFC 10:00 271' - TFC 10:00 298' - TDA 6:00 (Drop Connection) 301' - TDA 6:00 (Drop Connection)	297' to 300' - In-situ point repair over multiple cracks and fracture and cut out drop connections	CLEAN CIPP POINT REPAIR
1A	Plymouth Rd	8	VCP	1267	1335	298	8	1	US	HMD	Light grease on bottom of pipe throughout.	227' - RFJ	3' - TFC 10:00 4' - TFC 2:00 14' - TFA 10:00 32' - TFA 2:00 50' - TFC 10:00 52' - TFC 2:00 76' - TFA 2:00 82' - TFA 10:00 100' - TFC 2:00 (RML) 105' - TFC 10:00 129' - TFC 2:00 (RML) 144' - TFA 2:00 174' - TFA 10:00 180' - TFC 2:00 201' - TFA 2:00 221' - TFC 10:00 230' - TFA 2:00 250' - TFC 2:00 292' - TFC 2:00		CLEAN
1A	La Mirada Ave	8	VCP	1330	1331	250	11	1	US	HMD	250' - Flush Tank		9' - TFA 2:00 12' - TFA 10:00 38' - TFC 2:00 41' - TFC 10:00 62' - TFA 10:00 77' - TFA 2:00 89' - TFC 2:00 91' - TFA 10:00 112' - TFC 10:00 114' - TFA 2:00 141' - TFC 2:00 144' - TFA 10:00 162' - TFA 2:00 164' - TFC 10:00 191' - TFA 2:00 194' - TFC 10:00 212' - TFC 2:00 214' - TFA 10:00 241' - TFC 2:00 244' - TFA 10:00		MODIFY FLUSH TANK CLEAN & CIPP
1A	Plymouth Rd	8	VCP	1335	1334	302	11	1	DS	HMD	Light grease on bottom of pipe throughout.	55' - RFJ 70' - RFJ 8:00 258' - RFJ 295' - CMJ	19' - TFA 2:00 31' - TFA 10:00 39' - TFC 2:00 45' - TFC 10:00 (RML) 76' - TFC 2:00 (RFL) 81' - TFA 10:00 99' - TFC 10:00 111' - TFC 2:00 122' - TFA 2:00 137' - TFA 10:00 149' - TFC 10:00 151' - TFC 2:00 169' - TFA 2:00 181' - TFA 10:00 202' - TFC 10:00 204' - TFA 2:00 231' - TFA 12:00 252' - TFC 10:00 255' - TFC 2:00 285' - TFA 12:00 289' - TFA 2:00 296' - TFC 10:00 299' - TFC 2:00		CLEAN
1B	Winthrop Rd	8	VCP	1254	1253	151	2	1	DS	HMD	Roots Fine Joint (RFJ) throughout.	16' - RFJ 68' - RFJ 85' - RFJ 88' - RFJ	7' - TFC 10:00 13' - TFC 10:00 37' - TFC 2:00 70' - TFA 10:00 103' - TFC 10:00 124' - TFA 10:00 (RML)		CLEAN & CIPP
1B	Winthrop Rd	8	VCP	1255	1254	156	3	1	DS	HMD		6' - RFJ 3:00 9' - RFJ 2:00	5' - TFA 10:00 29' - TFA 10:00 65' - TFC 10:00 93' - TFC 10:00 95' - TBA 10:00 139' - TFC 2:00		NO REPAIR

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1B	Plymouth Rd	8	VCP	1258	1257	251	10	1	US	HMD	Roots Fine Joint (RFJ) throughout. 251' - Flush Tank	93' - RFJ 2:00 99' - RFJ 4:00 to 9:00	12' - TFA 2:00 33' - TFA 2:00 (RBL) 39' - TFA 10:00 (RML) 78' - TFA 10:00 115' - TFC 2:00 120' - TBA 2:00 145' - TFA 10:00 (RML) 190' - TFA 10:00 218' - TFA 2:00 245' - TFA 10:00 (RBL) 247' - TFA 2:00		MODIFY FLUSH TANK CLEAN & CIPP
1B	Roxbury Rd	8	VCP	1410	1430	285	8	1	US	HMD	Light grease on bottom of pipe throughout.	10' - RMJ 282' - RMJ 3:00 to 10:00 282' - Separated Joint 282' - CFJ	16' - TFA 2:00 (RML) 41' - TFA 10:00 52' - TFA 2:00 88' - TFC 2:00 (RML) 113' - TFA 10:00 (RML) 123' - TFC 2:00 155' - TBA 2:00 157' - TFC 2:00 182' - TFA 10:00 192' - TFA 2:00 228' - TFC 2:00 280' - TFA 10:00	282' - In-Situ Point Repair over Separated Joint	CLEAN CIPP POINT REPAIR
1C	Darby Rd	8	VCP	1415	1413	302	6	1	DS	HMD	Light grease on bottom of pipe throughout.	202' - RMJ 9:00 to 2:00 207' - RFJ 12:00 to 2:00 215' - RFJ 12:00 231' - RFJ 1:00	17' - TFA 10:00 76' - TFA 10:00 (RML) 78' - TFA 2:00 138' - TFA 10:00 140' - TFC 2:00 205' - TFA 10:00 (RML) 215' - TFC 2:00 244' - TFA 10:00 (RBL)		CLEAN & CIPP
1B	Darby Rd	8	VCP	1416	1415	302	10	1	US	HMD	Light grease on bottom of pipe throughout. 302' - Flush Tank		3.5' - TFC 10:00 49' - TFA 2:00 51' - TFC 10:00 97' - TBA 10:00 107' - TBA 2:00 110' - TFC 2:00 130' - TFA 10:00 174' - TFC 2:00 183' - TFA 2:00 195' - TFA 10:00 236' - TFA 2:00 259' - TFC 10:00 261' - TBA 10:00 285' - TFA 2:00 287' - TFA 10:00		MODIFY FLUSH TANK CLEAN
1B	Darby Rd	8	VCP	1417	1418	302	7	1	US	HMD	302' - Flush Tank	32' - FMJ	8' - TFA 10:00 15' - TFC 2:00 65' - TFA 10:00 75' - TFC 2:00 124' - TFA 10:00 150' - TFC 2:00 153' - TBA 10:00 186' - TFC 10:00 196' - TFC 2:00 243' - TFA 10:00 256' - TFA 2:00 276' - TFA 10:00 292' - TFC	32' - In-situ Point Repair over cracks	MODIFY FLUSH TANK CIPP POINT REPAIR
1B	Darby Rd	8	VCP	1418	1420	303	3	1	DS	HMD			55' - TFA 2:00 61' - TFC 10:00 123' - TFA 2:00 180' - TFA 2:00 234' - TFC 2:00 301' - TDA 6:00 (Drop Connection)		NO REPAIR
1B	Roxbury Rd	8	VCP	1430	1429	283	7+	1	US	HMD	Light grease on bottom of pipe throughout. 260' - ABANDONED SURVEY DUE TO INTRUDING LATERAL	11' - RFJ	18' - TFC 10:00 21' - TBA 2:00 (RFL) 29' - TFC 2:00 54' - TFA 10:00 90' - TFC 10:00 101' - TFC 2:00 121' - TBA 10:00 126' - TFC 10:00 159' - TFC 10:00 169' - TFA 2:00 195' - TFC 10:00 220' - TBA 2:00 231' - TFA 10:00 241' - TFC 2:00 260' - TBI 2:00	260' - Trim intruding lateral	CLEAN TRIM INTRUSION
1D	Lorain Rd	8	VCP	1450	1449	250	4	1	DS	HMD	Turbulent water. Grease on bottom of pipe.	9' - RMJ 9:00 198' - Camera underwater	6' - TBA 10:00 38' - TFC 10:00 88' - TFC 2:00 98' - TFA 10:00 150' - TFC 2:00 154' - TBA 10:00 157' - TFC 10:00 211' - TFC 2:00 221' - TFA 10:00		VIDEO AT LOW FLOW CLEAN & CIPP

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1D	Lorain Rd	8	VCP	1451	1450	227	5	1	DS	HMD	Grease in bottom of pipe throughout. 140' - Camera underwater. 225' - Broken MH channel	1.5' - HOLE in MH channel 50' - RBJ 1:00 to 11:00 84' - RFJ 11:00 109' - RBJ 2:00 to 11:00 133' - RBL 1:00 to 6:00 201' - RBJ 2:00 to 6:00 225' - Hole in MH channel	18' - TFA 10:00 28' - TFC 2:00 79' - TFA 10:00 89' - TFA 2:00 (Object in lateral) 132' - TFA 12:00 (grease in lateral) 140' -TFC 10:00 145' - TFC 2:00 196' - TFA 10:00	1.5' - Rehab MH channel (MH 1451) 225' - Rehab MH channel (MH 1450)	CLEAN & CIPP REHAB MH CHANNEL
1D	Lorain Rd	8	VCP	1452	1451	221	3	1	DS	HMD	Light grease on bottom of pipe throughout. Light to medium roots in joints throughout.	0' - HOLE in MH channel 2' - Large Grease Deposit 69' - RMJ 9:00 72' - RFJ 9:00 84' - RFJ 2:00 to 10:00 89' - RFJ 219' - HOLE in MH channel	58' - TFA 10:00 68' - TFC 2:00 119' - TFA 10:00 129' - TFC 2:00 180' - TFA 10:00 (RBL) 190' - TFC 2:00	0' - Rehab MH channel (MH 1452) 219' - Rehab MH channel (MH 1451)	CLEAN & CIPP REHAB MH CHANNEL
1B	Monterey Rd	8	VCP	1689	1269	110	1	1	DS	HMD		1' - CMJ 9' - CMJ 42' - CMJ	35' - TFC 2:00 59' - TFC 2:00 80' - TFC 2:00 86' - TFC 10:00 104' - TBA 3:00		CLEAN & CIPP
1A	Winthrop Rd	8	VCP	1339	16 0258	232	7	1	DS	HMD	Light roots in multiple joints.	12' - RFJ 33' - RFJ 75' - RFJ 86' - RFJ 136' - RMJ 225' - FMB	26' - TFA 2:00 (RBL) 35' - TFC 2:00 47' - TFA 10:00 (RML) 67' - TFA 2:00 (RBL) 98' - TFC 2:00 100' - TFA 10:00 (RML) 118' - TFA 2:00 (RML) 139' - TFC 2:00 148' - TFC 10:00 (RFL) 171' - TFA 2:00 198' - TFA 10:00 (RML)		CLEAN & CIPP
1B	Monterey Rd	8	VCP	1261	1268	273	7	1	US	HMD		60' - RFJ 7:00 63' - RFJ 7:00 161' - RFJ 3:00 180' - RMJ 9:00 to 3:00 186' - RFJ 185' to 212' - Grease deposits on barrel 224' - RFJ 239' - RMJ 249' - RMJ	22' - TFC 10:00 27' - TFA 2:00 48' - TFC 10:00 54' - TFC 2:00 72' - TFC 10:00 78' - TFC 2:00 98' - TFC 10:00 111' - TFA 2:00 140' - TFC 2:00 170' - TFA 2:00 194' - TFC 10:00 200' - TFC 2:00 221' - TFA 10:00 226' - TFA 2:00 248' - TFA 10:00 259' - TFA 2:00		CLEAN & CIPP
1B	Monterey Rd	8	VCP	1262	1261	276	10	1	US	HMD	Light roots in multiple joints. 276' - Flush Tank	71' - FMJ **276' - Wood cover box???**	6' - TFC 10:00 12' - TFC 2:00 33' - TFA 10:00 39' - TFA 2:00 (RML) 60' - TFC 10:00 70' - TFC 2:00 93' - TFA 10:00 98' - TFA 2:00 123' - TFC 10:00 125' - TFC 2:00 149' - TFC 10:00 158' - TFC 2:00 185' - TFA 10:00 188' - TFA 2:00 215' - TFC 10:00 219' - TFA 2:00 (RML) 242' - TFC 2:00 245' - TFA 10:00 269' - TFA 2:00 271' - TFA 10:00 **276' - Wood cover box??**	276' - Modify WOODEN BOX	MODIFY FLUSH TANK CLEAN & CIPP
1B	Monterey Rd	8	VCP	1268	1689	273	6	1	US	HMD		213' - FMJ 232' - RTJ	18' - TFA 10:00 42' - TFC 10:00 60' - TFC 2:00 69' - TFC 10:00 90' - TFC 10:00 92' - TFC 10:00 120' - TFA 10:00 128' - TFA 2:00 143' - TFC 10:00 158' - TFC 2:00 (GREASE) 170' - TFC 10:00 185' - TFA 2:00 193' - TFC 10:00 211' - TFC 2:00 220' - TFC 10:00 241' - TFA 2:00 (RBL) 243' - TFA 10:00 268' - TFC 2:00	213' - CIPP POINT REPAIR over fracture 232' - CIPP POINT REPAIR over joint with tap root	CIPP POINT REPAIR
1B	Monterey Rd	8	VCP	1269	1270	233	6	1	DS	HMD	PIPE PREVIOUSLY LINED	2' - Broken MH Channel (US MH 1269) 56' to 72' - HWL (potential sag in pipe)	31' - TFA 10:00 48' - TFA 2:00 68' - TFA 10:00 124' - TFC 2:00 128' - TFA 10:00 173' - TFA 2:00 200' - TFA 2:00	56' to 72' - EXCAVATION POINT REPAIR	REHAB MH CHANNEL EXCAVATION POINT REPAIR

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1B	Ramiro Rd	8	VCP	1274	1689	300	4	1	DS	AAC/HMD		4', 183' - FC 131', 256' - CC	15' - TFA 10:00 42' - TFC 10:00 78' - TFC 2:00 81' - TFC 10:00 111' - TFA 10:00 129' - TFC 2:00 131' - TFC 10:00 156' - TFC 10:00 171' - TFC 2:00 189' - TFA 10:00 216' - TFA 2:00 219' - TFC 10:00 258' - TFC 10:00	4', 183' - CIPP POINT REPAIR	CLEAN & CIPP
1B	Ramiro Rd	8	VCP	1275	1274	162	2	1	DS	AAC/HMD		45',61' - CL 87' - CC 145' - FC	8' - TFC 12:00 11' - TFC 12:00 32' - TFC 12:00 50' - TFC 12:00 58' - TFC 12:00 86' - TFA 12:00 88' - TFA 12:00 113' - TFC 10:00 152' - TFC 10:00	145' - CIPP POINT REPAIR	CLEAN & CIPP
1B	Ramiro Rd	8	VCP	1276	1275	149	2	1	DS	AAC/HMD		RF at multiple joints	13' - TFD 10:00 (roots) 37' - TFC 10:00 64' - TFC 10:00 98' - TFC 10:00 106' - TFC 12:00 127' - TFA 12:00		CLEAN & CIPP
1B	Ramiro Rd	8	VCP	1291	1277	176	2	1	US	AAC/HMD		37' - RM 44' - FL	16' - TFC 2:00 28' - TFC 2:00 43' - TBA 2:00 (grease) 73' - TFC 2:00 88' - TFC 10:00 103' - TFC 2:00 171' - TBD 2:00 (roots)	44' - CIPP POINT REPAIR	CLEAN & CIPP
1B	Ramiro Rd	8	VCP	1277	1276	172	4	1	US	AAC/HMD		0' - Surface Missing Wall from 5-7 o'clock	9' TFC 2:00 15' - TBA 2:00 42' - TFC 2:00 69' - TFD 2:00 (roots) 81' - TFA 10:00 99' - TFC 2:00 129' - TFD 2:00 (roots) 135' - TFC 10:00 156' - TFC 2:00	0' - Channel Rehab (DS MH 1276)	REHAB MH CHANNEL CLEAN & CIPP
1A	Winthrop Rd	8	VCP	1336	1337	230	6	1	US	AAC/HMD	230' - Flush Tank	RF at multiple joints 54' - RM	7' - TFC 2:00 20' - TFC 10:00 35' - TFA 10:00 53' - TFD 2:00 (roots) 68' - TFC 10:00 92' - TFC 2:00 119' - TFC 10:00 143' - TFD 2:00 (roots) 158' - TFA 10:00 194' - TFA 2:00 221' - TFA 10:00		CLEAN & CIPP MODIFY FLUSH TANK
1A	Winthrop Rd	8	VCP	1337	1338	232	4	1	DS	AAC/HMD		RF at multiple joints	9' - TFC 2:00 31' - TFC 2:00 57' - TFC 10:00 59' - TBA 10:00 60' - TFC 2:00 84' -TFD 2:00 111' - TFC 2:00 114' - TFA 10:00 131' - TFC 2:00 162' - TFC 2:00 164' - TFC 10:00 179' - TFC 2:00 209' - TFC 2:00 212' - TFC 10:00 230' - TFA 2:00		CLEAN & CIPP
1A	Winthrop Rd	8	VCP	1338	1339	232	5	1	DS	AAC/HMD			26' - TFC 2:00 32' - TFD 10:00 (roots) 47' - TFC 2:00 77' - TFA 2:00 82' - TFC 10:00 97' - TFC 2:00 125' - TFD 2:00 (roots) 133' - TFC 10:00 149' - TFC 2:00 176' - TFC 2:00 182' - TFD 10:00 (roots) 200' - TFA 2:00 227' - TFC 2:00 229' - TFC 10:00		CLEAN & CIPP
2C	Robles Ave	8	VCP	2044	2043	141	1	1	DS	AAC/HMD			29' - TFC 3:00 35' - TFA 10:00 82' - TFC 10:00 94' - TFC 2:00		NO REPAIR

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2B	Winston Ave	8	VCP	2202	2201	210	5	1	DS	AAC/HMD		RF at multiple joints	9' - TFC 2:00 12' - TBD 9:00 (roots) 32' - TFC 10:00 50' - TFC 10:00 61' - TFC 2:00 76' - TFC 2:00 88' - TBA 2:00 91' - TFA 10:00 105' - TFC 10:00 126' - TFC 2:00 140' - TFA 2:00 149' - TFC 10:00 167' - TFC 10:00 174' - TBA 10:00 190' - TFC 2:00 199' - TFC 10:00 205' - TFC 2:00		NO REPAIR
2B	Winston Ave	8	VCP	2201	2200	209	2	1	DS	HMD			11' - TFC 10:00 44' - TFC 2:00 56' - TFA 10:00 (RML) 70' - TFC 10:00 94' - TFC 2:00 109' - TFC 10:00 135' - TFA 10:00 165' - TFC 10:00 183' - TFC 10:00		NO REPAIR
2B	N. Huntington Dr	8	VCP	2471	2470	290	5	1	US	HMD	Light roots in joints throughout.		9' - TFC 2:00 48' - TFA 2:00 69' - TFA 2:00 95' - TFC 2:00 119' - TFC 2:00 145' - TFA 2:00 169' - TFC 2:00 201' - TFA 2:00 219' - TFC 2:00 245' - TFC 2:00 269' - TFC 2:00 284' - TFA 2:00 290' - FLUSH TANK		MODIFY FLUSH TANK CLEAN & CIPP
2B	N. Huntington Dr	8	VCP	2470	2469	295	6	1	DS	HMD		206' - CFB	11' - TBI 10:00 32' - TFC 10:00 53' - TFC 10:00 82' - TFA 10:00 103' - TFA 10:00 133' - TFC 10:00 153' - TFA 10:00 183' - TFC 10:00 212' - TFA 10:00 (RML) 233' - TFC 10:00 254' - TFA 10:00 288' - TFC 10:00	11' - Trim intruding lateral 206' - CIPP point repair over crack	TRIM INTRUSION CLEAN & CIPP
2B	N. Huntington Dr	8	VCP	2469	2468	275	4	1	DS	HMD		22' - FMB	38' - TFC 10:00 62' - TFA 10:00 85' - TFA 10:00 112' - TFA 10:00 142' - TFC 10:00 162' - TFC 10:00 186'- TFA 10:00 213' - TFC 10:00 251' - TFC 10:00		CLEAN & CIPP
2C	Robles Ave	8	VCP	2643	2044	240	1	1	DS	HMD		61' - RFJ 142' - FMJ 160'- Grease Deposits 224' - Large Joint Offset	17' - TFC 2:00 22' - TFC 10:00 52' - TFC 2:00 66' - TFC 10:00 103' - TFC 2:00 117' - TFC 10:00 153' - TFC 2:00 159' - TBA 2:00 203' - TFC 2:00 218' - TFC 10:00	224' - Excavation Point Repair	EXCAVATION POINT REPAIR CLEAN & CIPP
2B	Raleigh Dr	8	VCP	2165	2166	131	2	1	DS	HMD			25' - TFC 10:00 31' - TFC 2:00 79' - TFA 2:00 88' - TFA 10:00 117' - TFC 10:00 123' - TFC 2:00		NO REPAIR
2B	Raleigh Dr	8	VCP	2166	2167	129	4	1	DS	HMD			50' - TFA 10:00 52'- TFA 2:00 79' - TFA 10:00 99' - TFA 2:00		NO REPAIR
2B	Raleigh Dr	8	VCP	2167	2200	183	1	1	DS	HMD			15' - TFC 10:00 50' - TFC 2:00 53' - TFA 10:00 116' - TFC 2:00 121' - TFC 10:00 169' - TFC 2:00		NO REPAIR

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
2B	Winston Ave	8	VCP	2200	2199	302	7	1	DS	HMD		300' - Hole in channel of DS MH 2199	5' - TFA 10:00 35' - TFA 2:00 41' - TFC 10:00 61' - TFC 10:00 91' - TFA 10:00 106' - TFC 2:00 114' - TFC 10:00 144' - TFA 2:00 146' - TFC 10:00 167' - TFC 2:00 194' - TFA 10:00 208' - TFC 2:00 217' - TFC 10:00 240' - TFC 10:00 261' - TFC 2:00 273' - TFA 10:00 296' - TFA 10:00	300' - Rehab channel of DS MH 1299	REHAB MH CHANNEL
2B	Winston Ave	8	VCP	2043	2202	240	4	1	DS	HMD			59' - TFC 10:00 65' - TFC 2:00 104' - TFC 10:00 109' - TFA 2:00 121' TFC 10:00 127' - TBA 2:00 130' - TFC 2:00 166' - TFA 10:00 168' - TFC 2:00 179'- TFC 10:00 191' - TFC 2:00 215' - TFC 10:00 229' - TFC 10:00 235' - TFA 2:00		NO REPAIR
2C	Robles Ave	8	VCP	2045	2643	263	2	1	US	HMD	Light roots in joints throughout.	3' - RFJ	33' - TFC 2:00 69' - TFC 10:00 84' - TFC 2:00 92' - TFC 10:00 134' - TFC 2:00 158' - TFA 10:00 185' - TFC 2:00 239' - TFA 2:00		CLEAN & CIPP
2B	Wilbury Rd	8	VCP	2189	2190	290	5	1	US	AAC/HMD		RF at multiple joints US MH 2189 channel collapsed	33' - TFC 10:00 51' - TFC 2:00 56' - TFA 10:00 101' - TFC 2:00 116' - TFC 10:00 121' - TFC 2:00 145' - TFC 10:00 165' - TFA 2:00 181' - TBA 2:00 186' - TFC 2:00 189' - TFD 10:00 (roots) 224' - TFC 2:00 230' - TFC 10:00 239' - TBA 2:00 241' - TFC 2:00 273' - TFC 2:00	REHAB MH CHANNEL (US MH 2189)	REHAB MH CHANNEL CLEAN & CIPP
2B	Ridgeway Rd	8	VCP	2172	2171	265	8	1	US	HMD	Light grease on bottom of pipe throughout.	96' - FMJ	3' - TFA 12:00 18' - TFA 10:00 39' - TFC 12:00 54' - TFC 10:00 69' - TFC 12:00 80' - TFA 10:00 118' - TFC 10:00 130'- TFC 12:00 138' - TFA 10:00 151' - TFC 12:00 177' - TFC 10:00 200' - TFC 10:00 218' - TFC 12:00 219' - TBA 2:00 232' - TFA 10:00 250' - TFA 12:00 258' - TFA 10:00 265' - FLUSH TANK	96' - CIPP Point Repair over fracture	MODIFY FLUSH TANK CLEAN & CIPP
2B	Ridgeway Rd	8	VCP	2171	2170	210	6	1	US	HMD	Light roots in joints throughout. Light grease on the bottom of the pipe.	17' - RMJ 165' - Light grease deposits on enitre pipe	13' - TBA 10:00 16' - TFA 12:00 24' - TFC 10:00 66' - TFC 12:00 74' - TFA 10:00 97' - TFA 10:00 131'- TFC 12:00 139' - TFC 10:00 159' - TFA 10:00 165' - TFA 12:00 186' - TFC 12:00 197' - TFC 10:00		CLEAN & CIPP

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
2B	Cumberland Rd	8	VCP	2191	2190	275	9	1	US	AAC/HMD	Light grease buildup in pipe	RF at multiple joints	24' - TFA 10:00 26' - TFC 2:00 41' - TFC 10:00 77' - TFD 10:00 (fractured wye) 79' - TFC 2:00 94' - TFC 2:00 96' - TFC 10:00 120' - TFC 10:00 137' - TFA 2:00 146' - TFA 10:00 160' - TFC 2:00 163' - TFC 10:00 199' - TFA 2:00 204' - TFA 10:00 213' - TFC 2:00 218' - TFC 10:00 254' - TFA2:00 262' - TFC 10:00 271' - TFA 2:00 271' - TBA 10:00		CLEAN & CIPP
2B	Ridgeway Rd	8	VCP	2170	2169	195	4	1	US	HMD	Large to light grease buildup in pipe	85' - Large deposits on bottom of pipe	18' - TFC 10:00 33' - TFA 12:00 74' - TFA 10:00 84' - TFC 12:00 92' - TFA 2:00 104' - TFC 10:00 134' - TFC 12:00 138' - TBA 10:00 142' - TFC 10:00 163' - TFC 12:00 174' - TFC 10:00		CLEAN
2B	Cumberland Rd	8	VCP	2190	2195	184	4	1	DS	AAC/HMD	Light grease on bottom of pipe.	RF at multiple joints	19' - TFC 2:00 37' - TFA 2:00 66' - TFC 12:00 78' - TFC 2:00 93' - TFC 2:00 119' - TFC 12:00 137' - TFA 2:00 148' - TFA 12:00 154' - TFA 2:00		CLEAN & CIPP
2B	Cumberland Rd	8	VCP	2195	2197	184	3	1	DS	AAC/HMD	Light grease on bottom of pipe.	1' - Missing wall from channel RF at multiple joints	16' - TFC 2:00 24' - TFC 12:00 30' - TFC 2:00 72' - TFA 2:00 83' - TFC 12:00 86' - TFA 2:00 123' - TBA 10:00 143' - TFC 2:00 154' - TFC 12:00	1' - REHAB MH 2195 CHANNEL	REHAB MH CHANNEL CLEAN & CIPP
2B	Ridgeway Rd	8	VCP	2168	2169	197	2	1	US	HMD	Two pipe in one video	105' - MH 2646 184' - Large grease deposits	49' - TFC 2:00 55' - TFC 12:00 105' - MH 2646 115' - TFA 2:00 145' - TFC 12:00 156' - TFC 2:00 186' - TFA 12:00 191' - TFC 2:00 200' - FLUSH TANK		MODIFY FLUSH TANK CLEAN
2B	Wilbury Rd	8	VCP	2169	2189	266	2	1	DS	HMD	Light roots in joints throughout.	265' - Hole in channel of DS MH 2189	40' - TFC 2:00 75' - TFC 2:00 87' - TFC 10:00 120' - TFC 2:00 137' - TFC 10:00 143' - TFC 2:00 149' - TBA 10:00 158' - TFC 10:00 196' - TFC 10:00 201' - TFC 2:00 219' - TFC 10:00 237' - TFC 2:00 255' - TFC 10:00 259' - TBA 10:00	265' - Rehab channel of DS MH 2189 (record in another video, so not accounted for in this row)	CLEAN & CIPP
1C	Lorain Rd	10	DIP	1432	1431	284	9	1	DS	HMD	CLEANING NOZZLE VISIBLE AHEAD OF CAMERA		24' - TFA 10:00 65' - TFA 2:00 74' - TFA 10:00 125' - TFA 2:00 137' - TFA 10:00 194' - TFA 2:00 199' - TFA 10:00 257' - TFA 2:00 261' - TFA 10:00		CLEAN & CIPP
1C	Lorain Rd	10	DIP	1433	1432	340	11	1	DS	HMD	**VIDEO 1:** 8' - HWL 11' to 20' - camera underwater 42' to 47' - HWL 75' - HWL 86' - CAMERA STUCK (ABANDONED SURVEY) **VIDEO 2:** **CLEANING NOZZLE VISIBLE AHEAD OF CAMERA** 297' - HWL	5' - Joint separation 5' - Change from VCP to DIP	4' - TFC 2:00 13' - TFA 2:00 16' - TFA 10:00 91' - TFA 2:00 111' - TFA 10:00 126' - TFA 2:00 161' - TFA 10:00 213' - TFA 10:00 243' - TFA 2:00 265' - TFA 10:00 304' - TFA 2:00 307' - TFA 10:00		CLEAN & CIPP

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2C	Oakwood Dr	8	VCP	2160	2161	251	4	1	DS	HMD	Light roots in joints throughout.		27' - TFA 10:00 47' - TFA 2:00 150' - TFA 10:00 169' - TFA 2:00		CLEAN & CIPP
2C	Oakwood Dr	8	VCP	2161	2162	251	5	1	DS	HMD	Medium to light roots in joints throughout.	123' RFJ	25' - TFA 10:00 40' - TFA 2:00 116' - TBA 2:00 160' - TFA 10:00 (RBL) 167' - TFA 2:00 (RML)		CLEAN & CIPP
2C	Oakwood Dr	8	VCP	2159	2160	274	3	1	DS	HMD	Light roots in joints throughout.		71' - TFA 10:00 177' - TBI 2:00 183' - TFA 10:00	177'- TRIM INTRUSION	TRIM INTRUSION CLEAN & CIPP
2C	Canterbury Rd	8	VCP	2108	2097	240	3	1	US	LJP/AAC/HMD		RF in multiple joints 232' - CC 224'-230' - CL	64'-TFC 10:00 67'-TFC 2:00 114'-TBA 2:00 115'-TFA 10:00 117'-TFC 2:00 165'-TFC 10:00 168'-TFC 2:00 200'-TBA 10:00 207'-TFC 10:00 209'-TFC 2:00		CLEAN AND CIPP
2C	Canterbury Rd	8	VCP	2097	2107	300	3	1	US	LJP/HMD	Multiple sags in pipe.		53'-TFC 10:00 56'-TFC 2:00 109'-TFA 10:00 111'-TFC 2:00 165'-TFA 10:00 167'-TFA 2:00 212'-TFC 10:00 213'-TFC 2:00		REPLACE PIPE
2C	Canterbury Rd	8	VCP	2088	2108	236	4	1	US	LJP/AAC/HMD		2' - FS 94'-98' - CL 202' - F	17'-TFC 2:00 18'-TFA 10:00 47'-TFC 10:00 48'-TFC 2:00 85'-TFC 10:000 87'-TFC 2:00 134'-TFA 10:00 138'-TFA 2:00 177'-TFC 10:00 179'-TFC 2:00 202'-TBA 10:00 218'-TFC 10:00 221'-TFC 2:00		CLEAN AND CIPP
2C	California Blvd	8	VCP	2126	2125	50	0	1	DS	LJP/HMD	US MH 2126 in yard of Residential Property 2233 E.	18' - SAG			REPLACE PIPE
2C	California Blvd	8	VCP	2124	2126	210	3	1	US	LJP/HMD	US MH 2124 in yard of Residential Property 2197 E. California Blvd next to sidewalk and DS MH 2126 2233 E. California Blvd next to sidewalk. Light Grease buildup in pipe Abandoned survey due to SAG (HWL)		38'-TFA 2:00 116'-TFA 2:00 149'-TFA 2:00		REPLACE PIPE
2C	Bonita Ave	8	VCP	2647	2115	187	4	1	US	LJP/HMD	Light grease buildup in pipe Abandoned survey due to impassable roots	RF/RM in multiple joints	46'-TFD 2:00 (RBL) 106'-TFD 2:00 (RBL)		CLEAN AND CIPP
2C	Orlando Rd	8	VCP	2573	2572	301	2	1	US	HMD	Medium to light roots in joints throughout.	2' - Slightly joint separation 274' - RMJ	60' - TFC 2:00 111' - TFC 2:00 160' - TFA 2:00 211' - TFC 2:00 262' - TFA 2:00		CLEAN & CIPP
2C	San Marino Ave	8	VCP	2571	2572	272	1	1	DS	LJP/AAC/HMD		23', 104', 110' - CC 210' - BSV 7:00-9:00 242' - CM	20'-TFC 2:00 22'-TFC 10:00 69'-TFC 2:00 71'-TFC 10:00 140'-TFC 2:00 143'-TFC 10:00 189'-TFC 2:00 192'-TFA 10:00 240'-TFC 2:00 243'-TFC 10:00		CLEAN & CIPP
2C	San Marino Ave	8	VCP	2460	2459	301	2	1	DS	LJP/AAC/HMD		197' - CM	16'-TFC 10:00 19'-TFC 2:00 67'-TFA 2:00 120'-TFC 2:00 166'-TFC 10:00 168'-TFC 2:00 216'-TFC 10:00 219'-TFA 2:00 (RFL) 267'-TFC 10:00 270'-TFC		CLEAN & CIPP
2C	San Marino Ave	8	VCP	2568	2569	168	3	1	DS	LJP/AAC/HMD		RF/RM at multiple joints 126' - CC	7'-TFA 2:00 11'-TFC 10:00 13'-TBA 10:00 59'-TFC 2:00 (RML) 62'-TFA 10:00 98'-TFC 2:00 101'-TFC 10:00 (RML) 160'-TFC 2:00 162'-TFC 10:00		CLEAN & CIPP
2C	Lombardy Pl	8	VCP	2031	2030	207	3	1	US	LJP/AAC/HMD		RF at multiple joints	23'-TFA 2:00 196'-TFA 10:00 199'-TFA 2:00		CLEAN & CIPP

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2C	San Marino Ave	8	VCP	2461	2460	302	5	1	DS	LJP/AAC/HMD		4' - FM 77', 270' - CM 95' - CL	10'-TBA 2:00 16'-TFA 10:00 19'-TFC 2:00 68'-TFC 10:00 70'-TFC 2:00 116'-TFC 10:00 119'-TFA 2:00 (RFL) 167'-TFC 10:00 170'-TFC 2:00 215'-TFA 10:00 218'-TFC 2:00 266'-TFC 10:00 269'-TFA 2:00		CLEAN & CIPP
2C	Lombardy Rd	8	VCP	2033	2034	234	3	1	DS	LJP/AAC/HMD	Light grease buildup in pipe		29'-TFC 10:00 31'-TFC 2:00 79'-TFA 10:00 82'-TFC 2:00 129'-TFA 10:00 132'-TFC 2:00 180'-TFC 10:00 182'-TFA 2:00		CLEAN
2C	Lombardy Rd	8	VCP	2030	2033	233	5	1	DS	LJP/AAC/HMD	Light grease buildup in pipe		11'-TFC 10:00 13'-TFC 2:00 14'-TBA 10:00 53'-TBA 2:00 (Grease) 61'-TFC 10:00 64'-TFC 2:00 111'-TFA 10:00 114'-TFC 2:00 162'-TFC 10:00 164'-TFC 2:00 212'-TFA 10:00 215'-TFA 2:00		CLEAN
2C	San Marino Ave	8	VCP	2570	2571	273	2	1	DS	LJP/AAC/HMD			101'-TFC 2:00 103'-TFC 10:00 152'-TFC 2:00 154'-TFA 10:00 203'-TFA 2:00 206'-TFC 10:00 252'-TFC 2:00 254'-TFC 10:00		NO REPAIR
2C	San Marino Ave	8	VCP	2572	2461	218	1	1	DS	LJP/AAC/HMD	Light grease on the bottom of pipe.	193', 195', ,209' - CM	136'-TFC 10:00 138'-TFA 2:00 184'-TFC 10:00 187'-TFC 2:00	193' -CIPP POINT REPAIR	CLEAN & CIPP
2C	Lombardy Rd	8	VCP	2029	2030	216	2	1	US	LJP/AAC/HMD	Light grease buildup in pipe		37'-TFC 10:00 39'-TFA 2:00 87'-TFC 10:00 90'-TFC 2:00 138'-TFC 10:00 141'-TFA 2:00 188'-TFC 10:00 191'-TFC 2:00		CLEAN
2C	San Marino Ave	8	VCP	2455	16 0079	327	3	1	DS	LJP/HMD	Light grease on the bottom of pipe. SAG INTO LACSD TRUNK SEWER. LOCATED IN INTERSECTION OF SAN MARINO AND STRATFORD.	0' - Hole in MH channel (US MH 2455) 18' - FM 317' to 327' - HWL (sag)	14'-TFA 10:00 17'-TFA 2:00 62'-TFC 10:00 65'-TFC 2:00 113'-TFC 10:00 116'-TFC 2:00 164'-TFA 10:00 167'-TFC 2:00 213'-TFC 10:00 215'-TFC 2:00 264'-TFC 10:00 312'-TFC 10:00	0' - Rehab MH Channel (US MH 2455) 18' - CIPP POINT REPAIR 317' to 327' - EXCAVATION POINT REPAIR and replace sagging pipe	REHAB MH CHANNEL EXCAVATION POINT REPAIR CLEAN & CIPP
2C	San Marino Ave	8	VCP	2459	2458	272	4	1	US	LJP/HMD		RF in multiple joints	52'-TFA 10:00 55'-TFC 2:00 103'-TFC 10:00 106'-TFC 2:00 152'-TFC 10:00 154'-TBI 10:00 154'-TFC 2:00 205'-TFC 10:00 208'-TFC 2:00 254'-TFA 10:00 (RFL) 256'-TFA 2:00	154' - TRIM INTRUSION	TRIM INRUSION CLEAN & CIPP
2C	San Marino Ave	8	VCP	2458	2457	30	0	1	US	LJP/HMD	Missing Wall at MH 2457			2' - REHAB MH 2457 CHANNEL	REHAB MH CHANNEL
2C	San Marino Ave	8	VCP	2457	2456	300	5	1	DS	LJP/HMD	PREVIOUSLY LINED. HAVE ROOT BALL LATERALS CLEANED.		87'-TFA 2:00 115'-TFA 10:00 118'-TFA 2:00 217'-TFA 10:00 269'-TFA 2:00		NO REPAIR
2C	San Marino Ave	8	VCP	2456	2455	302	4	1	DS	LJP/HMD	Missing wall at MH 2455 Light grease on the bottom of the pipe throughout.		16'-TFA 10:00 19'-TFC 2:00 67'-TFC 10:00 70'-TFC 2:00 115'-TFC 10:00 118'-TFA 2:00 166'-TFA 10:00 168'-TFA 2:00 217'-TFC 10:00 220'-TFC 2:00 265'-TFC 10:00 268'-TFC 2:00	300' - REHAB MH 2455 CHANNEL (REPEAT OF REHAB MH ABOVE)	CLEAN & CIPP

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2B	Del Mar Ave	10	VCP	2511	2510	300	5	1	DS	LJP/HMD	PREVIOUSLY LINED. HAVE ROOT BALL LATERALS CLEANED.		109'-TFD 10:00 (RBL) 127'-TFD 2:00 (RBL) 156'-TFA 10:00 244'-TFA 2:00 290'-TBA 10:00		CLEAN
2C	Canterbury Rd	8	VCP	2107	2555	487	5	1	DS	LJP/HMD	Missing wall at MH Sierra Madre Blvd Medium roots in joints throughout. Light grease in bottom of pipe throughout.	0' - Hole in US MH 2107 140' - FMJ 275' & 278' - Hole in Middle MH 2642 299' - FMJ 465' - FMJ	2' - TFC 10:00 9' - TFA 2:00 52' - TFA 10:00 54' - TFC 2:00 110' - TFC 10:00 116' - TFC 2:00 167' - TFC 10:00 175' - TFA 2:00 243' - TFC 10:00 245' - TFC 2:00 292' -TFC 10:00 295' - TFA 2:00 345' - TFC 10:00 348' - TFC 2:00 397' - TFA 2:00 451' - TFC 2:00	0' - Rehab MH channel (US MH 1207) 275' - Rehab MH channel (Middle MH 2642)	REHAB MH CHANNEL CLEAN & CIPP
2C	Chester Ave	8	VCP	2112	2105	266	2	1	US	LJP/HMD	Previously Lined.		152'-TFA 10:00 (RML) 175'-TFA 2:00		NO REPAIR
2C	Robles Ave	8	VCP	2106	2640	200	1	1	DS	HMD	Fine Cracks in joints throughout.	199' - HOLE IN CHANNEL OF DS MH 2640	49' - TFA 2:00 51' - TFC 10:00 97' - TFC 2:00 100' - TFC 10:00 149' - TFC 2:00 151' - TFC 10:00	199' - REHAB CHANNEL OF DS MH 2640	REHAB MH CHANNEL CLEAN & CIPP
2C	Robles Ave	8	VCP	2102	2103	290	6	1	US	LJP/HMD		289' - DSC	19'-TFA 2:00 21'-TFC 10:00 68'-TFC 2:00 72'-TFC 10:00 119'-TFA 2:00 121'-TFA 10:00 170'-TFC 2:00 172'-TFA 10:00 218'-TFC 2:00 221'-TFC 10:00 280'-TFA 2:00 282'-TFA 10:00		CLEAN
2C	Robles Ave	8	VCP	2103	2104	291	5	1	DS	LJP/HMD	Light roots in joints throughout.	0' - DSC	24'-TBI 2:00 37'-TFC 2:00 40'-TFC 10:00 78'-TBA 10:00 (RML) 99'-TFA 2:00 101'-TFC 10:00 167'-TFC 2:00 170'-TFA 10:00 221'-TFC 2:00 224'-TFC 10:00 263'-TBA 2:00 270'-TFC 2:00 272'-TFC 10:00	24' - TRIM INTRUSION	TRIM INRUISON CLEAN & CIPP
2C	Huntlet Ct	8	VCP	2164	2163	260	8	1	US	LJP/HMD	260' - Flush Tank	RF/RM throuhout	9'-TFA 2:00 52'-TFD 10:00 (Grease) 109'-TFA 2:00 197'-TFA 2:00 212'-TFD 10:00 (RBL) 230'-TFA 2:00 254'-TFD 10:00 (GREASE) 257'-TFA 2:00		MODIFY FLUSH TANK CLEAN & CIPP
2C	Robles Ave	8	VCP	2104	2105	290	2	1	DS	LJP/HMD	Light grease buildup in pipe Missing wall in MH 2105		30'-TFC 2:00 32'-TFC 10:00 78'-TFC 2:00 80'-TFC 10:00 129'-TFA 2:00 132'-TFC 10:00 178'-TFC 2:00 180'-TFC 10:00 232'-TFA 2:00 278'-TFC 10:00 281'-TFC 2:00	290' - REHAB MH 2105 CHANNEL	CLEAN REHAB MH CHANNEL
2C	Robles Ave	8	VCP	2105	2106	200	3	1	DS	LJP/HMD	Cracks at joints throughout.	24' - HSV	38'-TFA 2:00 41'-TFC 10:00 87'-TFC 2:00 89'-TFC 10:00 138'-TFA 2:00 140'-TFA 10:00 189'-TFC 2:00 192'-TFC 10:00	24' - CIPP POINT REPAIR	CLEAN & CIPP
2C	Robles Ave	8	VCP	2458	2102	271	3	1	US	LJP/HMD	TOP OF PIPE BLOCKED BY BRICK. Light grease buildup in pipe.	261' - B	50'-TFC 2:00 53'-TFC 10:00 101'-TFA 2:00 103'-TFA 10:00 150'-TFA 2:00 152'-TFC 10:00	261' - EXCAVATION POINT REPAIR	EXCAVATION POINT REPAIR
2C	Santa Anita Ave	8	VCP	2013	2012	275	5	1	US	LJP/AAC/HMD	Missing Wall in MH 2013	21' - CL 166' - FM RF in multiple joints	8'-TBA 10:00 (RML) 195'-TFA 10:00 222'-TFD 2:00 (RBL) 236'-TFA 10:00 (RML) 268'-TFA 10:00 270'-TFC 2:00	273' - Rehab MH 2013 channel 21', 166' - CIPP POINT REPAIR	CIPP POINT REPAIR REHAB MH CHANNEL
2C	Santa Anita Ave	8	VCP	2011	2008	55	1	1	US	LJP/HMD		5' - BSV	33'-TFC 2:00 45'-TFA 10:00	5' - CIPP POINT REPAIR	CIPP POINT REPAIR

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2C	Fairfield Pl	8	VCP	2009	2008	226	6	1	US	LJP/HMD		4' - FS	58'-TFA 10:00 63'-TFD 2:00 (RBL) 129'-TFA 10:00 (RML) 135'-TFA 2:00 210'-TFA 10:00 215'-TFA 2:00	4' - CIPP POINT REPAIR	CIPP POINT REPAIR
2C	E. Sierra Madre Blvd	8	RPM	2542	2541	260	4	1	US	LJP/HMD	Cockroaches throughout	RF at multiple joints	4'-TFA 6:00 (Drop Connection) 57'-TFA 2:00 93'-TFC 2:00 129'-TFA 2:00 197'-TFA 2:00		CLEAN
2C	E. Sierra Madre Blvd	8	VCP	2539	2538	222	2	1	DS	LJP/HMD	Light grease on bottom of the pipe.		80'-TFC 10:00 131'-TFA 10:00 206'-TFC 10:00 215'-TBA 10:00		CLEAN
2C	E. Sierra Madre Blvd	8	VCP	2538	2535	216	2	1	DS	LJP/HMD	Pipe was previously line.		65'-TFA 10:00 71'-TFC 10:00 154'-TFA 10:00		NO REPAIR
2B	E. Sierra Madre Blvd	10	VCP	2533	2532	281	3	1	DS	LJP/HMD			50'-TFA 10:0 83'-TFC 10:00 146'-TFA 10:00 188'-TFA 10:00 251'-TFC 10:00		NO REPAIR
2C	E. Sierra Madre Blvd	8	VCP	2540	2639	91	1	1	DS	LJP/AAC/HMD		RF at multiple joints 49', 67' - RM 66' - CL	66' - TBA 10:00 82'-TFC 10:00	66' - CIPP POINT REPAIR	CLEAN & CIPP
2C	E. Sierra Madre Blvd	8	VCP	2639	2539	119	1	1	DS	LJP/AAC/HMD	PIPE RUNS THROUGH RESIDENTIAL PROPERTY. Light grease on bottom of pipe throughout. 21' to 49' - HWL	6', 24', 74' - CM 17'-49' - SAG 21' - FM	7'-TFC 10:00 56'-TBA 10:00	17'-49' - REPLACE PIPE 6' - CIPP POINT REPAIR	CLEAN & CIPP
2C	E. Sierra Madre Blvd	8	VCP	2541	2540	115	0	1	DS	LJP/HMD		29' - CM	88'-TFC 10:00	29' - CIPP POINT REPAIR	CLEAN & CIPP
2B	E. Sierra Madre Blvd	10	VCP	2534	2533	275	3	1	DS	LJP/HMD	Cockroaches throughout		67'-TFC 10:00 110'-TBA 10:00 115'-TFC 10:00 157'-TFA 10:00 218'-TFA 10:00 254'-TFC 10:00		CLEAN
2C	E. Sierra Madre Blvd	10	VCP	2535	2640	9	0	1	DS	LJP/HMD	VERY STEEP PIPE				NO REPAIR
2C	Devonport Rd	8	VCP	2056	2057	266	8	1	US	AAC/HMD	266' - FLUSH TANK	183', 193' - FM 204', 207', 221', 227' - BSV 211', 215', 218' - CL	16' - TFA 10:00 40' - TFA 2:00 43' - TFC 10:00 45' - TFC 2:00 64' - TFA 2:00 116' - TFA 10:00 136' - TFC 2:00 139' - TFA 10:00 163' - TFA 2:00 212' - TFC 10:00 229' - TFC 2:00 238' - TFA 10:00 256' - TFC/TFD 2:00 (roots) 258' - TBA 2:00 (soil visible)		CLEAN & CIPP MODIFY FLUSH TANK
2C	Wetherby Rd	8	VCP	2055	2054	300	8	1	US	AAC/HMD		RF at multiple joints	10' - TFC/TFD 2:00 (dirt) 12' - TFA 10:00 36' - TFC/TFD 2:00 (dirt) 72' - TFC/TFD 10:00 (dirt) 92' - TFA 2:00 98' - TFA 10:00 122' - TFA 2:00 173' - TFC 10:00 184' - TFC 2:00 195' - TFA 10:00 210' - TFC/TFD 2:00 (dirt) 229' - TBI 2:00 271' - TFC 2:00 273' - TFC/TFD 10:00 (dirt) 291' - TFA 10:00 293' - TFA 2:00	229' - TRIM INTRUDING LATERAL	TRIM INTRUDING LATERAL CLEAN & CIPP
2C	Canterbury Rd	8	VCP	2069	2068	275	7	1	US	AAC/HMD	275' - Flush Tank		13' - TFC 10:00 19' - TFA 2:00 40' - TFA 10:00 45' - TFC 2:00 112' - TFA 2:00 117' - TFC 10:00 138' - TFC 2:00 147' - TFA 10:00 207' - TFD 2:00 (roots) 216' - TFC 10:00 233' - TFC 2:00 239' - TFA 10:00 267' - TFC 10:00 268' - TFA 2:00		MODIFY FLUSH TANK CLEAN & CIPP
2C	Canterbury Rd	8	VCP	2068	2067	261	4	1	DS	HMD			52' - TFA 2:00 61' - TFC/TFD 10:00 (dirt) 82' - TFC 2:00 87' - TFC/TFD 2:00 (dirt) 132' - TFA 2:00 157' - TFC 2:00 166' - TBA 10:00 168' - TFC 10:00 195' - TFC/TFD 10:00 210' - TFA 2:00 237' - TFC 2:00		CLEAN & CIPP

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
2C	Devonport Rd	8	VCP	2057	2058	262	3	1	DS	AAC/HMD		32' - CC	39' - TFC/TFD 10:00 (dirt) 54' - TFC 2:00 69' - TFA 10:00 (lateral offset) 78' - TFC/TFD 2:00 (dirt) 132' - TFA 2:00 141' - TFC/TFD 10:00 (dirt) 165' - TFC/TFD 2:00 (dirt) 167' - TFC/TFD 10:00 (dirt) 171' - TBD 10:00 (fractured) 221' - TFA 2:00 245' - TFC 10:00 247' - TFC 2:00		CLEAN & CIPP
2C	Wetherby Rd	8	VCP	2054	2053	300	5	1	DS	AAC/HMD	171' - Utility visible in lateral cap void	293' - FM	16' - TFA 2:00 57' - TFA 10:00 82' - TFD/TFC 2:00 84' - TFD/TFC 10:00 105' - TFA 2:00 150' - TFA 10:00 171' - TFC/TFD 2:00 177' - TFC/TFD 10:00 194' - TFC/TFD 2:00 254' - TFC/TFD 10:00 263' - TFC/TFD 2:00 298' - TFA 6:00 (Drop connection)	293' - CIPP POINT REPAIR	CLEAN & CIPP
2C	Canterbury Rd	8	VCP	2067	2066	304	9	1	DS	AAC/HMD		RF at multiple joints	24' - TFA 10:00 27' - TFA 2:00 51' - TFA 10:00 53' - TFA 2:00 105' - TFC 2:00 117' - TBA 2:00 129' - TFC 2:00 144' - TFC 10:00 167' - TBA 10:00 170' - TFC 2:00 185' - TFC 2:00 209' - TFC 2:00 267' - TFA 2:00 269' - TFC/TFD 2:00 (dirt) 293' - TFA 2:00 295' - TFA 10:00		CLEAN & CIPP
2C	Devonport Rd	8	VCP	2058	2060	261	3	1	DS	AAC/HMD		14', 52' - BSV CL, FM at many areas	14' - TFA 10:00 53' - TFA 2:00 76' - TFC 2:00 91' - TFC/TFD 10:00 (dirt) 115' - TFC/TFD 10:00 (dirt) 148' - TFA 2:00 171' - TFC 2:00 198' - TFC 10:00 231' - TFC 2:00		CLEAN & CIPP
2C	Canterbury Rd	8	VCP	2066	2065	300	3	1	DS	AAC/HMD		RF at multiple joints	38' - TFA 2:00 68' - TFA 2:00 82' - TFC 10:00 109' - TFC 10:00 124' - TFC 2:00 148' - TFC 2:00 203' - TFA 2:00 223' - TFC 10:00 225' - TFC 2:00 271' - TFC 2:00		CLEAN & CIPP
2C	Devonport Rd	8	VCP	2062	2060	274	5	1	DS	AAC/HMD			14' - TFC 10:00 17' - TFA 2:00 68' - TFC 2:00 76' - TBA 10:00 89' - TFC 10:00 95' - TFC 2:00 100' - TBA 2:00 116' - TFC/TFD 10:00 (dirt) 192' - TFA 10:00 239' - TFA 2:00		CLEAN & CIPP
2C	Devonport Rd	8	VCP	2630	2062	274	8	1	US	AAC/HMD	274' - Flush Tank	270' - DEAD RAT IN MAIN PIPE	9' - TFC 2:00 12' - TFC 10:00 61' - TFA 10:00 65' - TBA 2:00 75' - TFC 2:00 87' - TFA 10:00 102' - TFA 2:00 144' - TFC 10:00 159' - TFC 2:00 171' - TFA 10:00 183' - TFC 2:00 219' - TFC 10:00 239' - TFA 2:00 245' - TFA 10:00 263' - TFA 2:00		CLEAN & CIPP MODIFY FLUSH TANK
2C	La Paz Dr	8	VCP	2016	2015	197	6	1	US	HMD	197' - Flush Tank		4' - TFA 2:00 58' - TFA 10:00 60' - TFC 2:00 90' - TFA 10:00 138' - TFA 2:00 188' - TFA 2:00 191' - TFA 10:00		MODIFY FLUSH TANK

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
2C	Los Arboles Ln	8	VCP	2017	2018	337	10	1	US	HMD	Light roots in joints throughout. 337' - Flush Tank		70' - TFC 10:00 73' - TFA 2:00 121' - TFC 10:00 123' - TFC 2:00 (RML) 144' - TFA 2:00 (RBL) 177' - TFA 10:00 (RBL) 221' - TFA 10:00 224' - TFA 2:00 265' - TFC 10:00 269' - TFC 2:00 274' - TFA 2:00 319' - TFA 10:00 331' - TFA 2:00 333' - TFA 10:00 335' - TBA 2:00		CLEAN & CIPP MODIFY FLUSH TANK
2C	La Paz Dr	8	VCP	2015	2014	197	3	1	US	HMD		63' - small chiped pipe near joint 153' - RFJ	64' - TFC 10:00 66' - TFC 2:00 87' - TBA 2:00 114' - TFA 10:00 138' - TFC 2:00 156' - TBI 3:00 186' - TFC 10:00		CLEAN
2C	Alegria Pl	8	VCP	2020	2019	300	8	1	US	LJP/HMD	Light to medium roots in joints throughout 300' - Flush Tank	64' - RFJ 3:00 70' - RFJ 1:00 to 5:00 73' - RFJ 3:00 277' - CM	49'-TFC 10:00 52'-TFC 2:00 100'-TFA 10:00 (RML) 102'-TFC 2:00 122'-TBA 2:00 150'-TFA 10:00 153'-TFC 2:00 198'-TFC 10:00 204'-TFA 2:00 252'-TFA 10:00 257'-TFA 2:00 287'-TFA 10:00 290'-TFA 2:00		CLEAN & CIPP MODIFY FLUSH TANK
2C	Palomar Rd	8	VCP	2061	2065	186	2	1	DS	LJP/HMD			13'-TFC 10:00 37'-TFA 2:00 54'-TFC 10:00 124'-TFC 2:00 150'-TFA 10:00		NO REPAIR
2C	Winston Ave	8	VCP/CIPP Lined	2638	2041	220	7	1	US	LJP/AAC/HMD	PIPE LINED IN THE PAST	11' - CM 30' - FM	30'-TFD 10:00 (RBL) 48'-TFA 2:00 106'-TFA 10:00 112'-TFD 2:00 (RBL) 189'-TFD 2:00 (RBL) 191'-TFA 10:00 209'-TFA 10:00 (RML)		NO REPAIR
2C	Santa Anita Ave	8	VCP	2047	2046	299	7	1	US	LJP/HMD	299' - Flush Tank	251' - FM 283' - CM 291' - RM	19'-TFD 10:00 (RBL) 24'-TBA 2:00 (Intruding) 76'-TFC 2:00 81'-TFC 10:00 99'-TFA 10:00 132'-TFC 2:00 159'-TFC 10:00 170'-TFA 2:00 179'-TFA 10:00 (RFL) 206'-TFC 2:00 238'-TFC 10:00 250'-TFC 2:00 261'-TFC 10:00 282'-TFD 10:00 (RBL) 291'-TFD 2:00 (RBL)	24' - Trim intrusion	TRIM INTRUSION CLEAN & CIPP MODIFY FLUSH TANK
2C	Winston Ave	8	VCP	2041	2042	161	3	1	DS	LJP/HMD	Missing wall at MH 965	52' - RFJ 7:00 to 11:00 55' - RFJ 7:00 61' - RFJ 78' - RFJ 7:00 159' - HOLE IN MH CHANNEL (MH 2042)	28'-TFA 10:00 49'-TFC 2:00 54'-TFA 10:00 99'-TFA 2:00 104'-TFC 10:00 125'-TFC 10:00 152'-TFC 2:00	159' - Rehab MH channel (DS MH 2042)	CLEAN & CIPP REHAB MH CHANNEL
2C	Santa Anita Ave	8	VCP	2046	2045	260	3	1	DS	LJP/HMD	Light roots in joints throughout.		12' - TFC 2:00 27' - TFC 10:00 63' - TFA 2:00 78' - TFA 10:00 93' - TFA 2:00 (RBL) 135' - TFC 10:00 143' - TFC 2:00 164' - TFC 2:00 173' - TFC 10:00 206' TFC 2:00 226' - TFC 10:00		CLEAN & CIPP
2C	Palomar Rd	8	VCP	2077	2076	182	0	1	DS	LJP/AAC/HMD			20'-TFC 2:00 23'-TFC 10:00 138'-TFC 2:00 140'-TFC 10:00		NO REPAIR
2C	Winston Ave	8	VCP	2042	2043	282	5	1	DS	LJP/HMD			14'-TFA 10:00 29'-TFA 10:00 74'-TFA 2:00 91'-TFC 10:00 115'-TFC 10:00 154'-TFA 2:00 165'-TFC 10:00 174'-TFC 2:00 224'-TFC 10:00 234'-TFA 2:00		NO REPAIR

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2C	California Blvd	8	VCP	2014	2018	293	8	1	DS	LJP/HMD		RF at multiple joints	3'-TBA 2:00 58'-TFC 10:00 61'-TFA 2:00 109'-TFC 10:00 112'-TFA 2:00 160'-TFA 10:00 162'-TFA 2:00 210'-TFC 10:00 (RFL) 213'-TFA 2:00 (RFL) 260'-TFC/TFD 10:00 (RBL) 263'-TFD 2:00 (RBL)		CLEAN & CIPP
2C	California Blvd	8	VCP	2018	2019	195	1	1	DS	LJP/HMD		RF in multiple joints	20'-TFD 2:00 (RML) 68'-TFC 10:00 (RBL) 70'-TFC 2:00 (RML) 118'-TFC 10:00 121'-TFC 2:00 168'-TFC 10:00		CLEAN & CIPP
2C	Wallingford Rd	8	VCP	2074	2073	231	5	1	DS	LJP/HMD		RF at multiple joints	18'-TBA 2:00 42'-TFC 2:00 44'-TFA 10:00 68'-TFC 2:00 70'-TFA 10:00 (RML) 119'-TFA 2:00 130'-TFC 10:00 145'-TFA 2:00 156'-TFC 10:00 208'-TFC 2:00 210'-TFC 10:00		CLEAN
2C	Wallingford Rd	8	VCP	2075	2074	232	5	1	DS	LJP/HMD		230' - Hole in DS MH 2074	31'-TFC 2:00 33'-TFA 10:00 57'-TFA 2:00 59'-TFC 10:00 107'-TFC 2:00 110'-TFA 10:00 134'-TFC 2:00 137'-TFC 10:00 188'-TFA 2:00 190'-TFA 10:00 214'-TFC 2:00 217'-TFC 10:00	230' - Rehab channel of DS MH 2074	REHAB MH CHANNEL
2C	Canterbury Rd	8	VCP	2064	2065	300	7	1	US	LJP/AAC/HMD	300' - Flush Tank		28'-TFC 10:00 67'-TFC 10:00 70'-TFC 2:00 100'-TFC 10:00 109'-TBA 10:00 139'-TFA 2:00 162'-TFC 2:00 168'-TFC 10:00 195'-TFC 10:00 216'-TFA 2:00 245'-TFC 2:00 269'-TFA 10:00 290'-TFC 2:00 292'-TFC 10:00 295'-TFA 2:00 296'-TBA 10:00 298'-TBA 2:00		MODIFY FLUSH TANK
2C	Wallingford Rd	8	VCP	2078	2076	300	8	1	US	LJP/HMD	300' - Flush Tank 259'- Rat observed		46'-TFA 2:00 48'-TFA 10:00 97'-TFC 2:00 99'-TFC 10:00 126'-TFA 2:00 128'-TFA 10:00 (Grease) 176'-TFC 2:00 179'-TFC 10:00 200'-TFA 2:00 202'-TFA 10:00 256'-TFC 2:00 259'-TFC 10:00 283'-TFA 2:00 285'-TFA 10:00		MODIFY FLUSH TANK
2C	Palomar Rd	8	VCP	2065	2077	183	1	1	DS	LJP/HMD			66'-TFA 2:00 69'-TFC 10:00 168'-TFC 2:00 171'-TFC 10:00		NO REPAIR
2C	Palomar Rd	8	VCP	2060	2061	186	1	1	DS	AAC/HMD		145' - FS	60' - TFC 2:00 84' - TFC 10:00 121' - TBI 2:00 169' - TFC 2:00	121' - TRIM INTRUDING LATERAL 145' - CIPP POINT REPAIR	TRIM INTRUSION CLEAN & CIPP
2C	Wallingford Rd	8	VCP	2076	2075	233	5	1	DS	LJP/HMD	Light grease on the bottom of the pipe throughout.		52'-TFC 2:00 55'-TFC 10:00 100'-TFA 2:00 (Grease) 102'-TFA 10:00 126'-TFC 2:00 129'-TFA 10:00 180'-TFA 2:00 183'-TFC 10:00 207'-TFA 2:00 209'-TFC 10:00		NO REPAIR
2B	Gainsborough Dr R/W	8	VCP	2645	2206	211	0	1	DS	AAC/HMD		RF at multiple joints	56' - TFC 2:00 59' - TFC 10:00 104' - TFC 2:00 106' - TFC 10:00		CLEAN & CIPP

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2B	Gainsborough Dr	8	VCP	2203	2204	281	8	1	US	AAC/HMD		123' - 130' - Sag in Pipe 270' - CC 278' - BSV	60' - TBA 2:00 66' - TBA 10:00 200' - TFA 2:00 202' - TFA 10:00 272' - TFA 2:00 273' - TBA 2:00 274' - TFA 10:00 276' - TBA 10:00		CLEAN & CIPP
2B	Bradbury Rd	8	VCP	2400	2401	282	13	1	DS	AAC/HMD		9', 127' - CC 45', 262' - FM RF at multiple joints	8' - TFC 10:00 29' - TFD 2:00 (roots) 35' - TFD 10:00 (roots) 58' - TFD/TFI 10:00 (roots) 65' - TFA 2:00 89' - TFC 2:00 95' - TFC 10:00 122' - TFC 10:00 124' - TFC 2:00 150' - TFA 2:00 157' - TFA 10:00 180' - TFA 10:00 181' - TFA 10:00 184' - TFA 2:00 211' - TFA 2:00 215' - TFA 10:00 244' - TFC 10:00 247' - TFC 2:00 274' - TFA 2:00 276' - TFD 10:00 (roots)		CLEAN & CIPP
2B	Bradbury Rd	8	VCP	2401	2402	282	8	1	DS	AAC/HMD		RF at multiple joints 172', 221', 234' - CC	18' - TFC 10:00 24' - TFC 2:00 51' - TFC 2:00 54' - TFD 10:00 (roots) 81' - TFC 10:00 83' - TFD 2:00 (roots) 110' - TFA 2:00 113' - TFA 10:00 140' - TFA 10:00 142' - TFC 2:00 173' - TFC 2:00 175' - TFC 10:00 202' - TFC 10:00 205' - TFA 2:00 232' - TFC 2:00 234' - TFD 10:00 (roots) 261' - TFC 10:00 264' - TFA 2:00		CLEAN & CIPP
2B	Gainsborough Dr	8	VCP	2220	2466	287	3	1	DS	AAC/HMD		89' - FM 274' - CC	21' - TFA 2:00 75' - TBI 12:00 99' - TFA 2:00		CLEAN & CIPP
2B	Bradbury Rd	8	VCP	2466	2400	281	8	1	DS	AAC/HMD		19', 32' - FC 187' - CL 224' - FL	42' - TFC 10:00 48' - TFC 2:00 72' - TBD 2:00 (roots) 81' - TFA 10:00 95' - TFC 2:00 107' - TFC 10:00 124' - TFC 2:00 142' - TFD 10:00 (roots) 157' - TFA 2:00 172' - TFA 10:00 184' - TFC 2:00 205' - TFD 10:00 (roots) 213' - TFC 2:00 231' - TFD 10:00 (roots) 243' - TFD 2:00 (roots) 264' - TFC 10:00 272' - TFC 2:00		CLEAN & CIPP
2B	Bradbury Rd	8	VCP	2402	2403	281	11	1	DS	AAC/HMD	Missing wall @ MH 2403	162' - RM RF at multiple joints 205' - FC 210', 246', 255', 267' - CC	9' - TFA 2:00 12' - TFA 10:00 42' - TFC 10:00 44' - TFC 2:00 71' - TFC 2:00 74' - TFA 10:00 101' - TFD 10:00 (roots) 103' - TFD 2:00 (roots) 130' - TFD 2:00 (roots) 133' - TFD 10:00 (roots) 160' - TFC 10:00 163' - TFC 2:00 189' - TFC 2:00 (roots) 192' - TFD 10:00 (roots) 222' - TFC 10:00 224' - TFD 2:00 (roots) 251' - TFD 2:00 (roots) 253' - TFD 10:00 (roots)		CLEAN & CIPP REHAB MH CHANNEL

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
2B	Bradbury Rd	8	VCP	2403	2404	271	11	1	DS	AAC/HMD	Light grease on bottom of pipe.	RF at multiple joints 212' - CC	8' - TFC 2:00 29' - TFC 2:00 31' - TFA 10:00 32' - TBD 2:00 (roots) 60' - TFA 10:00 64' - TFC 2:00 91' - TFC 2:00 93' - TFA 10:00 (roots) 120' - TFD 2:00 (broken) 123' - TFC 10:00 144' - TFA 2:00 149' - TFA 10:00 179' - TFC 2:00 187' - TFC 10:00 209' - TFD 2:00 (roots) 217' - TFC 2:00 227' - TBA 10:00 241' - TFC 2:00 247' - TFA 10:00 268' - TFD 2:00 (roots)		CLEAN & CIPP
2B	Cumberland Rd	8	VCP	2212	2213	289	8	1	US	AAC/HMD	289' - Flush Tank	4', 28', 34', 133', 202', 228', 231' - FM	25' - TFA 10:00 36' - TFD 2:00 (roots) 102' - TFA 10:00 111' - TFA 2:00 183' - TFD 10:00 (roots) 195' - TFA 2:00 282' - TFA 10:00 284' - TFA 2:00		CLEAN & CIPP MODIFY FLUSH TANK
2B	N. Huntington Dr Alley	8	VCP	2217	2216	291	5	1	US	AAC/HMD		RF at multiple joints 254' - 257' - SAG	86' - TFA 2:00 116' - TFA 2:00 193' - TFA 2:00 254' - TFA 2:00 287' - TFA 2:00 292' - GAS BARRIER GATE		CLEAN & CIPP
2B	Cumberland Rd	8	VCP	2213	2214	291	7	1	DS	AAC/HMD		66' - CC 94', 115', 138', 190' - FM 178' - RM	45' - TFA 10:00 60' - TFA 2:00 129' - TFA 10:00 135' - TFA 2:00 204' - TFA 10:00 210' - TFA 2:00 240' - TFD 10:00 (roots)		CLEAN & CIPP
2B	Cumberland Rd R/W	8	VCP	2215	2484	281	5	1	DS	AAC/HMD		9', 229', 265', 268' - CC 35' - BSV 132' - CL 170' - FM	39' - TFC 10:00 42' - TBI 2:00 93' - TBI 2:00 108' - TFC 10:00 110' - TFA 2:00 159' - TFC 10:00 162' - TFC 2:00 175' - TBA 1:00 208' - TFC 10:00 209' - TFC 2:00 279' - TFA 6:00 (drop connection)	42', 93' - TRIM INTRUDING LATERAL	TRIM INTRUSION CLEAN & CIPP
2B	Cumberland Rd R/W	8	VCP	2214	2215	289	3	1	DS	AAC/HMD	112' - Material change to Cast Iron 208' - Material change to VCP Channel narrows at MH A	17' - Intruing Sealing Grout 17', 112' - CC	60' - TFA 10:00 114' - TFC 12:00 141' - TFA 2:00 197' - TFC 12:00 198' - TFA 12:00 237' - TFC 10:00 240' - TFC 2:00 281' - TFC 10:00 284' - TFC 2:00	17' - TRIM INTRUDING SEALING GROUT	TRIM INTRUSION CLEAN & CIPP
2B	Bellwood Rd	8	VCP	2411	2410	293	10	1	US	HMD	293' - Flush Tank	12' - RFJ 21'- RFJ 60' - RFJ 106' - CFJ	3' - TFC 2:00 24' - TFA 2:00 (RML) 36' - TFA 10:00 (RML) 62' - TFC 2:00 64' - TFC 10:00 76' - TBA 10:00 88' - TBA 2:00 109' - TFC 10:00 116' - TFC 2:00 138' - TFA 10:00 (RFL) 145' - TBA 2:00 155' - TFC 2:00 172' - TFC 10:00 193' - TFC 2:00 202' - TFA 10:00 219' - TFA 2:00 240' - TFC 10:00 257' - TFC 2:00 257' - TBA 10:00 266' - TFC 10:00 283' - TFA 2:00		CLEAN & CIPP MODIFY FLUSH TANK

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
2B	Bellwood Rd	8	VCP	2410	2409	242	8	1	DS	HMD	163' - Trim Root Ball Lateral	80' - CFJ 178' - RMJ 10:00 190' - RMJ 242' - Roots in MH 2409	4' - TFC 2:00 35' - TFA 10:00 (RML) 37' - TFA 2:00 61' - TFC 10:00 78' - TFC 2:00 97' - TFA 10:00 104' - TFA 2:00 125' - TFC 10:00 151' - TFC 2:00 159' - TFA 10:00 (RBL) 161' - TFC 10:00 (RML) 189' - TFC 2:00 (RML) 192' - TBA 12:00 (RML) 214' - TFA 2:00 (RTL) 216' - TFC 10:00 221' - TFC 2:00 (RFL) 238' - TFA 10:00 (RFL)	242' - Clean and line MH 2409	CLEAN & CIPP LINE MH
2B	Bellwood Rd	8	VCP	2409	2408	296	7	1	DS	HMD	Light roots in joints throughout.	24' - RFJ 1:00 24' - CFJ 1:00 to 5:00	9' - TFA 2:00 (RFL) 42' - TFC 10:00 50' - TFC 2:00 (RFL) 68' - TFC 10:00 80' - TFA 2:00 109' - TFA 10:00 118' - TFC 2:00 135' - TFC 10:00 144' - TFA 2:00 (RML) 177' - TFA 10:00 184'- TFC 2:00 206' - TFA 10:00 211' - TFC 2:00 243' - TFC 10:00 247' - TBA 2:00 (RML) 252' - TFC 2:00 269' - TFC 10:00 278' - TFC 2:00		CLEAN & CIPP
2B	Rubio Dr	8	VCP	2416	2415	281	8	1	US	HMD	Cockroach infestation. Cockroahes of all sizes. Clean to kill them and prevent them from burring in joints.		6' - TFA 10:00 30' - TFC 2:00 39' - TFA 10:00 50' - TFA 2:00 74' - TFC 10:00 91' - TFC 2:00 94' - TFA 10:00 118' - TFC 2:00 123' - TFC 10:00 147' - TFA 2:00 153' - TFA 10:00 176' - TFA 2:00 194' - TFC 10:00 199' - TFC 2:00 224' - TFA 10:00 228' - TFC 2:00 255' - TFC 10:00 267' - TFC 2:00		CLEAN
2B	Bellwood Rd	8	VCP	2408	2407	295	11	1	US	HMD			5' - TFA 10:00 19' - TFA 2:00 43' - TFC 10:00 54' - TFC 2:00 72' - TFA 10:00 80' - TFC 2:00 112' - TFA 10:00 121' - TFA 2:00 (RML) 135' - TFA 10:00 147' - TFA 2:00 176' - TFC 10:00 185' - TFC 2:00 205' - TFA 10:00 211' - TFA 2:00 246' - TFC 10:00 252' - TFC 2:00 272' - TFA 10:00 281' - TFC 2:00 285' - TBA 2:00 (RBL)		CLEAN & CIPP
2B	Rubio Dr	8	VCP	2415	2414	274	8	1	DS	HMD		228' - FJ 7:00 to 3:00	22' - TFC 2:00 25' - TFC 10:00 52' - TFC 2:00 57' - TFA 10:00 87' - TFA 2:00 89' - TFC 10:00 110' - TFC 2:00 112' - TFA 10:00 141' - TFC 10:00 145' - TFA 2:00 165' - TFA 2:00 183' - TFA 10:00 207' - TFA 10:00 209' - TFC 2:00 227' - TFA 2:00 250' - TFC 10:00 268' - TFC 2:00	228' - CIPP point repair over fracture	CIPP POINT REPAIR

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
2B	Bellwood Rd	8	VCP	2407	2406	238	7	1	DS	HMD	Light roots in joints throughout.	195' - CMJ	8' - TFC 10:00 22' - TFC 2:00 51' - TFA 10:00 (RFL) 57' - TFA 2:00 78' - TFA 10:00 80' - TFC 2:00 107' - TFA 2:00 118' - TFC 10:00 139' - TFC 2:00 147' - TFC 10:00 174' - TBI 2:00 191' - TFC 10:00 200' - TFC 2:00 200' - TBA 10:00 (RBL) 217' - TFC 10:00 232' - TFA 2:00	174' - Trim intruding lateral	TRIM INTRUSION CLEAN & CIPP
2B	Rubio Dr	8	VCP	2414	2413	273	8	1	DS	HMD	Light grease in barrel of pipe.	229' - FB 2:00 272 ' - Hole in MH 2413 channel	4' - TFA 10:00 9' - TFC 2:00 36' - TFC 10:00 44' - TFA 2:00 59' - TFC 10:00 65' - TFC 2:00 88' - TFA 10:00 103' - TFA 2:00 127' - TFC 10:00 129'- TFC 2:00 142' - TBI 2:00 156' - TBA 9:00 162' - TFC 2:00 171' - TFC 10:00 191' - TFC 10:00 194' - TFC 2:00 229' - TFA 2:00 235' - TFC 10:00 246' - TFC 2:00 258' - TBA 2:00	229 ' - CIPP Point Repair over fracture and reintall lateral 272' - Rehab channel of MH 2413	CIPP POINT REPAIR REHAB MH CHANNEL
2B	Bellwood Rd	8	VCP	2406	2405	240	8	1	DS	HMD	Fine cracks at joints throughout.	132' -CFJ	17' - TFC 2:00 22' - TFC 10:00 26' - TBA 10:00 52' - TFC 10:00 55' - TFA 2:00 81' - TFC 2:00 96' - TFA 10:00 116' - TFA 2:00 (RML) 121' - TFC 10:00 142' - TBI 2:00 162' - TFA 10:00 186' - TFC 2:00 188' - TFC 10:00 203' - TFC 2:00 (RFL) 206' - TBA 2:00 (RFL) 223' - TBA 10:00 232' - TFC 10:00 235' - TFC 2:00	142' - Trim intruding lateral	TRIM INTRUSION CLEAN & CIPP??
2B	Rubio Dr	8	VCP	2413	2412	150	4	1	DS	HMD			18' - TFC 2:00 41' - TFC 10:00 50' - TFA 2:00 73' - TFC 2:00 76' - TFA 10:00 96' - TFC 10:00 102' - TFA 2:00 129' - TFC 2:00 137' - TFA 10:00		NO REPAIR
2B	Bellwood Rd	8	VCP	2405	16 0516	96	2	1	DS	HMD			17' - TFA 2:00 19' - TFC 10:00 57' - TFC 2:00 60' - TFA 10:00 (RML)		NO REPAIR
2B	Huntington Dr	8	VCP	2473	2474			1	DS	HMD	Previously Lined (THEREFORE DID NOT WATCH VIDEO); The pipe might have liner bad seals at laterals, should watch later if budget available.				PREVIOUSLY LINED
2B	Huntington Dr	8	VCP	2472	2473			1	US	HMD	Previously Lined (THEREFORE DID NOT WATCH VIDEO); The pipe might have liner bad seals at laterals, should watch later if budget available.				PREVIOUSLY LINED
2B	Vandyke Rd	8	VCP	2386	2385	250	8	1	US	HMD	249' - Flush Tank	40' - RTJ	3' - TFC 2:00 36' - TFA 2:00 45' - TFA 10:00 71' - TFC 2:00 74' - TFA 10:00 104' - TFC 2:00 115' - TFC 10:00 145' - TFA 2:00 (RML) 148' - TFC 10:00 174' - TFA 2:00 (RBL) 189' - TBI 10:00 219' - TFC 10:00 242' - TFA 2:00 245' - TFA 10:00	40' - CIPP Point Repair over root 189' - Trim intruding lateral	CLEAN TRIM INTRUSION CIPP POINT REPAIR MODIFY FLUSH TANK

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
2B	Mirasol Dr	8	VCP	2417	2418	301	9	1	DS	HMD	Spiderwebs at top of pipe.		14' - TFA 2:00 22' - TFC 10:00 46' - TFA 10:00 52' - TFC 2:00 76' - TFA 10:00 81' - TFC 2:00 116' - TFC 10:00 119' - TFA 2:00 137' - TFC 10:00 145' - TFC 2:00 168' - TFA 10:00 171' - TFA 2:00 198' - TFA 10:00 203' - TFA 2:00 230' - TFC 10:00 251' - TFC 2:00 253' - TFC 10:00 263' - TBA 10:00 268' - TFC 2:00 297' - TFC 10:00		NO REPAIR
2B	Mirasol Dr	8	VCP	2629	2417	184	3	1	US	HMD	Light roots in joints throughout. 184' - Flush Tank	14' to 16' - Break at top of Pipe with concrete(?) pipe over it 152' to 158' - RMB	48' - TFC 10:00 62' - TFC 2:00 76' - TFA 10:00 (RBL) 172' - TFA 2:00 (RBL) 97' - TFC 2:00 100' - TFC 10:00 135' - TFC 10:00 137' - TFC 2:00 155' - TFC 10:00 (RML) 178' - TFA 10:00 (RML)		CLEAN & CIPP MODIFY FLUSH TANK
2B	Mirasol Dr	8	VCP	2418	2419	301	12	1	DS	HMD	Light grease on bottom of pipe.	103' - CMJ 294' - CMJ	6' - TFA 2:00 20' - TFC 10:00 29' - TFC 2:00 62' - TFA 10:00 64' - TFA 2:00 76' - TFC 10:00 88' - TFC 2:00 94' - TBA 2:00 102' - TFA 10:00 129' - TFC 2:00 137' - TFC 10:00 146' - TFC 2:00 173' - TFA 10:00 184' - TFI 2:00 199' - TFA 10:00 204' - TFC 2:00 221' - TFA 10:00 236' - TFA 2:00 263' - TFA 10:00 271' - TFA 2:00 295' - TFC 10:00	184' - Trim intruding lateral liner 103' - CIPP point repair over crack 294' - CIPP point repair over crack and reinstall lateral	TRIM INTRUSION CIPP POINT REPAIR
2B	Mirasol Dr	8	VCP	2419	2420	176	6	1	US	HMD			3' - TFC 2:00 23' - TFA 10:00 42' - TFA 2:00 62' - TFA 10:00 68' - TFA 2:00 98' - TFC 10:00 103' - TFC 2:00 124' - TFA 2:00 129' - TFA 10:00 135' - TFC 10:00 159' - TFC 2:00 161' - TFC 10:00		NO REPAIR
2B	Mirasol Dr	8	VCP	2420	2421	186	6	1	US	HMD			3' - TFA 2:00 18' - TFC 2:00 23' - TFA 10:00 35' - TFA 2:00 71' - TFA 2:00 109' - TFC 2:00 115' - TFC 10:00 133' - TFA 2:00 141' - TFA 10:00 171' - TFC 2:00 179' - TFC 10:00		NO REPAIR
2B	Mirasol Dr	8	VCP	2421	2413	227	2	1	DS	HMD	Light grease on bottom of pipe.		12' - TFC 10:00 28' - TBA 10:00 30' - TFC 10:00 47' - TFC 2:00 53' - TFC 2:00 80' - TFC 2:00 94' - TFC 10:00 137' - TFA 2:00 184' - TFC 10:00 190' - TFC 2:00		CLEAN

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
2B	Rubio Dr	8	VCP	2412	2314	248	7	1	US	HMD	Light grease on bottom of pipe.		89' - TFA 10:00 94' - TFA 2:00 124' - TFC 2:00 (RML) 130' - TFC 10:00 144' - TFA 2:00 156' - TFA 10:00 168' - TFC 2:00 194' - TFA 10:00 206' - TFC 2:00 214' - TFA 10:00 232' - TFA 2:00 240' - TFC 10:00		CLEAN
2B	Rubio Dr	8	VCP	2314	2313	45	0	1	DS	HMD	Light grease on bottom of pipe.	17' - RFJ 9:00			CLEAN
2B	Rubio Dr	8	VCP	2313	2312	271	9	1	DS	HMD		37' - FMJ 258' - CMJ 8:00	6' - TFA 2:00 9' - TFC 10:00 (RFL) 33' - TFC 10:00 36' - TFC 2:00 63' - TFA 2:00 65' - TFC 10:00 100' - TFA 10:00 118' - TFA 2:00 136' - TFC 10:00 152' - TFA 2:00 175' - TFA 10:00 180' - TFA 2:00 207' - TFA 10:00 212' - TFC 2:00 239' - TFA 2:00 263' - TFC 10:00 267' - TFA 2:00	37' - CIPP point repair over fracture 258' - CIPP point repair over cracks	CIPP POINT REPAIR
2B	Melville Dr	8	VCP	2621	2314	300	8	1	US	HMD	Coackroaches throughout. Fine roots in joints throughout. 300' - Flush Tank	69' - RMJ 12:00 88' - RMJ 11:00 to 1:00 91' - RFJ 2:00 172' - RTJ 12:00	108' - TFA 2:00 (RTL) 174' - TFA 2:00 211' - TBA 10:00 219' - TFA 3:00 243' - TFA 2:00 258' - TFA 10:00 284' - TFC 2:00 293' - TBA 2:00 293' - TFA 10:00 295' - TFC 2:00		CLEAN & CIPP MODIFY FLUSH TANK
2B	Melville Dr	8	VCP	2374	06 0515	237	3	1	DS	HMD	Light grease on the bottom of the pipe. Fine roots in joints throughout.		36' - TFC 10:00 57' - TFA 2:00 (RBL) 60' - TFA 10:00 102' - TFC 10:00 132' - TFC 2:00 134' - TFC 10:00 172' - TBA 10:00 186' - TFC 10:00		CLEAN & CIPP
2B	Vandyke Rd	8	VCP	2385	2384	249	7	1	US	LJP/AAC/HMD	Fine roots in joints in select locations.	42' - RF	24'-TFA 2:00 48'-TFC 10:00 60'-TFC 10:00 81'-TFD 10:00 (RBL) 89'-TFA 2:00 122'-TFC 2:00 131'-TFA 10:00 152'-TFA 2:00 160'-TFD 10:00 (RBL) 187'-TFC 2:00 214'-TFC 10:00 216'-TFA 2:00 243'-TFC 10:00		CLEAN & CIPP
2B	Vandyke Rd	8	VCP	2384	2383	300	9	1	DS	LJP/AAC/HMD	Fine roots in joints in select locations.	20', 151' - RM in joint	4'-TFA 2:00 6'-TFC 10:00 31'-TFA 2:00 40'-TFD 10:00 (RBL) 70'-TFA 10:00 79'-TFA 2:00 108'-TFC 2:00 111'-TFC 10:00 141'-TFD 10:00 (RBL) 153'-TFD 2:00 (RBL) 182'-TFC 10:00 185'-TFC 2:00 212'-TFC 10:00 227'-TFA 2:00 253'-TFC 10:00 257'-TBA 10:00 259'-TFC 2:00 280'-TFC 10:00		CLEAN & CIPP
2B	Vandyke Rd	8	VCP	2383	2382	302	9	1	DS	LJP/AAC/HMD	Missing Wall at MH 2382	158', 161' - FM 158' - RF in joint 167' - RM 161' - CL	7'-TFA 2:00 21'-TFA 10:00 33'-TFA 2:00 54'-TFC 10:00 80'-TFC 2:00 95'-TFA 10:00 109'-TFC 2:00 124'-TFC 10:00 157'-TFA 2:00 168'-TFD 10:00 (RBL) 186'-TFA 2:00 201'-TFD 10:00 (RBL) 230'-TFC 2:00 254'-TFC 10:00 263'-TFA 2:00	300' - Rehab MH 2382	CLEAN & CIPP REHAB MH CHANNEL

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
2B	Blackstone Rd	8	VCP	2387	2388	252	7	1	US	HMD	Medium to light roots in joints throughout. 252' - Flush Tank	10' - RMJ 4:00 to 7:00 220' - RTJ 7:00	16' - TFA 2:00 (RBL) 40' - TFC 10:00 54' - TFC 2:00 (RML) 72' - TFC 10:00 (RML) 81' - TFA 2:00 (RBL) 120' - TBI 10:00 123' - TFC 2:00 150' - TFA 10:00 155' - TFA 2:00 179' - TFC 10:00 185' - TFC 2:00 209' - TFC 10:00 (RML) 217' - TFA 10:00 (RBL) 218' - TFC 2:00 232' - TFC 2:00 241' - TFC 10:00 (RTL) 243' - TFA 2:00	120' - Trim intruding lateral liner	TRIM INTRUSION CLEAN & CIPP MODIFY FLUSH TANK
2B	Blackstone Rd	8	VCP	2388	2389	280	9	1	DS	HMD	Medium to light roots in joints throughout.		3' - TFA 2:00 19' - TFC 10:00 (RML) 30' - TFA 2:00 61' - TFA 10:00 79' - TFA 2:00 84' - TFC 10:00 111' - TFC 2:00 126' - TFA 10:00 156' - TFA 2:00 (RBL) 159' - TFC 10:00 189' - TFC 2:00 191'- TFA 10:00 227' - TFC 10:00 239' - TFA 2:00 266' - TFA 10:00 268' - TFC 2:00		CLEAN & CIPP
2A	Wellesley Rd	8	VCP	2350	2351	220	9	1	US	LJP/HMD		RF in multiple joints 99' - FM 126' - CM	15'-TFA 10:00 48'-TFD 2:00 (RBL) 68'-TBA 10:00 77'-TFD 10:00 (RTL) 80'-TFD 2:00 (RBL) 173'-TFA 10:00 179'-TFA 2:00 205'-TFA 2:00 213'-TFA 10:00		CLEAN & CIPP
2A	Wellesley Rd	8	VCP	2351	2346	185	4	1	DS	LJP/HMD	Light grease on the bottom of the pipe.	98' - RFJ 6:00	31'-TFA 10:00 61'-TFA 2:00 97'-TFA 10:00 114'-TFA 2:00		CLEAN & CIPP
2A	Somerset Pl	8	VCP	2345	2344	271	9	1	US	LJP/HMD	Light grease on the bottom of the pipe.		4'-TFA 2:00 54'-TFA 2:00 57'-TFA 10:00 104'-TFD 2:00 (FC) 128'-TFA 10:00 158'-TFA 10:00 194'-TFA 2:00 212'-TFA 10:00 227'-TFA 2:00		CLEAN
2A	Sharon Pl	8	VCP	2339	2338	165	2	1	US	LJP/HMD		RF at multiple joints	3'-TFA 2:00 33'-TFC 10:00 (RML) 69'-TFC 10:00 159'-TFA 10:00		CLEAN & CIPP
2A	Sharon Pl	8	VCP	2338	2337	249	6	1	DS	LJP/HMD		RF at multiple joints	11'-TFA 2:00 77'-TFA 10:00 104'-TFA 2:00 (Grease) 170'-TFA 2:00 185'-TFA 10:00 225'-TFA 10:00		CLEAN & CIPP

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
2A	Sharon Pl	8	VCP	2337	2336	261	8	1	DS	LJP/HMD			7'-TFA 2:00 49'-TFA 2:00 69'-TFA 10:00 102'-TFA 10:00 142'-TFA 2:00 171'-TFA 10:00 198'-TFA 2:00 222'-TFA 2:00		CLEAN & CIPP
2A	Sharon Pl	8	VCP	2336	2335	232	6	1	US	LJP/HMD		RF at multiple joints	25'-TFC 10:00 (RFL) 48'-TFA 2:00 87'-TFA 10:00 123'-TFA 2:00 (RFL) 153'-TFD 2:00 (RBL) 192'-TFD 2:00 (RBL) 194'-TFA 10:00		CLEAN & CIPP
2A	Rose Ave	8	VCP	2360	2359	271	5	1	DS	LJP/HMD	Missing wall @ MH 2359 3:00-9:00	RF at multiple joints	75'-TFA 10:00 99'-TFA 2:00 187'-TFD 2:00 (RBL) 244'-TFA 2:00 247'-TFA 10:00 (RFL)	270'-Rehab Channel of MH 2359	REHAB MH CHANNEL CLEAN & CIPP
2A	Sharon Pl	8	VCP	2335	2334	224	7	1	DS	LJP/HMD	Medium to light roots in joints throughout.	4' - RMJ	7'-TFA 10:00 9'-TFA 2:00 66'-TFA 2:00 (RFL) 93'-TFA 10:00 (RFL) 144'-TFA 2:00 (RFL) 201'-TFA 10:00 203'-TFA 2:00		CLEAN & CIPP
2A	Rose Ave	8	VCP	2359	2358	302	5	1	DS	LJP/HMD	Missing wall @ MH 2358 3:00-9:00	RF at multiple joints	51'-TFA 2:00 68'-TFD 10:00 (RBL) 107'-TFD 2:00 (RBL) 189'-TFA 2:00 262'-TFA 2:00	300'-Rehab Channel of MH 2358	REHAB MH CHANNEL CLEAN & CIPP
2A	Sharon Pl	8	VCP	2334	2332	225	3	1	DS	LJP/HMD		0' - Hole in channel of US MH 2334	55'-TFA 2:00 82'-TFD 2:00 (RBL) 136'-TFA 2:00	0' - Rehab channel of US MH 2334	REHAB MH CHANNEL
2A	Rose Ave	8	VCP	2331	2332	146	2	1	US	LJP/HMD	**146' - GAS BARRIER GATE**		13'-TFA 2:00 140'-TFA 2:00 **146' - Gas Barrier Gate**		NO REPAIR
2A	Woodlawn Ave	8	VCP	2368	2360	183	3	1	US	LJP/HMD	**183' - GAS BARRIER GATE**	RF at multiple joints 177'-DAGS	95'-TFA 2:00 107'-TFA 10:00 142'-TFA 2:00 **183' - GAS BARRIER GATE**		CLEAN & CIPP
2A	Sycamore Dr	8	VCP	2315	2316	250	7	1	US	LJP/HMD	250' - Flush Tank	RF at multiple joints 0' - Hole in DS MH 2316	37'-TFA 2:00 101'-TFA 2:00 130'-TFA 10:00 160'-TFA 2:00 193'-TFA 10:00 222'-TFA 2:00 246'-TFA 10:00	0' - Rehab channel in DS MH 2316	REHAB MH CHANNEL MODIFY FLUSH TANK CLEAN & CIPP
2A	Sycamore Dr	8	VCP	2316	2317	90	2	1	US	LJP/HMD	Fine roots in the joint throughout.		6'-TFD 2:00 (RBL) 66'-TFD 2:00 (RBL)		CLEAN & CIPP
2A	San Salvatore Pl	8	VCP	2332	2333	312	8	1	DS	LJP/HMD	Fine roots in the joint throughout.		36'-TBD 12:00 (RBL) 72'-TFA 10:00 135'-TFA 10:00 193'-TFA 10:00 195'-TFA 2:00 240'-TFA 10:00 294'-TFA 10:00 297'-TFA 2:00		CLEAN & CIPP
1D	Kensington Rd	6	VCP	1022	1591	170	6	1	DS	AAC/HMD	167' - Drop Connection Light Grease buildup in pipe	16', 139', 164' - CC 166' - BSV	28' - TFA 2:00 30' - TFD 10:00 (roots) 73' - TBD 10:00 (roots) 100' - TFD 2:00 (roots) 102' - TFC 10:00 167' - TFA 6:00		CLEAN & CIPP
1D	Valentine School	8	VCP	1591	1531	276	1	1	DS	AAC/HMD	Light grease in the bottom of the pipe.	36' - Small offset joint 161' - HSV 12:00 275' - MH Val. School Missing Wall	271' - TBA 12:00	36' - CIPP Point Repair 275' - Rehab MH Channel (DS MH 1531)	EXCAVATION POINT REPAIR CLEAN & CIPP REHAB MH CHANNEL
1D	Valentine School	8	VCP	1531	1695	277	3	1	DS	AAC/HMD		276' - MH Val. School 1 Missing Wall	48' - TBI 1:00 225' - TBA 10:00 266' - TBA 2:00	276' - Rehab MH Channel (DS MH 1695)	REHAB MH CHANNEL
1D	Valentine School	8	VCP	1695	1532	277	2	1	DS	AAC/HMD		4' - CL	6' - TBA 10:00 157' - TBA 12:00		NO REPAIR
1D	Valentine School	8	VCP	1532	1471	277	2	1	DS	AAC/HMD	Light grease in the bottom of the pipe.	2' - MH Val. School 2 Missing Wall	240' - TBA 10:00 241' - TBA 10:00	2' - Rehab MH Channel (US MH 1532)	REHAB MH CHANNEL CLEAN
1D	Alhambra Rd	8	VCP	1471	1470	274	5	1	DS	AAC/HMD	Light grease in the bottom of the pipe.	9' - CM 135' - FM 272' - MH 1880 Missing Wall	9' - TBA 10:00 18' - TBA 2:00 91' - TBA 2:00 167' - TBA 10:00 203' - TBA 10:00	135' - CIPP Point Repair 272' - Rehab MH Channel (DS MH 1470)	CLEAN & CIPP REHAB MH CHANNEL
1D	Alhambra Rd	8	VCP	1470	1469	265	3	1	DS	AAC/HMD	Light Grease buildup in pipe	12' - RM 265' - MH Lorain Rd Missing Wall	21' - TBD 10:00 (roots) 57' - TBA 2:00 97' - TBI 10:00	97' - Trim Intruding Lateral 265' - Rehab MH Channel (DS MH 1469)	CLEAN & CIPP REHAB MH CHANNEL TRIM INTRUSION
1D	Warwick Rd	8	VCP	1461	1460	230	5	1	DS	HMD	Light grease on bottom of the pipe.	193' - FMJ 227' - Hole in channel of DS MH 1460	103' - TFA 2:00 106' - TFA 10:00 174' - TFA 2:00 177' - TFA 10:00 209' - TBA 10:00	193' - CIPP point repair over fracture 227' - Rehab channel of DS MH 1460	REAHB MH CHANNEL CLEAN & CIPP

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1D	Warwick Rd	8	VCP	1460	1459	302	9	1	DS	HMD		6' - FMJ 87' - RFJ 120' - RFJ 263' - RFJ 300' - Hole in channel of DS MH 1459	16' - TFA 2:00 18' - TFC 10:00 86' - TFA 2:00 89' - TFA 10:00 157' - TFA 2:00 160' - TFA 10:00 223' - TFA 2:00 225' - TFA 10:00 286' - TFA 2:00 289' - TFA 10:00	300' - Rehab channel of DS MH 1459	REHAB MH CHANNEL CLEAN & CIPP
1D	Warwick Rd	8	VCP	1459	1452	302	9	1	DS	HMD	Light cracks throughout the pipe.	3' - FMJ 5:00 to 7:00 90' - CMJ 135' - CMJ 162' - CMJ 175' - CMJ 188' - CMJ 190' - RFJ	52' - TFA 2:00 54' - TFA 10:00 118' - TFA 2:00 120' - TFA 10:00 183' - TFA 2:00 186' - TFA 10:00 241' - TFA 10:00 252' - TFA 2:00 299' - TFA 6:00 (DROP)		CLEAN & CIPP
1D	Windsor Rd	8	VCP	1457	1458	301	8	1	DS	AAC/HMD		RF @ multiple joints 41', 218' - FM 65' - CM	29' - TFA 2:00 32' - TFA 10:00 101' - TFD 2:00 (roots) 103' - TFA 10:00 172' - TFA 2:00 174' - TFA 10:00 242' - TFA 2:00 245' - TFA 10:00		CLEAN & CIPP
1D	Windsor Rd	8	VCP	1458	1450	300	9	1	DS	AAC/HMD	298' - Drop Connection	1', 5', 281', 297' - FM 129', 255' - CC	9' - TFA 2:00 11' - TFD 10:00 (roots) 46' - TBA 2:00 80' - TFC 2:00 83' - TFA 10:00 151' - TFA 2:00 192' - TFA 10:00 241' - TBA 2:00 243' - TFA 2:00 (roots) 298' - TFA 6:00		CLEAN & CIPP
1D	Windsor Rd	8	VCP	1454	1455	230	7	1	US	LJP/HMD	Light Grease buildup in pipe 230' - Flush Tank		8'-TFA 2:00 11'-TFI 10:00 79'-TFA 2:00 82'-TFA 10:00 148'-TFA 2:00 150'-TFC 10:00 218'-TFA 2:00 220'-TFA 10:00	11' - Trim Intrusion	TRIM INTRUSION CLEAN MODIFY FLUSH TANK
1C	St. Albans Rd	8	VCP	1443	1444	298	6	1	US	LJP/HMD	Light Grease buildup in pipe 298' - Flush Tank		28'-TFD 2:00 (RBL) 38'-TFA 10:00 (RML) 95'-TFA 2:00 98'-TFC 10:00 158'-TFC 10:00 168'-TFA 2:00 228'-TFC 10:00 238'-TFA 2:00 278'-TFC 10:00 294'-TFA 2:00		CLEAN & CIPP MODIFY FLUSH TANK
1C	St. Albans Rd	8	VCP	1444	1445	301	5	1	DS	LJP/HMD		301' - Roots in channel of DS MH 1445	112'-TFC 2:00 122'-TFA 10:00 162'-TFA 2:00 193'-TFA 10:00 212'-TFC 2:00 263'-TFA 10:00 (Grease) 271' - TFA 2:00	301' - Rehab channel of DS MH 1445	REHAB MH CHANNEL CLEAN & CIPP
1C	St. Albans Rd	8	VCP	1445	1446	301	6	1	DS	LJP/HMD		0' - Tap root in US MH 1445 RF in multiple joints	22'-TFD 2:00 (RBL) 32'-TFA 10:00 (RFL) 72'-TFC 2:00 102'-TFA 10:00 170'-TFA 10:00 223'-TFC 2:00 243'-TFA 10:00 255'-TBA 2:00 273'-TFC 2:00		CLEAN & CIPP
1C	St. Albans Rd	8	VCP	1446	1447	301	6	1	DS	LJP/HMD		26', 284' - BVV	20'-TFA 10:00 (RML) 23'-TFC 2:00 81'-TFC 2:00 84'-TFA 10:00 131'-TFC 2:00 151'-TFA 10:00 182'-TFA 2:00 222'-TFA 10:00 293'-TFA 10:00		CLEAN & CIPP
1E	Huntington Dr S	8	VCP	1490	1489	315	3	1	US	LJP/HMD		RF in multiple joints	48'-TFC 2:00 96'-TFD 2:00 (RBL) 126'-TFA 2:00 (RFL) 201'-TFC 2:00 252'-TFC 2:00 308'-TFA 2:00 (RML)		CLEAN AND CIPP

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1E	Bedford Rd	8	VCP	1495	1496	251	6	1	US	LJP/HMD		RF in multiple joints	7'-TFC 10:00 25'-TFD 2:00 (RBL) 60'-TFA 10:00 78'-TFA 2:00 108'-TFC 2:00 110'-TFD 10:00 (RBL) 152'-TFD 2:00 (RBL) 173'-TFC 10:00 209'-TFC 2:00 220'-TBI 10:00 226'-TFC 10:00	220' - Trim intrusion	TRIM INTRUSION CLEAN & CIPP
1C	St. Albans Rd	8	VCP	1447	1448	302	4	1	DS	HMD		67' - RMJ 67' - FMJ 164' - FMJ	10' - TFC 2:00 61' - TFC 2:00 63' - TFA 10:00 111' - TFA 2:00 114' - TFA 10:00 162' - TFC 2:00 165' - TFC 10:00 213' - TFA 2:00 253' - TFC 2:00	67' - CIPP POINT REPAIR over fracture and roots 164' - CIPP POINT REPAIR over fracture	CLEAN & CIPP
1C	Sherwood Rd	8	VCP	1434	1435	303	10	1	US	HMD	Light roots in joints throughout. 303' - FLUSH TANK	0' - Hole in DS MH 1435	3' - TFA 2:00 (RML) 4' - TFA 10:00 (RBL) 76' - TFA 2:00 (RML) 79' - TFA 10:00 (RBL) 153' - TFA 2:00 155' - TFA 10:00 230' - TFA 2:00 232' - TFA 10:00 295' - TFA 2:00 298' - TFA 10:00	0' - Rehab channel of DS MH 1435	REHAB MH CHANNEL CLEAN & CIPP MODIFY FLUSH TANK
1C	Sherwood Rd	8	VCP	1435	1436	302	9	1	DS	HMD	Light grease in bottom of pipe.	293' to 298' - SAG in pipe (HWL)	71' - TFA 2:00 74' - TFA 10:00 143' - TBA 10:00 147'- TFA 2:00 (RML) 150' - TBI 10:00 223' - TFA 2:00 226' - TFA 10:00 294' - TFA 2:00 297' - TFA 10:00		CLEAN & CIPP
1C	Sherwood Rd	8	VCP	1436	1437	303	7	1	DS	HMD	Light roots in joints throughout. Light grease on the bottom of the pipe.	253' - CMJ	62' - TFA 2:00 65'- TFA 10:00 133' - TFA 2:00 135' - TFA 10:00 204' - TFA 2:00 206' - TFA 10:00 265' - TFA 2:00 267' - TFC 10:00 298' - TFC 2:00		CLEAN & CIPP
1C	Sherwood Rd	8	VCP	1437	1406	175	1	1	DS	HMD	Light grease on the bottom of the pipe.	95' - CMJ 111' - HSV	84' - TFC 10:00 89' - TFC 2:00 91' - TBA 10:00	111' - CIPP POINT REPAIR over hole	CLEAN & CIPP
1C	Roanoke Rd	8	VCP	1441	1442	302	10	1	US	HMD	302' - FLUSH TANK		4' - TFA 2:00 5' - TFA 10:00 79' - TFA 2:00 (RBL) 81' - TFA 10:00 155' - TFA 2:00 157' - TFA 10:00 231' - TFA 2:00 233'- TFA 10:00 294' - TFA 2:00 297' - TFA 10:00		CLEAN & CIPP MODIFY FLUSH TANK
1C	Roanoke Rd	8	VCP	1442	16 0340	265	3	1	DS	HMD	Fine cracks at joints throughout.	2' - CMJ	73' - TFA 10:00 90' - TFC 2:00 101' - TBA 10:00 222' - TFA 10:00		CLEAN & CIPP
1B	Adair St	8	VCP	1440	1439	312	10	1	US	HMD	Light grease on bottom of pipe. 312' - FLUSH TANK		13' - TFA 2:00 16' - TFA 10:00 70' - TFA 2:00 93' - TFC 10:00 125' - TBA 10:00 164' - TFA 2:00 166' - TFA 10:00 240' - TFA 2:00 243' - TFA 10:00 304' - TFA 2:00 306' - TFA 10:00		CLEAN MODIFY FLUSH TANK
1B	Adair St	8	VCP	1439	1438	313	8	1	DS	HMD	Light grease on bottom of pipe.		59' - TFA 2:00 62' - TFA 10:00 134' - TFA 2:00 136' - TFA 10:00 210' - TFA 2:00 212' - TFA 10:00 270' - TBA 10:00 281' - TFA 2:00 284' - TFC 10:00		CLEAN
1B	Adair St	8	VCP	1438	16 0338	313	5	1	DS	HMD			39' - TFA 2:00 42' - TFA 10:00 113' - TFA 10:00 123' - TFC 2:00 182' - TFA 10:00 232' - TFA 10:00		NO REPAIR
1D	Lorain Rd	8	VCP	1469	1453	140	3	1	DS	HMD	DS MH 1453 is being rehabilitated row below. Grease deposits on top of pipe. Light roots in joints of pipe throughout.	111' - Broken Pipe 139' - Hole in channel of DS MH 1453	112' - TBA 10:00 112' - TBA 2:00 (RBL) 114' - TBI 2:00	111' - EXCAVATION POINT REPAIR and reconnect two laterals 114' - Trim intruding lateral	EXCAVATION POINT REPAIR TRIM INTRUSION CLEAN & CIPP

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1D	Lorain Rd	8	VCP	1453	1452	302	4	1	DS	HMD	Grease in bottom of pipe throughout. Medium roots in joints throughout.	1' - Hole in US MH 1453	12' - TFC 2:00 53' - TFC 10:00 63' - TFC 2:00 114' - TFA 10:00 124' - TFC 2:00 170' - TFA 10:00 180' - TFC 2:00 230' - TFA 10:00 241' - TFC 2:00 294' - TFA 10:00	1' - Rehab channel in US MH 1453	REHAB MH CHANNEL CLEAN & CIPP
1E	Palmas Dr R/W	8	VCP	1693	1477	278	1	1	US	HMD	US MH 1693 between outdoor basketball courts and baseball field of Huntington (Henry E) Middle School. Light roots in joints throughout.	63' to 66' - Large fracture 6:00	3' - DROP CONNECTION		CLEAN & CIPP
1E	Palmas Dr R/W	8	VCP	1694	1693	288	6	1	US	HMD	ACTUALLY TWO PIPES IN VIDEO. U S MH 1531(7) is in driveway of Huntington (Henry E) Middle School just south of Huntington Dr. Middle MH 1694 in Huntington (Henry E) Middle School. DS MH 1693 between outdoor basketball courts and baseball field of Huntington (Henry E) Middle School. 206' - MH 1694 288' - FLUSH TANK	4' - Large fracture 2:00 to 8:00 6' - FMJ 241' - FMJ 1:00	199' - TBA 10:00 206' - MH 1694 208' - TBA 10:00 267' - TBA 12:00 273' - TBA 2:00 280' - TBA 2:00 280' - TFA 10:00	4' to 6' - CIPP POINT REPAIR over fractures 241' - CIPP POINT REPAIR over fracture	CIPP POINT REPAIR MODIFY FLUSH TANK
1B	Roanoke Rd	8	VCP	1404	1403	149	3	1	US	HMD		144' - CMJ 147' - Hole in channel of US MH 1404	5' - TFC 10:00 8' - TFC 2:00 31' - TBA 12:00 58' - TFA 2:00 73'- TFA 10:00	147' - Rehab channel of MH 1404	REHAB MH CHANNEL
1B	Roanoke Rd	8	VCP	1659	1404	114	2	1	US	HMD	114' - FLUSH TANK	2' - broken DS MH channel (MH 1404)	23' - TFC 10:00 92' - TBA 10:00 110' - TFA 10:00	2' - Rehab channel of MH 1404	MODIFY FLUSH TANK
1B	Roanoke Rd	8	VCP	1403	1402	253	4	1	DS	HMD		36' - CMJ	53' - TFC 10:00 61' - TFA 2:00 111' - TBA 2:00 134' - TFC 10:00 142' - TFC 2:00 167' - TBA 2:00 182' - TFA 10:00 207' - TFC 2:00 232' - TFC 10:00		NO REPAIR
1B	Roanoke Rd	8	VCP	1402	1394	252	4	1	DS	HMD		94' - FMJ	21' - TFA 2:00 80' - TFC 10:00 105' - TFA 2:00 130' - TFA 10:00 174' - TBA 2:00 189' - TFC 2:00 181' - TFC 10:00	94' - CIPP POINT REPAIR over fracture	CIPP POINT REPAIR
1B	Roanoke Rd	8	VCP	1399	1400	133	2	1	US	HMD			23' - TFA 2:00 66' - TFC 2:00 120' - TFA 2:00		NO REPAIR
1B	Roanoke Rd	8	VCP	1400	1401	202	1	1	DS	HMD			34' - TFA 10:00		NO REPAIR
1B	Roanoke Rd	8	VCP	1401	1394	352	3	1	DS	HMD			7' - TFA 10:00 129' - TFA 2:00 141' - TFA 10:00 159' - TFC 2:00		NO REPAIR
1B	Granada Ave	8	VCP	1391	1390	288	5	1	US	HMD			8' - TFC 2:00 33' - TFC 10:00 44' - TFC 2:00 80' - TFA 2:00 90' - TFC 10:00 116' - TFA 2:00 137' - TFA 10:00 170' - TFC 2:00 183' - TFC 2:00 185' - TFC 10:00 221' - TFA 2:00 236' - TFC 10:00 280' - TBI 2:00 281' - TFC 10:00	280' - Trim intrusion	TRIM INTRUSION
1C	Granada Ave	8	VCP	1371	1392	405	3	1	US	HMD	Light roots in joints throughout.		150' - TFC 10:00 (RML) 181' - TFC 2:00 201' - TFC 10:00 202' - TBA 2:00 250' - TFA 10:00 293' - TFC 10:00 325' - TFA 10:00 374' - TFC 2:00 377' - TFC 10:00 380' - TFC 10:00		CLEAN & CIPP
1B	Granada Ave	8	VCP	1392	1391	51	0	1	US	HMD					NO REPAIR

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1B	Granada Ave	8	VCP	1390	1389	287	5	1	DS	HMD			16' - TFC 2:00 26' - TFA 10:00 62' - TFA 10:00 72' - TFA 2:00 90' - TFC 10:00 116' - TFC 2:00 126' - TFA 10:00 156' - TFC 10:00 167' - TFA 2:00 182' - TFC 10:00 192' - TFC 10:00 218' - TFC 2:00 228' - TFC 10:00 269' - TFC 2:00		NO REPAIR
1C	Sherwood Rd	8	VCP	1389	1388	292	4	1	US	HMD	Light roots in joints throughout.		8' - TFC 2:00 18' - TFC 10:00 54' - TFC 10:00 59' - TFC 2:00 90' - TFA 10:00 111' - TFC 2:00 121' - TFA 10:00 154' - TFC 10:00 159' - TFC 2:00 195' - TFC 10:00 210' - TFA 2:00 226' - TFA 10:00		CLEAN & CIPP
1C	Sherwood Rd	8	VCP	1388	1387	293	4	1	DS	HMD	Light roots in joints throughout.		11' - TFA 2:00 41' - TFC 10:00 52' - TFA 2:00 82' - TFC 2:00 92' - TFC 10:00 100' - TBA 2:00 110' - TFC 2:00 138' - TFC 2:00 141' - TFC 10:00 174' - TFC 2:00 192' - TFC 10:00 202' - TFA 2:00 244' - TFC 2:00		CLEAN & CIPP
1B	S. Oak Knoll Ave	8	VCP	1397	1387	252	5	1	US	HMD		21' - HSV 1:00	49' - TFA 2:00 80' - TFC 2:00 83' - TFC 10:00 114' - TFC 2:00 116' - TFA 10:00 145' - TFA 2:00 147' - TFC 10:00 176' - TFC 2:00 179' - TFA 10:00 213' - TFA 2:00 215' - TFC 10:00 240' - TFC 2:00 243' - TFC 10:00	21' - CIPP POINT REPAIR over hole	CIPP POINT REPAIR
1B	S. Oak Knoll Ave	8	VCP	1398	1397	260	6+	1	US	HMD	175' - SURVEY ABANDONED at TBI 260'- FLUSH TANK???	126' - CMJ	21' - TBI 12:00 24' - TFC 2:00 27' - TFA 10:00 70' - TFC 2:00 72' - TBI 10:00 101' - TFA 2:00 103' - TFC 10:00 137' - TFC 2:00 140' - TFC 10:00 170' - TFC 2:00 173' - TFA 10:00 175' - TBI 12:00	21' - Trim intruding lateral 73' - Trim intruding lateral 175' - Trim intruding lateral	TRIM INTRUSION MODIFY FLUSH TANK
1B	S. Oak Knoll Ave	8	VCP	1387	1425	216	3	1	US	HMD			8' - TFA 2:00 11' - TFC 10:00 39' - TFC 2:00 41' - TFC 10:00 69' - TFA 2:00 73' - TFA 10:00 101' - TFC 2:00 119' - TFC 10:00		NO REPAIR
1B	S. Oak Knoll Ave	8	VCP	1425	1424	223	5	1	DS	HMD		221' - FMJ	32' - TFC 2:00 35' - TFA 10:00 41' - TBA 2:00 63' - TFA 2:00 66' - TFC 10:00 99' - TFC 2:00 102' - TFC 10:00 114'- TBA 10:00 130' - TFC 2:00 133' - TFC 10:00 165' - TFC 10:00 174'- TFA 10:00 201' - TFC 10:00	221' - CIPP POINT REPAIR over fracture	CIPP POINT REPAIR

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1B	S. Oak Knoll Ave	8	VCP	1424	1423	261	5	1	DS	HMD		2' - Hole in US MH 1424	21' - TBA 10:00 29' - TFC 10:00 70' - TFC 10:00 101' - TFA 10:00 104' - TFC 2:00 142' - TFC 10:00 145' - TFA 2:00 191' - TFC 10:00 194' - TFC 2:00 232' - TFA 10:00 242' - TFA 2:00	2' - Rehab channel of US MH 1424	REHAB MH CHANNEL
1C	S. Oak Knoll Ave	8	VCP	1423	1422	253	3	1	DS	HMD	Light grease on the bottom of the pipe.	1' - Hole in US MH 1423 245' - FMJ 249' - FMJ 6:00	27' - TFC 2:00 42' - TFA 2:00 50' - TFC 2:00 53' - TFC 10:00 89' - TFC 2:00 91' - TFC 10:00 122' - TBA 10:00 130' - TFC 2:00 133' - TFC 10:00 169' - TFC 2:00 172' - TFC 10:00 210' - TFC 2:00 213' - TFC 10:00 244' - TFC 2:00 246' - TFC 10:00 250' - DROP CONNECTION	1' - Rehab channel of US MH 1423	REHAB MH CHANNEL CLEAN & CIPP
1B	Winthrop Rd	8	VCP	1251	1252	250	10	1	US	HMD	Light roots in the joints throughout.	70' - RMJ	15' - TFA 2:00 30' - TFA 10:00 (RML) 75' - TFA 10:00 87' - TFA 2:00 130' - TFA 10:00 153' - TFA 2:00 171' - TFC 10:00 186' - TFA 2:00 201' - TFA 10:00 (RML) 232' - TFA 10:00 243' - TFA 2:00		CLEAN & CIPP
1B	Winthrop Rd	8	VCP	1250	1251	250	8	1	US	HMD	Light roots in joints throughout. 250' - FLUSH TANK		12' - TFC 10:00 40' - TFA 10:00 (RML) 61' - TFA 2:00 115' - TFA 2:00 146' - TFA 10:00 182' - TFA 2:00 212' - TFA 10:00 246' - TFA 2:00 (RBL) 248' - TFA 10:00		MODIFY FLUSH TANK CLEAN & CIPP
1B	Winthrop Rd	8	VCP	1252	1253	256	7	1	DS	HMD	Medium to light roots in joints throughout.	107' - RMJ 7:00 123' - RMJ 7:00	16' - TFA 2:00 (RML) 66'- TBA 10:00 71' - TFC 10:00 74' - TFA 2:00 119' - TFA 10:00 135' - TFA 2:00 (RBL) 201' - TFA 2:00 203' - TFC 10:00 208' - TBA 10:00 249' - TFC 2:00		CLEAN & CIPP
1B	Winthrop Rd	8	VCP	1253	1627	116	1	1	DS	HMD	Medium to light roots in joints throughout.	3' - RTJ 11:00 9' - RTJ 2:00 40' - FMJ 40' - RMJ	51' - TFC 2:00 90' - TFC 10:00 102' - TFA 2:00 (RBL) 113' - TFC 10:00		CLEAN & CIPP
1B	Plymouth Rd	8	VCP	1257	1256	252	7	1	DS	HMD	Medium to light roots in joints throughout.		47' - TFA 2:00 67' - TFA 10:00 (RBL) 107'- TFA 2:00 124' - TFC 2:00 (RML) 127' - TFA 10:00 (RBL) 129' - TBA 2:00 173' - TFC 10:00 209' - TFA 2:00 230' - TFA 10:00		CLEAN & CIPP
1B	Plymouth Rd	8	VCP	1256	1255	258	7	1	DS	HMD	Light roots in joints throughout.		24' - TFA 10:00 33' - TFA 2:00 51' - TFC 10:00 92' - TBA 10:00 99' - TFC 10:00 124' - TFA 2:00 129' - TFA 10:00 (RML) 181' - TFC 10:00 184' - TFA 10:00 186' - TFA 2:00		NO REPAIR
1B	El Molino Ave	8	VCP	1353	1354	149	3	1	US	HMD			52' - TFC 10:00 54' - TFC 2:00 87' - TFA 2:00 114' - TFC 10:00 117' - TFA 2:00 141' - TFA 10:00		CLEAN & CIPP
1B	Pasqualito Dr	8	VCP	1354	1359	302	1	1	DS	HMD	Light roots in joints throughout.		58' - TFC 2:00 97' - TFC 10:00 155' - TFC 10:00 166' - TBI 2:00 190' - TFC 10:00 270' - TFC 2:00 395' - TFC 2:00	166' - Trim intruding lateral	TRIM INTRUSION CLEAN & CIPP

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1B	Pasqualito Dr	8	VCP	1359	1360	301	3	1	DS	HMD	Light roots in joints throughout.		47' - TFA 10:00 59' - TFC 2:00 95' - TFC 2:00 120' - TFC 10:00 144' - TFC 10:00 158' - TFC 2:00 197' - TFA 10:00 (RBL) 240' - TFC 10:00 252' - TFC 2:00 263' - TFA 10:00		CLEAN & CIPP
1B	Pasqualito Dr	8	VCP	1360	1244	302	3	1	DS	HMD	Light roots in joints throughout.		43' - TFA 10:00 (RBL) 47' - TFC 2:00 117' - TFA 10:00 144' - TFC 2:00 242' - TFC 2:00 260' - TFA 10:00		CLEAN & CIPP
1B	El Molino Pl	8	VCP	1362	1359	186	5	1	US	HMD	Light roots in joints throughout.		48' - TFC 10:00 51' - TFC 2:00 66' - TFC 10:00 69' - TFC 2:00 102' - TFA 10:00 (RBL) 104' - TFC 2:00 122' - TFC 10:00 125' - TFC 2:00 155' - TFA 10:00 158' - TFA 2:00 171' - TFA 10:00 175' - TFC 10:00 178' - TFA 2:00 (RBL)		CLEAN & CIPP
1B	El Molino Pl	8	VCP	1363	1362	185	6	1	US	HMD	Light roots in joints throughout. 185' - FLUSH TANK		23' - TFC 10:00 26' - TFC 2:00 48' - TFA 10:00 53' - TFA 2:00 80' - TFC 10:00 83' - TFC 2:00 98' - TFA 10:00 100' - TFC 2:00 136' - TFC 10:00 151' - TFA 10:00 157' - TFA 2:00 181' - TFA 2:00		MODIFY FLUSH TANK CLEAN & CIPP
1A	Granada Ave	8	VCP	1626	1245	220	4	1	US	HMD		90' to 93' - sag in pipe	70' - TFC 10:00 91' - TFA 2:00 107' - TBA 2:00 (RBL) 170' - TFC 10:00 190' - TBA 10:00 209' - TBA 2:00	90' to 93' - EXCAVATION POINT REPAIR to replace sagginf pipe and reconnect lateral	EXCAVATION POINT REPAIR
1A	Granada Ave	8	VCP	1627	1626	212	0	1	US	HMD	Light grease on the bottom of the pipe.		51' - TFC 10:00 152' TFC 10:00		NO REPAIR
1B	Granada Ave	8	VCP	1245	1628	200	4	1	DS	HMD	Light roots in joints throughout.		7' - TFC 10:00 45' - TBA 10:00 55' - TFA 10:00 111'- TFC 10:00 113' - TFC 2:00 120' - TBA 2:00 (RBL) 159' - TFA 10:00 (RML) 165' - TFC 2:00 195' - TFC 2:00		CLEAN & CIPP
1B	Granada Ave	8	VCP	1628	1244	273	8	1	DS	HMD	Light roots in joints throughout.		6' - TFA 10:00 23' - TFA 10:00 (RML) 48' - TFA 2:00 69' - TFC 2:00 71' - TFA 10:00 123' - TFA 10:00 147'- TFA 2:00 171' - TFC 2:00 174' - TFC 10:00 195' - TFA 10:00 235' - TFC 2:00 247' - TFA 10:00		CLEAN & CIPP
1B	Granada Ave	8	VCP	1244	1243	253	4	1	DS	HMD			28' - TFA 10:00 80' - TFA 10:00 107' - TFC 10:00 123' - TFC 2:00 125' - TBA 2:00 206' - TFA 10:00 220' - TFC 2:00		NO REPAIR
1B	Granada Ave	8	VCP	1243	1604	115	1	1	DS	HMD			22' - TBA 10:00 67' - TFC 10:00 69' - TFC 2:00		NO REPAIR
1B	El Molino Ave	8	VCP	1352	1353	176	5	1	US	HMD	Light roots in joints throughout. 176' - FLUSH TANK	150' to 153' - FMB	9' - TFC 2:00 27' - TFC 10:00 36' - TFC 2:00 47' - TFC 10:00 74' - TFA 2:00 77' - TFC 10:00 85' - TBA 10:00 107' - TFC 2:00 110' - TFA 10:00 144' - TBA 2:00 (RBL) 155' - TFC 2:00 173' - TFA 2:00 (RML)		MODIFY FLUSH TANK CLEAN & CIPP

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1B	Wilson Ave	8	VCP	1248	1247	296	6	1	US	HMD	Medium roots in joints throughout.	17' - HSV	10' - TFC 10:00 18' - TFA 2:00 30' - TFA 2:00 76' - TFA 2:00 143' - TFC 2:00 173'- TFC 2:00 207'- TFA 10:00 252'- TBA 2:00 265'- TFA 10:00 267' - TFC 2:00	17' - EXCAVATION POINT REPAIR and replace pipe section	EXCAVATION POINT REPAIR CLEAN & CIPP
1B	Wilson Ave	8	VCP	1247	1246	279	8	1	US	HMD	Medium roots in joints throughout.		5' - TBA 2:00 7'- TFC 2:00 24'- TFC 10:00 34' - TBA 10:00 48' - TFA 2:00 (RBL) 63' - TFC 10:00 93' - TFC 10:00 96' - TFC 2:00 108' - TBA 2:00 111' - TFC 2:00 125'- TFA 10:00 153' - TFC 2:00 158' - TFA 10:00 (RBL) 183' - TFC 2:00 234' - TFA 2:00 243' - TFA 10:00 (RBL)		CLEAN & CIPP
1B	Wilson Ave	8	VCP	1246	1245	280	2	1	DS	HMD	Medium roots in joints throughout.		29' - TFC 2:00 32' - TFC 10:00 68' - TFC 10:00 73'- TBA 2:00 86' - TFC 10:00 120' - TFC 10:00 122' - TFC 2:00 177' - TFA 10:00 (RML) 180'- TFC 2:00 225' - TFC 10:00 274' - TFC 10:00		CLEAN & CIPP
1A	Wilson Ave	8	VCP	1351	Valentine Pl	182	2	1	US	HMD	Light roots in joints throughout. 182' - FLUSH TANK		3' - TFC 10:00 30' - TFA 2:00 54' - TFC 10:00 75' - TFC 2:00 105' - TFC 2:00 117' - TFC 10:00 144' - TFA 2:00 161' - TFC 10:00 176' - TFC 10:00 179' - TFC 2:00 182' - FLUSH TANK		MODIFY FLUSH TANK CLEAN & CIPP
1A	Wilson Ave	8	VCP	Valentine Pl	1346	81	1	1	DS	HMD	Light roots in joints throughout.	38'- RFJ	47' - TFC 2:00 49' - TFA 10:00 (RML)		CLEAN & CIPP
1A	Wilson Ave	8	VCP	1346	1345	274	6	1	DS	AAC/HMD	Light grease on bottom of pipe.	RF at multiple joints	15' - TFC 2:00 39' - TFA 10:00 66' - TFC 2:00 68' - TFC 10:00 85' - TBA 10:00 114' - TFC 2:00 116' - TFC 10:00 151' - TFA 10:00 165' - TFC 2:00 217' - TFA 2:00 229' - TFA 10:00 265' - TFC 2:00 268' - TFA 10:00		CLEAN & CIPP
1A	Wilson Ave	8	VCP	1345	NEW MH	201	2	1	DS	AAC/HMD	New Manhole at Urmston	RF at multiple joints	44' - TFC 2:00 46' - TFC 10:00 72' - TBA 10:00 92' - TFC 2:00 95' - TFC 10:00 146' - TFC 2:00 149' - TFA 10:00 197' - TFC 2:00		CLEAN & CIPP
1A	Wilson Ave	8	VCP	NEW MH	1342	73	2	1	DS	AAC/HMD	New Manhole at Urmston	RM at multiple joints 3' - RMJ 9' - RMJ 12' - RMJ 21' - RMJ	42' - TFC 2:00 47' - TFC 10:00 65' - TFC 10:00 68' - TFA 6:00 (DROP) 71' - TFA 6:00 (DROP)		CLEAN & CIPP
1	Valentine Pl	8	VCP	NOT IN GIS	NOT IN GIS			1	US	AAC	Cobwebs (170 LF, 2 lateral)		79' - TFA 3:00 87' - TFA 9:00		NO REPAIR
1	Valentine Pl	8	VCP	NOT IN GIS	NOT IN GIS			1	US	AAC	(154 LF, 3 lateral)		99' - TFA 9:00 146' - TFA 3:00 148' - TFA 9:00		NO REPAIR
1	Valentine Pl	8	VCP	NOT IN GIS	NOT IN GIS			1	US	AAC	(146 LF, 4 lateral)		7' - TFA 2:00 94' - TFA 3:00 136' - TFA 9:00 138' - TFA 3:00		NO REPAIR
1B	Pasqualito Dr	8	VCP	1358	1357	282	8	1	US	AAC/HMD	282' - FLUSH TANK	Light Grease Buildup RF/RM at multiple joints	4' - TFD 2:00 (roots) 39' - TFA 10:00 99' - TFA 2:00 104' - TFD 10:00 (roots) 165' - TFC 10:00 168' - TFC 2:00 204' - TFD 10:00 (roots) 234' - TFD 2:00 (roots) 252' - TFA 10:00 279' - TFA 10:00		CLEAN & CIPP MODIFY FLUSH TANK

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1B	Pasqualito Dr	8	VCP	1357	1356	296	5	1	DS	AAC/HMD		RF/RM at multiple joints	6' - TFC 2:00 8' - TFC 10:00 38' - TFC 10:00 44' - TBA 10:00 50' - TFC 2:00 92' - TFC 10:00 110' - TFA 3:00 112' - TFC 10:00 151' - TFC 2:00 154' - TBA 10:00 172' - TFC 10:00 199' - TFC 2:00 205' - TFC 10:00 228' - TFC 2:00 258' - TFC 10:00 290' - TFA 2:00 294' - TFA 6:00 (DROP)		CLEAN & CIPP
1B	Pasqualito Dr	8	VCP	1356	1355	177	4	1	DS	AAC/HMD	4' - Camera Couldn't Pass		4' - TBI 2:00 (roots)	4' - TRIM INTRUDING LATERAL	TRIM INTRUDING LATERAL CLEAN & CIPP
1B	Pasqualito Dr	8	VCP	1356	1355			1	US	AAC/HMD			15' - TFA 10:00 71' - TBA 2:00 72' - TFC 2:00 127' - TFA 10:00		NO REPAIR
1A	La Mirada Ave	8	VCP	1259	1266	208	4	1	DS	HMD	Light roots in joints throughout.	1' - CMB 1' - RFJ 106' - CMJ	4' - TFA 2:00 (RBL) 10' - TFA 10:00 (RBL) 34' - TFC 2:00 37' - TFC 10:00 67' - TFC 2:00 73' - TFC 10:00 99' - TFA 12:00 130' TFC 2:00 132' - TFC 10:00 159'- TFA 12:00		CLEAN & CIPP
1A	La Mirada Ave	8	VCP	1260	1259	265	10	1	US	HMD	Light roots in joints throughout. 265' - FLUSH TANK		18' - TFA 2:00 24' - TFC 10:00 42' - TFC 2:00 54' - TFA 10:00 (RML) 74' - TFC 2:00 83' - TFA 10:00 104' - TFA 2:00 113' - TFC 10:00 137' - TFA 2:00 (RML) 145' - TFA 10:00 (RML) 163' - TFC 2:00 171' - TFC 10:00 196' - TFA 2:00 201' - TFA 10:00 216' - TFC 2:00 222' - TFC 10:00 250' - TFA 2:00 260' - TFA 10:00		CLEAN & CIPP MODIFY FLUSH TANK
1B	El Molino Ave	8	VCP	1278	1279	254	8	1	US	HMD	Medium roots in joints.	210' - RFJ 9:00 to 2:00	4' - DROP CONNECTION 6' - DROP CONNECTION 13' - TFC 10:00 37' - TFA 10:00 64' - TFC 10:00 88' - TFA 10:00 93' - TFA 2:00 111' - TFC 10:00 132' - TFC 10:00 144' - TFC 2:00 171' - TFA 10:00 182' - TFC 2:00 206' - TFC 10:00 218' - TFC 2:00 (RTL) 236' - TFC 10:00 248' - TFA 2:00 250' - TFA 10:00		CLEAN & CIPP
1B	El Molino Ave	8	VCP	1279	1280	162	4	1	DS	HMD	Fine root in joints throughout.		2' - TFC 12:00 27' - TFC 12:00 54' - TFA 12:00 81' - TFA 12:00 86' - TFC 12:00 112' - TFA 12:00 131' - TFC 12:00 140' - TFA 12:00		CLEAN & CIPP
1B	El Molino Ave	8	VCP	1280	1281	173	1	1	DS	HMD		61' - RFJ	10' - TFC 12:00 22' - TFC 12:00 31' - TFC 12:00 67' - TFC 10:00 76' - TFC 2:00 94' - TBA 2:00 119' - TFC 2:00		CLEAN & CIPP

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1A	Old Mill Rd	8	VCP	1297	1296	220	7	1	US	HMD	220' - FLUSH TANK	34' - HSV 2:00	12' - TFA 2:00 20' - TFC 10:00 35' - TFC 2:00 50' - TFC 10:00 67'- TFA 2:00 82' - TFC 10:00 91' - TFC 2:00 115' - TFC 10:00 121' - TFA 2:00 142' - TFC 2:00 169' - TFC 10:00 175' - TFC 2:00 199' - TFA 2:00 (RML) 214' - TFA 10:00 (RBL) 216' - TFA 2:00 217' - TBA 2:00		CLEAN & CIPP MODIFY FLUSH TANK
1A	Euclid Ave	8	VCP	1305	1304	265	10	1	US	HMD	Light roots in joints throughout. 265' - FLUSH TANK	221' - FMJ	3' - TFA 2:00 9' - TFA 10:00 33' - TFC 2:00 39' - TFC 10:00 66' - TFA 2:00 68' - TFA 10:00 95' - TFC 2:00 101' - TFA 10:00 (RBL) 122' - TFC 2:00 128' - TFC 10:00 152' - TFA 2:00 161' - TFA 10:00 (RBL) 182' - TFA 2:00 190' - TFC 10:00 211' - TFC 2:00 220' - TFC 10:00 256' - TFA 10:00 259' - TFA 2:00 (RBL)		CLEAN & CIPP MODIFY FLUSH TANK
1A	Euclid Ave	8	VCP	1304	1303	272	7	1	DS	HMD	Light roots in joints throughout.	149' - RTJ 2:00	23' - TFA 2:00 26' - TFC 10:00 53' - TFC 2:00 59' - TFC 10:00 80' - TBA 10:00 83' - TFC 2:00 88' - TFC 10:00 101' - TBI 2:00 112' - TFC 2:00 118' - TFC 10:00 142' - TFA 2:00 148' - TFA 10:00 (RML) 175' - TFC 2:00 180' - TFC 10:00 201' - TFC 2:00 (RFL) 206' - TFA 10:00 234' - TFA 2:00 239' - TFC 10:00 260' - TFC 2:00 266' - TFC 10:00		CLEAN & CIPP
1A	Euclid Ave	8	VCP	1303	1302	273	11	1	DS	HMD	Light roots in joints throughout.	71' - CMJ 239' - FMJ 269' - FMJ	18' - TFA 2:00 25' - TFA 10:00 49' - TFC 2:00 54' - TFA 10:00 78' - TFA 2:00 81' - TFC 10:00 108' - TFA 2:00 110' - TFA 10:00 140' - TFC 2:00 164' - TFC 10:00 167' - TFA 2:00 188' - TFA 10:00 196' - TFC 2:00 214' - TFC 10:00 229' - TFA 2:00 240' - TFA 10:00 259' - TFC 2:00 268' - TFC 10:00 270' - DROP CONNECTION		CLEAN & CIPP
1A	Buena Vista St	8	VCP	1306	1307	240	6	1	US	HMD	240' - FLUSH TANK	100' - FMJ 216' - RML	2' - TFA 10:00 24' - TFC 10:00 48' - TFC 10:00 57' - TFA 10:00 75' - TFC 10:00 99' - TFA 10:00 111' - TFC 2:00 125' - TFC 10:00 153' - TFA 10:00 180' - TFC 10:00 191' - TFC 2:00 203' - TFC 10:00 216' - TBI 10:00 (RML) 219' - TFA 2:00 233' - TFC 10:00	100' - CIPP POINT REPAIR over fracture 216' - Trim intruding lateral 216' - CIPP POINT REPAIR around TBA	TRIM INTRUSION CLEAN & CIPP MODIFY FLUSH TANK

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1A	Las Flores Ave	8	VCP	1307	1308	228	7	1	DS	HMD	Light roots in joints throughout.	2' - FMJ 69' - CMJ 224' - FMJ	4' - TFA 2:00 (RBL) 41' - TFA 2:00 62' - TFC 2:00 68' - TFC 10:00 (RML) 92' - TFA 2:00 97' - TFA 10:00 121' - TFC 2:00 127' - TFA 10:00 151' - TFC 2:00 157' - TFC 10:00 178' - TFA 2:00 190' - TFC 10:00 211' - TFC 2:00 222' - TFA 10:00		CLEAN & CIPP
1A	Las Flores Ave	8	VCP	1308	1309	244	8	1	DS	HMD	Pipe previously lined.		14' - TFA 2:00 (RBL) 20' - TFA 10:00 77' - TFA 2:00 119' - TFA 10:00 137' - TFA 2:00 179' - TFA 10:00 196' - TFA 2:00 241' - TFA 10:00		NO REPAIR
1A	Las Flores Ave	8	VCP	1309	1310	245	9	1	DS	HMD	Pipe previously lined. Lining failing at US MH 1309.		14' - TFA 2:00 (RBL) 62' - TFA 10:00 77' - TFA 2:00 103' - TFA 2:00 128' - TFA 10:00 187' - TFA 10:00 196' - TFA 2:00 217' - TFA 10:00 240' - DROP CONNECTION	1' - CIPP POINT REPAIR over failing lining	NO REPAIR
1B	Staats Pl	8	VCP	Pasadena MH (MH 1901-173)	1272	229	2	1	US	HMD	Light roots in joints throughout. Multiple offset joints.	211' - RTJ 2:00 227' - FMJ 6:00	57' - TFC 10:00 60' - TFA 2:00 (RBL) 76' - TFC 10:00 106' - TFC 2:00 139' - TFC 10:00 157' - TFC 2:00 205' - TFC 10:00 214' - TFA 2:00 (RML)		CLEAN & CIPP
1B	Banning Way	8	VCP	Pasadena MH (MH 1901-174)	1272	153	6	1	US	HMD	Medium to fine roots in joints.		2' - TFA 10:00 (RBL) 27' - TFA 10:00 (RBL) 32' - TFC 2:00 (RML) 38' - TFA 10:00 (RML) 45' - TBA 2:00 (RBL) 60' - TFC 2:00 (RML) 66' - TFA 10:00 (RBL) 93' - TFC 2:00 98' - TFC 10:00 125' - TBA 10:00 (RBL) 137' - TFC 2:00 143' - TFC 10:00		CLEAN & CIPP
1B	Banning Way	8	VCP	1272	1273	177	6	1	DS	HMD	Medium to fine roots in joints. Multiple cracks at joints.	108' - FMJ	20' - TFC 2:00 44' - TFC 2:00 47' - TFC 10:00 68' - TFA 10:00 (RML) 74' - TFA 2:00 94' - TFA 10:00 104' - TFA 2:00 119' - TFC 10:00 124' - TFC 2:00 148' - TFC 10:00 153' - TFC 2:00 168' - TFA 10:00 171' - TFA 2:00		CLEAN & CIPP
1B	Banning Way	8	VCP	1273	1270	140	2	1	DS	HMD	Multiple cracks at joints.	17' - FMJ 50' - CMJ	15' - TBA 10:00 19' - TFC 10:00 22' - TFA 2:00 46' - TFC 10:00 48' - TFC 2:00 69' - TFC 10:00 75' - TFC 2:00 99' - TFC 10:00 104' - TFC 2:00		CLEAN & CIPP
1A	Avonrea Rd	8	VCP	1369	1368	320	11	1	US	HMD	Live rat!!	317' - GAS BARRIER GATE (at dead-end MH outlet)	9' - TFA 2:00 67' - TFA 10:00 69' - TFA 2:00 117' - TFA 10:00 129' - TFA 2:00 177' - TFA 10:00 189' - TFA 2:00 240' - TFA 10:00 249' - TFA 2:00 303' - TFA 10:00 312' - TFA 10:00		CLEAN
1A	Avonrea Rd	8	VCP	1368	1367	236	5	1	DS	HMD			43' - TFA 2:00 76' - TFA 10:00 130' - TFA 2:00 133' - TFA 10:00 196' - TFA 10:00		NO REPAIR
1A	Avonrea Rd	8	VCP	1367	1366	238	6	1	DS	HMD			21' - TFA 10:00 30' - TFA 2:00 82' - TFA 10:00 130' - TFA 2:00 142' - TFA 10:00 220' - TFA 2:00		NO REPAIR

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1A	Oak St	12	ACP	1366	1365	175	1	1	DS	HMD	Crust deposits on inside of pipe.		14' - TFC 2:00 72' - TFC 2:00 103' - TFA 10:00 146' - TFC 2:00		CLEAN & CIPP
1A	Oak St	12	ACP	1365	B 1560 or B 1527	193	1	1	DS	HMD	Light grease on the bottom of the pipe.		12' - TFC 10:00 53' - TFA 10:00 64' - TFC 2:00 134' - TFC 10:00		CLEAN
1A	Las Flores Ave	8	VCP	1302	1617	223	4	1	US	HMD		97' - FMJ 206' - RMJ 9:00	27' - TFC 2:00 33' - TFC 10:00 60' - TFC 2:00 62' - TFC 10:00 90' - TFA 2:00 92' - TFC 10:00 126' - TFC 2:00 131' - TFC 10:00 153' - TBA 10:00 156' - TFA 2:00 158' - TFC 10:00 183' - TFC 2:00 185' - TFC 10:00 212' - TFA 10:00 (RBL) 215' - TFC 2:00		CLEAN & CIPP
1A	Euclid Ave	8	VCP	1314	1315	280	11	1	US	HMD	Slightly offset joints throughout. Fine roots in joints throughout. 280' - FLUSH TANK		15' - TFA 10:00 (RML) 18' - TFC 2:00 39' - TFC 10:00 41' - TFA 2:00 69' - TFC 10:00 71' - TFA 2:00 89' - TFA 10:00 92' - TFC 2:00 119' - TFC 10:00 121' - TFC 2:00 142' - TFA 10:00 145' - TFA 2:00 169' - TFC 10:00 (RFL) 172' - TFA 2:00 193' - TFA 10:00 (RBL) 195' - TFC 2:00 220' - TFC 10:00 (RFL) 225' - TFC 2:00 (RFL) 243' - TFA 10:00 246' - TFC 2:00 273' - TFA 10:00 (RBL) 276' - TFA 2:00 (RTL)		CLEAN & CIPP MODIFY FLUSH TANK
1A	Euclid Ave	8	VCP	1315	1316	272	9	1	DS	HMD	Light roots in the joints throughout.	272' - Roots on bench of DS MH 1316	2' - TFA 10:00 (RBL) 9' - TFC 2:00 29' - TFC 2:00 32' - TFA 2:00 (RFL) 59' - TFA 10:00 62' - TFA 2:00 76' - TFC 10:00 78' - TFC 2:00 109' - TFA 10:00 (RBL) 112' - TFA 2:00 130' - TFC 10:00 133' - TFC 2:00 159' - TFA 10:00 162' - TFC 2:00 180' - TFC 10:00 (RTL) 183' - TFC 2:00 (RFL) 207' - TFA 10:00 209' - TFC 2:00 227' - TFC 10:00 230' - TFA 2:00 257' - TFC 10:00 260' - TFC 2:00	272' - Rehab DS MH bench (DS MH 1316)	REHAB MH CHANNEL CLEAN & CIPP
1A	Euclid Ave	8	VCP	1316	1320	272	11	1	DS	HMD	Medium to light roots in joints throughout.	92' - CMJ	9' - TFI 10:00 (RML) 13' - TFC 2:00 (RFL) 40' - TFA 10:00 43' - TFC 2:00 60' - TFC 10:00 (RFL) 63' - TFA 2:00 (RBL) 90' - TFA 10:00 93' - TFC 2:00 114' - TFC 10:00 116' - TFA 2:00 (RBL) 140' - TFA 10:00 143' - TFA 2:00 161' - TFC 10:00 163' - TFC 2:00 190' - TFC 10:00 193' - TFC 2:00 211' - TFA 10:00 214' - TFA 2:00 241' - TFA 10:00 243' - TFC 2:00 264' - TFC 10:00 267' - TFA 2:00	9' - Trim intruding lateral	TRIM INTRUSION CLEAN & CIPP

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1A	Euclid Ave	8	VCP	1320	1321	274	12	1	DS	HMD	Medium to light roots in joints throughout. 177' - SURVEY ABANDONED DUE TO TAP ROOT.	80' - CMJ	14' - TFC 2:00 20' - TFA 10:00 28' - TFA 2:00 40' - TFC 10:00 70' - TFC 10:00 72' - TFC 2:00 91' - TFA 2:00 (RML) 96' - TFA 2:00 120' - TFA 10:00 (RML) 123' - TFC 2:00 133' - TFA 2:00 144' - TFC 10:00 174' - TFA 10:00 (RBL) 176' - TFA 2:00 (RBL)		CLEAN & CIPP
1A	Euclid Ave	8	VCP	1320	1321			2	US	HMD	Light roots in joints throughout.		2' - TFC 10:00 3' - TFC 2:00 30' - TFC 10:00 (RML) 32' - TFA 2:00 50' - TFA 10:00 53' - TFA 2:00 77' - TFA 10:00 79' - TFC 2:00		-
1A	Euclid Ave	8	VCP	1321	1324	272	7	1	DS	HMD	Light roots in joints throughout.	271' - ROOTS in DS MH Channel (MH 1324)	19' - TFA 10:00 25' - TFA 2:00 48' - TFA 10:00 51' - TFC 2:00 69' - TFA 10:00 (RBL) 74' - TFA 2:00 (RBL) 135' - TFA 2:00 141' - TFC 10:00 190' - TFA 10:00	271' - Rehab channel of MH 1324	REHAB MH CHANNEL CLEAN & CIPP
1A	Ashbourne Dr	8	VCP	1634	1341	282	5	1	DS	HMD	Cracks at joints throughout.	281' - Hole in DS MH channel (MH 1341)	35' - TFC 10:00 56' - TFA 2:00 65' - TFA 10:00 104' - TFC 10:00 110' - TFC 2:00 134' - TFC 10:00 173' - TFC 10:00 176' - TBA 10:00 207' - TFA 10:00 228' - TBA 2:00 245' - TFC 10:00	281' - Rehab channel in DS MH 1341	REHAB MH CHANNEL CLEAN & CIPP
1A	Ashbourne Dr	8	VCP	1341	1340	233	6	1	DS	HMD	Light roots in joints throughout.	148' - FMJ 205' - FMJ 230' - HSV 4:00 tp 7:00	14' - TFC 2:00 48' - TFA 2:00 71' - TFA 10:00 74' - TFC 2:00 101' - TFC 2:00 141' - TBI 2:00 144' - TFC 2:00 146' - TFC 10:00 167' - TFA 2:00 203' - TFA 2:00 230' - DROP CONNECTION	230' - Excavation point repair replace broken pipe and recconect drop connection	EXCAVATION POINT REPAIR CLEAN & CIPP
1B	Pasqualito Dr	8	VCP	1355	1611	201	4	1	DS	HMD	Light grease on the bottom of the pipe. Fine roots in joints throughout.	149' - RTJ 2:00	13' - TBA 10:00 (RBL) 18' - TFC 10:00 30' - TFC 10:00 57' - TFA 2:00 87' - TFC 2:00 93' - TFA 10:00 150' - TFA 2:00 (RBL)		CLEAN & CIPP
1A	Monterey Rd	8	VCP	1264	1325	297	12	1	US	HMD			12' - TFC 2:00 30' - TFC 10:00 39' - TFA 2:00 57' - TFA 10:00 59' - TFC 2:00 83' - TFA 10:00 95' - TFA 2:00 107' - TFC 10:00 109' - TFC 2:00 136' - TFC 10:00 139' - TFA 2:00 157' - TFA 10:00 159' - TFC 2:00 183' - TFA 10:00 186' - TFA 2:00 207' - TFC 10:00 209' - TFC 2:00 240' - TFA 10:00 (RML) 243' - TFC 2:00 257' - TFC 10:00 260'- TFA 2:00 287' - TFA 10:00 289' - TFA 2:00		NO REPAIR

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1A	Monterey Rd	8	VCP	1325	16 0261	367	11	1	DS	HMD	182' - BURIED MH Multiple cracks and fractures in joints in pipe DS of BURIED MH (MH 1640).	262' - CMJ 307'- CMJ	16' - TFA 10:00 43' - TFC 10:00 46' - TFC 2:00 64' - TFA 10:00 69' - TFA 2:00 90' - TFC 10:00 93' - TFC 2:00 111' - TFA 10:00 114' - TFA 2:00 141' - TFC 10:00 143' - TFC 2:00 164' - TFC 10:00 167' - TFA 2:00 182' - BURIED MH 192' - TFA 10:00 195' - TFC 2:00 216' - TFC 10:00 218' - TFA 2:00 245' - TFA 10:00 263' - TFC 2:00 269' - TFC 10:00 312' - TFA 10:00 317' - TFC 2:00 365' - DROP CONNECTION	182' to 365' - CLEAN & CIPP	CLEAN & CIPP
1A	Montrobles Pl	8	VCP	1326	1325	203	1	1	US	HMD	Light roots in joints throughout.	32' & 35' - RFJ	74' - TFC 10:00 79' - TFC 2:00 131' - TFC 10:00 133'- TFC 2:00 191' - TFA 10:00 194' - TFC 2:00		CLEAN & CIPP
1A	Montrobles Pl	8	VCP	1327	1326	201	9	1	US	HMD	ABANDONED SURVEY AT 196' due to TBI. 201' - FLUSH TANK (from Altas Map pdf page 5)	28' - RFJ 46' - RTB 50' - RFJ	13' - TFA 2:00 18' - TFC 10:00 44' - TFC 2:00 (RML) 46' - TFA 10:00 (RTL) 67' - TFA 2:00 (RBL) 93'- TFC 10:00 94' - TFA 2:00 (RML) 119'- TFC 2:00 121' - TFC 10:00 145' - TBA 2:00 (RTL) 148' - TFC 2:00 163' - TFA 10:00 168' - TFC 2:00 196' - TBI 2:00 198' - TBI 10:00	196' - Trim intruding lateral 198' - Trim intruding lateral	MODIFY FLUSH TANK TRIM INTRUSION CLEAN & CIPP
1A	La Mirada Ave	8	VCP	1333	16 0260	244	7	1	US	HMD			60' - TFA 12:00 99' - TFA 12:00 138' - TFA 12:00 (RML) 154' - TFC 10:00 156' - TFC 2:00 180'- TFC 10:00 186' - TFC 2:00 207' - TFC 2:00 209' - TFA 2:00 (RML) 210' - TFA 10:00 (RML) 215' - TFC 10:00 237' - TFA 10:00 239' - TFA 2:00 244' - FLUSH TANK		MODIFY FLUSH TANK
1C	Monterey Rd	8	VCP	1214	1213	359	4	1	US	HMD	Medium to light roots in joints throughout. 362' - FLUSH TANK	174' - FMJ 260' - Change of material to DIP 263' - MH 1690 (roots in wall)	19' - TFC 10:00 48' - TBA 10:00 70'- TFC 10:00 118' - TFA 10:00 (RBL) 167' - TFC 10:00 245' - TFA 10:00 (RBL) 309' - TFC 10:00 312' - TFC 2:00 357' - TFC 2:00 360' - TFA 10:00 362' - FLUSH TANK	263' - LINE MH 1690	MODIFY FLUSH TANK REHAB MH WALL CLEAN & CIPP
1B	Monterey Rd	8	VCP	1234	1213	215	3	1	US	HMD		2' - FMJ 2' - RMJ	18' - TFA 2:00 69' - TFC 2:00 120' - TFC 2:00 168' - TFA 2:00 211' - TFA 2:00 215' - FLUSH TANK	2' - CIPP POINT REPAIR	MODIFY FLUSH TANK CIPP POINT REPAIR
1C	Courtland Ave	8	VCP	1213	1212	251	5	1	DS	HMD	Medium to light roots in joints throughout.	22' - RFJ	61' - TFC 10:00 63' - TFA 2:00 (RBL) 112' - TFA 10:00 114' - TFA 2:00 (RBL) 162' -TFA 10:00 165' - TFA 2:00 213' - TFC 10:00 215' - TFC 2:00		CLEAN & CIPP

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1C	Courtland Ave	8	VCP	1212	1211	251	5	1	DS	HMD	Medium to light roots in joints throughout.	89' - FMJ 113' - FMJ (Large fracture) 130' - FMB	10' - TFC 10:00 12' - TFC 2:00 30'- TBA 10:00 61' - TFC 10:00 63' - TFA 2:00 103' - TBA 10:00 112' - TFC 10:00 114' - TFA 2:00 (RBL) 150' - TFA 10:00 160' - TFC 10:00 165' - TFC 2:00 213' - TFC 10:00 215' - TFC 2:00		CLEAN & CIPP
1C	Courtland Ave	8	VCP	1211	1210	252	6	1	DS	HMD	Medium to light roots in joints throughout.	249' - FMJ	10' - TFA 10:00 (RML) 13' - TFA 2:00 61' - TFA 10:00 (RBL) 64' - TFC 2:00 112' - TFC 10:00 115' - TFC 2:00 163' - TFA 10:00 166' - TFC 2:00 214' - TFA 10:00 217' - TFA 2:00		CLEAN & CIPP
1C	Chelsea Rd	8	VCP	1204	1203	327	7	1	DS	HMD		175' - CMJ 322' - Joint seperation	25' - TFA 2:00 48' - TFC 10:00 82' - TFC 2:00 84' - TFC 10:00 147' - TFA 10:00 151' - TFA 2:00 188' - TFA 10:00 191' - TFC 2:00 243' - TFC 10:00 246' - TFA 2:00 271' - TFC 10:00 274' - TFC 2:00 313' - TFA 10:00 316' - TFA 2:00	175' - CIPP POINT REPAIR over crack 322' - CIPP POINT REPAIR over joint seperation	CLEAN & CIPP
1C	Chelsea Rd	8	VCP	1203	1598	326	5	1	DS	HMD	Medium to light roots in joints throughout.	38' - CMJ 84' - CMJ 135' - CMJ 181' - FMJ	34' - TFC 10:00 37' - TFC 2:00 79' - TFA 10:00 82' - TFA 2:00 124' - TFA 2:00 127' - TFC 2:00 204' - TFA 10:00 225' - TFC 10:00 228' - TFA 2:00		CLEAN & CIPP
1	McFarlane St	8	VCP	1317	1646			1	DS	HMD	Pipe not draw in GIS correctly?? (127 ft, 1 lateral)	0' - Hole in channel of US MH 1317 112' - RFJ 127' - Roots in channel of DS MH	101' - TFA 10:00	0' - Rehab channel of US MH 1317 127' - Rehab channel of DS MH	REHAB MH CHANNEL
1	McFarlane St	8	VCP	1646				1	DS	HMD	Light roots in joints throughout. Pipe not draw in GIS correctly?? (172 ft, 1 lateral)	69' - RFJ 90' - RFJ 102' - RFJ 172' - Hole is DS MH channel	161' - TFA 2:00 (RBL)	172' - Rehab channelof DS MH	REHAB MH CHANNEL CLEAN & CIPP
1	McFarlane St	8	VCP		1322			1	DS	HMD	Pipe bend to the left. Light roots in joints throughout. (135 ft, 1 lateral)	7' - RFJ 30' - RMJ 49'- FMJ 97' - FMJ 130' - FMJ 135' - Roots in DS MH channel and Wall	15' - TFA 10:00 (RBL)	49', 97', & 130'- CIPP point repair over fracture 135' - Rehab channel and wall of DS MH	REHAB MH CHANNEL & WALL CLEAN & CIPP
1A	McFarlane St	8	VCP	1319	1318	225	8	1	DS	HMD	Light roots in joints throughout.	7' - RMJ 167' - RTJ	6' - TFA 10:00 (RML) 10' - TBA 10:00 79' - TFC 10:00 92' - TFA 2:00 96' - TBA 10:00 151' - TFA 10:00 (RBL) 174' - TFA 2:00 (RBL) 181' - TFC 2:00 182' - TBA 2:00 189' - TBA 10:00 (RBL)		CLEAN & CIPP
1A	McFarlane St	8	VCP	1318	1317	102	2	1	DS	HMD	VIDEO JUMP from 0' feeet to 23'???? DS MH 1317 has two inlets?? Medium to light roots in joints.	102' - Root in channel of DS MH 1318	23' - TBA 2:00 37' - TFC 2:00 40' - TFA 2:00 (RTL)	103' - Rehab channel of DS MH 1317	CLEAN & CIPP
1D	Shanendoah Rd	8	VCP	1691	1220	302	2	1	US	HMD	Medium to light roots in joints throughout.	93' - RMJ	99' - TFA 12:00 287' - TFC 10:00 292' - TFA 2:00 (RML)		CLEAN & CIPP
1D	Shanendoah Rd	8	VCP	1220	1218	241	2	1	DS	HMD			134' - TFA 12:00 233' - TFA 12:00		NO REPAIR
1D	Shanendoah Rd	8	VCP	1218	1217	241	2	1	DS	HMD	Fine crack at joints throughout.	193' - FMJ	95' - TFA 12:00 197' - TFA 12:00		CIPP POINT REPAIR
1D	Monterey Rd	8	VCP	1216	1224	323	4	1	US	HMD			50' - TFC 10:00 106' - TFA 2:00 126'- TFA 10:00 156'- TFC 10:00 188' - TFA 2:00 299'- TFA 2:00 319' - TFC 10:00 323' - FLUSH TANK		MODIFY FLUSH TANK

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1D	Monterey Rd	8	VCP	1219	1220	305	4	1	US	HMD			3' - DROP CONNECTION 65' - TFA 10:00 68' - TFC 2:00 184' - TFC 10:00 189' - TBA 10:00 196' - TBA 2:00 296' - TFC 2:00 298' - TFA 10:00 305' - FLUSH TANK		MODIFY FLUSH TANK
1B	El Molino Ave	8	VCP	1283	1284	274	6	1	DS	LJP/AAC/HMD	Light grease buildup in pipe		8'-TFC 2:00 15'-TBA 2:00 26'-TBA 10:00 38'-TFC 2:00 61'-TFA 10:00 77'-TFC 2:00 116'-TFC 10:00 119'-TFC 2:00 154'-TFA 2:00 166'-TFC 10:00 184'-TFA 2:00 214'-TFC 10:00 217'-TFC 2:00 244'-TFC 2:00 268'-TFA 2:00		CLEAN & CIPP
1A	Pilgrim Pl	8	VCP	1364	16 0252	252	7	1	DS	HMD	DUPLICATE VIDEO TO ONE ABOVE	31' - FMJ	7' - TFA 2:00 9' - TFA 10:00 24'- TFA 2:00 60' - TFA 2:00 75' - TFA 10:00 155'- TFA 2:00 176'- TFA 10:00	31' - CIPP Point repair over fracture	CIPP POINT REPAIR
1D	Hampton Rd	8	VCP	1027	1028	200	6	1	US	HMD	Fine roots in joints throughout.	162' - FMJ	33' - TFA 2:00 (RBL) 69' - TFA 10:00 134' - TFA 2:00 152' - TFA 10:00 193' - TFC 2:00 195' - TBA 2:00 (RML) 195' - TFA 10:00		CLEAN & CIPP
1D	Hampton Rd	8	VCP	1040	1027	133	0	1	US	HMD		118' - FMB		118' - CIPP POINT REPAIR over fracture	CIPP POINT REPAIR
1D	Hampton Rd	8	VCP	1028	1029	203	4	1	DS	HMD	Fine roots in joints throughout.	72' - FMB 72' - RFB 201' - HSV in DS MH 1029	14' - TFA 2:00 70' - TBI 10:00 101' - TFA 2:00 (RML) 177' - TFA 10:00 (RML)	70' - Trim intruding lateral 201' - Rehab DS MH 1029 channel	TRIM INTRUSION REHAB MH CHANNEL CLEAN & CIPP
1D	Hampton Rd	8	VCP	1029	1030	203	3	1	DS	HMD	Fine roots in joints throughout.	1' - HSV in US MH 1029 (Same MH as row above) 149' - Joint offset 201' - HSV in DS MH 1030 channel	8' - TFC 2:00 11' - TBA 2:00 96' - TFA 10:00 105' - TFA 2:00	201' - Rehab DS MH 1030 channel	REHAB MH CHANNEL CLEAN & CIPP
1D	Kensington Rd	8	VCP	1026	1025	280	8	1	US	HMD	Medium to fine roots in joints throughout. 280' - FLUSH TANK		11' - TBI 2:00 64' - TFA 10:00 100' - TFA 2:00 145' - TFA 10:00 184' - TFA 2:00 (RBL) 227' - TFA 10:00 (RBL) 269' - TFA 2:00 271' - TFA 10:00 (RBL)	11' - Trim intruding lateral	TRIM INTRUSION CLEAN & CIPP MODIFY FLUSH TANK
1D	Kensington Rd	8	VCP	1025	1024	280	6	1	US	HMD	Fine roots in joints throughout.		9' - TFA 10:00 90' - TFA 2:00 102' - TFA 10:00 184' - TFA 10:00 195' - TFA 2:00 (RBL) 265' - TFA 10:00		CLEAN & CIPP
1D	Kensington Rd	8	VCP	1024	1023	205	3	1	DS	HMD	Fine roots in joints throughout.	1' - Roots in bench of US MH 1024 2' - RFJ 107' - LARGE FRACTURE 2:00 to 9:00 114' - Large joint separation	21' - TFA 10:00 (RBL) 173' - TFI 2:00 (RBL) 185' - TFA 10:00 (RBL)	1' - Rehab channel of US MH 1024 107' - EXCAVATION POINT REPAIR (replace fractured pipe) 173' - Trim intruding lateral	REHAB MH CHANNEL TRIM INTRUSION EXCAVATION POINT REPAIR CLEAN & CIPP
1D	Kensington Rd	8	VCP	1023	1692	163	4	1	DS	HMD		89' - FMJ 89' - RMJ	57' - TFA 2:00 (RML) 90' - TFA 10:00 (RBL) 144' - TFA 2:00 (RBL) 148' - TFA 10:00 (RBL)	89' - EXCAVTION POINT REPAIR fracture and reconnect lateral	EXCAVATION POINT REPAIR
1D	Kensington Rd	8	VCP	1692	1022	270	4	1	DS	HMD	Light grease on bottom of pipe.	4' - FMJ 4' to 10' - Sag (HWL) 270' - Sag in middle of DS MH 1022 channel	59' - TFI 2:00 71' - TFA 10:00 (RBL) 137' - TFA 2:00 221' - TFA 2:00 (RML) 254' - TFC 10:00	4' to 10' - Excavation point repair and replace pipes in sag zone 59' - Trim intruding lateral liner 270' - Rehab channel of DS MH 1022	TRIM INTRUSION EXCAVATION POINT REPAIR REHAB MH CHANNEL CLEAN
1C	S. Oak Knoll Ave	8	VCP	1242	1208	281	2	1	US	LJP/HMD		RF in multiple joints	18'-TFC 10:00 73'-TFC 10:00 75'-TFC 2:00 121'-TFD 10:00 (RBL) 123'-TFC 2:00 171'-TFC 10:00 174'-TFC 2:00 222'-TFC 10:00 225'-TFC 2:00 270'-TFC 10:00 273'-TFA 2:00 (RFL)		CLEAN & CIPP
1C	S. Oak Knoll Ave	8	VCP	1208	1207	230	5	1	DS	LJP/HMD		RF in multiple joints	23'-TBD 2:00 (RBL) 59'-TFC 10:00 61'-TFC 2:00 101'-TFA 2:00 107'-TFC 10:00 159'-TFC 10:00 161'-TFD 2:00 (RBL) 210'-TFA 10:00 (RML) 213'-TFC 2:00 221'-TBD 2:00 (RBL)		CLEAN & CIPP

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1C	S. Oak Knoll Ave	8	VCP	1207	1206	230	3	1	DS	LJP/HMD	0' - Hole in US MH 1207	38' - CM RF in multiple joints	30'-TFC 10:00 32'-TFC 2:00 81'-TFA 10:00 83'-TFC 2:00 131'-TFC 10:00 134'-TFC 2:00 182'-TFD 10:00 185'-TFA 2:00	0'- Rehab channel of US MH 1207	REHAB MH CHANNEL CLEAN & CIPP
1D	Wembley Rd	8	VCP	1016	1017			1	US	LJP/HMD	Survey abandoned/Could not pass intruding lateral liner		60'-TFD 2:00 (RBL) 75'-TFI 10:00 (Intruding Liner)	75' - Trim Intrusion	-
1D	Wembley Rd	8	VCP	1016	1017	274	6	1	DS	LJP/HMD	Survey abandoned/Reached Overlap Point of Inspection	75', 78', 138' - CM RF in multiple joints	7'-TFD 10:00 (RBL) 49'-TFD 10:00 (RBL) 101'-TFA 2:00 134'-TFA 10:00 (RFL)	199' - Trim Intrusion	TRIM INTRUSION CLEAN & CIPP
1D	Wembley Rd	8	VCP	1017	1018	278	6	1	DS	LJP/HMD	Missing Wall in MH 1017	RF in multiple joints 11' - CM	21'-TFD 10:00 24'-TFC 2:00 26'-TBI 2:00 105'-TFA 10:00 127'-TFD 2:00 (RBL) 193'-TFD 10:00 (RBL) 229'-TFD 2:00 (RBL)	0' - Rehab US MH 1017 Channel 26' - Trim Intrusion	REHAB MH CHANNEL TRIM INTRUSION CLEAN & CIPP
1D	Wembley Rd	8	VCP	1018	1019	282	5	1	US	LJP/HMD		153' - DSC	100'-TFA 10:00 105'-TFD 2:00 (RBL) 201'-TFA 2:00 228'-TFA 10:00 276'-TFA 2:00		CLEAN & CIPP
1D	Wembley Rd	8	VCP	1019	1020	221	5	1	DS	LJP/HMD	Missing wall in MH 1020		78'-TFA 10:00 92'-TFD 2:00 (RBL) 151'-TFD 10:00 (RBL) 166'-TFA 2:00 (RFL) 174'-TBA 10:00	219' - Rehab MH 251 Channel	REHAB MH CHANNEL CLEAN & CIPP
1D	Wembley Rd	8	VCP	1020	1021	227	7	1	DS	LJP/HMD		RF in multiple joints	10'-TFD 10:00 (RBL) 19'-TFD 2:00 (RBL) 82'-TFD 10:00 (RBL) 96'-TFD 2:00 (RBL) 157'-TFD 10:00 (RBL) 172'-TFA 2:00 218'-TBA 12:00		CLEAN & CIPP
1D	Monterey Rd	8	VCP	1030	1019	272	0	1	US	LJP/HMD	Missing wall in MH 1030	121' - CM 264' - FM		270' - Rehab MH 261 Channel	CLEAN AND CIPP REHAB MH CHANNEL
1D	Patton Way	8	VCP	1051	1050	197	5	1	US	HMD			16' - TFA 10:00 75'- TFA 2:00 174' - TFA 10:00 187' - TFA 2:00 192' - TFA 2:00		NO REPAIR
1D	Patton Way	8	VCP	1050	1049	210	2	1	DS	HMD		2' - CFB 62' - CFJ	59' - TFA 10:00 155' - TFA 2:00		NO REPAIR
1D	Patton Way	8	VCP	1049	1041	201	1	1	DS	HMD			58'- TBA 2:00		NO REPAIR
1D	Patton Ct	8	VCP	1052	1050	115	1	1	US	HMD			86' - TFA 2:00		NO REPAIR
1D	Euston Rd	8	VCP	1042	1041	201	3	1	US	HMD		24' - HSV	87' - TFA 2:00 120' - TFA 2:00 189' - TFA 2:00	24' - Excavation Point Repair Hole and replace pipe segment	EXCAVATION POINT REPAIR
1D	Euston Rd	8	VCP	1041	1040	384	3	1	DS	HMD		20' - CFB	128' - TFA 10:00 208' - TFA 10:00 303' - TFA 10:00		NO REPAIR
1D	Euston Rd	8	VCP	1674	1040	354	6	1	US	HMD	354' - RAT!!!	109' - Large offset joint	20' - TFA 10:00 27' - TFA 10:00 (RML) 38' - TFA 10:00 144' - TFA 10:00 249' - TFA 10:00 349' - TFA 10:00	109' - Excavation point repair and replace pipe segment	EXCAVATION POINT REPAIR
1C	Huntington Dr N	8	VCP	1597	1598	241	2	1	US	HMD		110' - Deposits on the bottom of the pipe 141' - FJ 6:00 206' - Deposits on the bottom of the pipe 227' - Deposits on the bottom of the pipe 239' - FMJ	89' - TFA 10:00 235' - TFA 10:00 241' - FLUSH TANK		MODIFY FLUSH TANK CLEAN & CIPP
1C	Huntington Dr N	8	VCP	1599	1598	303	2	1	US	HMD	Medium to light roots in joints throughout.		74' - TFC 2:00 190'- TFC 2:00 251' - TFA 2:00 293'- TBA 2:00		CLEAN & CIPP
1C	Huntington Dr N	8	VCP	1601	1603	223	0	1	DS	HMD	Light grease in bottom of the pipe. Medium to fine roots in joints throughout.	223' - Hole in channel of DS MH 1603	65' - TFC 2:00 117'- TFC 2:00 165' - TFC 2:00 217' - TFC 2:00	223' - Rehab channel in DS MH 1603	REHAB MH CHANNEL CLEAN & CIPP
1C	Huntington Dr N	8	VCP	1603	1604	243	3	1	DS	HMD	Light grease on bottom of the pipe.	0' - Hole in channel US MH 1603 168' - Grease deposits on the top of the pipe 216' - CMJ	43' - TFA 2:00 96' - TFA 2:00 145' - TFC 2:00 197' - TFA 2:00		CLEAN & CIPP
1A	Monterey Rd	8	VCP	1323	1324	118	1	1	DS	HMD	Light roots in joints throughout. Watermark 90% of pipe.	6' - CMB	28'- TFA 10:00		CLEAN & CIPP
2B	Huntington Dr N	8	VCP	2474	2475	282	1	1	DS	HMD	DUPLICATE OF OLDER VIDEO ABOVE Fractures at joints and barrel throughout.	4' - FMJ 53' - FMJ 151' - Large joint separation	5' - TFA 2:00 33' - TFC 2:00 57' - TFC 2:00 80' - TFC 2:00 108' - TFC 2:00 132' - TFC 2:00		CLEAN & CIPP
1D	Avondale Rd	8	VCP	1111	1102	241	3	1	DS	HMD		240' - Hole in channel of DS MH 1102	43' - TFC 2:00 45' - TFC 10:00 69'- TFA 2:00 71' - TFA 10:00 168' - TFA 2:00 171' - TFC 10:00	240' - Rehab channel of DS MH 1102	REAHB MH CHANNEL

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1C	S. Oak Knoll Ave	8	VCP	1206	1601	243	5	1	DS	HMD	Light grease on top and bottom of pipe throughout.	131' - FMJ 140' - FMJ 223' to 232' - Large Deposits 2:00	9' - TFC 10:00 12' - TFC 2:00 52' - TFA 10:00 54' - TFA 2:00 103' - TFA 10:00 (RBL) 105' - TFC 2:00 152' - TBA 10:00 157'- TFC 10:00 160'- TFC 2:00 202' - TFC 10:00 204' - TFA 2:00		CLEAN & CIPP
1B	Huntington Dr Alley	8	VCP	1370	1625	157	1	1	DS	HMD	NEED TO CONFIRM LOCATION WITH NEW VIDEO. Light grease on bottom of pipe throughout. Fine roots in joints throughout.	70' - RTJ 75' to 139' - SAG	66' - TFC 10:00 75' - TFA 2:00		REPLACE PIPE
1C	Huntington Dr Alley	8	VCP	1625	1624	118	4	1	DS	HMD	Cracks at joints throughout.	50' - FMB	5' - TFA 2:00 8' - TFA 10:00 (RBL) 40' - TBA 2:00 51' - TFC 10:00 82' - TFC 2:00 102' - TFA 10:00		CLEAN & CIPP
1B	Huntington Dr Alley	6	VCP	1624	1374	295	1	1	DS	HMD	Light grease on bottom of pipe throughout.		84' - TFA 10:00		CLEAN
1B	Huntington Dr Alley	6	VCP	1374	1375	303	2	1	DS	HMD			47' - TFA 10:00 122' - TFA 10:00		NO REPAIR
2B	Del Mar Rd	6	VCP	2510	2509	302	6	1	DS	HMD	DUPLICATE OF TWO OLDER VIDEOS. Light roots in joints throughout.	301' - Hole in channel of DS MH 2509	3' - TFC 10:00 58'- TFA 10:00 109' - TBA 10:00 (RBL) 158' - TFA 10:00 (RBL) 208' - TFA 10:00 (RBL) 215' -TBA 2:00 260' - TFC 10:00 297' - TBA 10:00	301' - Rehab channel of DS MH 2509	REHAB MH CHANNEL CLEAN & CIPP
2B	Del Mar Rd	6	VCP	2509	Trunk Sewer MH	107	0	1	DS	HMD	DUPLICATE OF OLDER VIDEO ABOVE. Light roots in joints throughout.		11' - TFC 10:00 59' - TFC 10:00		CLEAN & CIPP
2A	Rose Ave	8	VCP	2362	2361	314	5	1	DS	HMD	DUPLICATE OF OLDER VIDEO ABOVE. Light roots in joints throughout.	312' - Hole in channel of DS MH 2361	45' - TFA 10:00 96'- TFA 2:00 175' - TFA 10:00 235' - TFA 2:00 247' - TFA 10:00	312' - Rehab channel of DS MH 2361	REHAB MH CHANNEL CLEAN & CIPP
2A	Rose Ave	8	VCP	2361	2360	313	5	1	DS	HMD	DUPLICATE OF OLDER VIDEO ABOVE. Light roots in joints throughout.	75' - RMJ 312' - Hole in MH channel (DS MH 2360)	26' - TFA 10:00 94' - TFA 10:00 133' - TFA 2:00 263' - TFA 2:00 290' - TFA 2:00	312' - Rehab channel of DS MH 2360	REHAB MH CHANNEL CLEAN & CIPP
2A	Rose Ave	8	VCP	2358	2332	282	1	1	DS	HMD	DUPLICATE OF OLDER VIDEO ABOVE. Light roots in joints throughout.		235' - TFA 10:00		CLEAN & CIPP
2A	Del Mar Ave	8	VCP	2507	2506	250	7	1	US	HMD		0' - Hole in DS MH 2506	6' - TFC 2:00 6' - TBA 10:00 27' - TBA 2:00 33' - TFC 2:00 63' - TFC 2:00 69' - TBA 10:00 96' - TFA 2:00 126' - TFC 2:00 155' - TBA 10:00 157' - TFA 2:00 186' - TFC 2:00 216' - TFC 2:00 247' - TBI 2:00 250' - FLUSH TANK	0' - Rehab channel of DS MH 2506	REHAB MH CHANNEL MODIFY FLUSH TANK CLEAN & CIPP
2A	Del Mar Ave	8	VCP	2506	2505	252	8	1	DS	HMD	Fracture at multiple joints throughout.	13' - FMJ 26' - Broken Wye of lateral 57' - FMJ 250' - Hole in channel of DS MH 2505	26' - TFA 10:00 (RBL) 36' - TFA 2:00 56' - TFC 10:00 77' - TBI 2:00 86' - TFA 10:00 116' - TFC 10:00 140' - TBC 2:00 143' - TBA 2:00 146' - TFA 10:00 179' - TFC 10:00 206' - TFC 10:00 207' - TBA 2:00 233' - TFA 10:00	26' - Top hat lining over broken wye 77' - Trim intruding lateral 250' - Rehab channel in DS MH 2505	REHAB MH CHANNEL TRIM INTRUSION CLEAN & CIPP
2A	Del Mar Ave	8	VCP	2505	2504	226	7	1	DS	HMD	Fractures and cracks at joints throughout.	96' - previously this section had a CIPP POINT REPAIR	14' - TFA 10:00 15' - TBA 2:00 56' - TFC 10:00 65' - TBI 2:00 96' - TFA 10:00 146'- TFC 10:00 161' - TBI 2:00 201' - TFA 10:00 204' - TBA 2:00 216' - TFC 10:00	65' & 161'- Trim intruding lateral	TRIM INTRUSION CLEAN & CIPP
2A	Del Mar Ave	8	VCP	2504	2502	203	3	1	DS	HMD	Medium roots in joints throughout.	3' - RMJ 3' - Small Joint Seperation	59' - TBI 2:00 62' - TFC 10:00 123' - TBI 2:00 185' - TBI 2:00	123' & 185' - Trim intruding lateral	TRIM INTRUSION CLEAN & CIPP

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
2B	Del Mar Ave	8	VCP	2520	2518	261	2	1	DS	HMD	Medium roots in joints throughout.		19' - TFC 10:00 67' - TFC 10:00 84' - TFC 10:00 130' - TFC 10:00 151' - TFA 10:00 (RML) 189' - TFC 10:00 205' - TFA 10:00 250' - TFC 10:00		CLEAN & CIPP
2A	San Gabriel Blvd	8	VCP	2499	2500	242	4	1	DS	HMD	Light grease on the bottom of the pipe throughout. FRACTURES and fine cracks at joints throughout.	13' - CFJ 28' - CFJ 58' - RFJ	71' - TFA 2:00 138' - TFA 2:00 186' - TFA 2:00 237' - TFA 2:00		CLEAN & CIPP
2B	Gainsborough Rd	8	VCP	2209	2220	187	5	1	DS	HMD	Light grease on the bottom of the pipe. Fractures at joints throughout.	24' - CFJ 35' - FMJ 126' - FMJ	37' - TFA 2:00 86' - TFA 2:00 119' - TFA 10:00 158' - TFA 2:00 185' - DROP CONNECTION		CLEAN & CIPP
2C	Sierra Madre Blvd	8	VCP	2561	2562	302	2	1	DS	HMD	Fine cracks at joints throughout. Medium to light roots in joints throughout.	165' - FMJ	10' - TBA 2:00 50' - TFA 2:00 128'- TFC 2:00 204' - TFC 2:00 279'- TFC 2:00		CLEAN & CIPP
2C	Sierra Madre Blvd	8	VCP	2562	2563	305	2	1	DS	HMD	Fine cracks at joints throughout.		17' - TBA 2:00 52' - TFC 2:00 127' - TFA 2:00 205'- TFC 2:00 283' - TFC 2:00		CLEAN & CIPP
2C	Sierra Madre Blvd	8	VCP	2563	2564	253	0	1	DS	HMD	Light grease on the bottom of the pipe throughout.	165' - HVV	51' - TFC 2:00 128'- TFC 2:00 211' - TFC 2:00	165' - CIPP POINT REPAIR	CLEAN & CIPP
1	Bedford Rd	8	VCP	1497	1500			1	US	HMD	44' - End of pipe Unsure of Location (44 LF, 2 lateral)		10' - TBA 2:00 12' - TFC 2:00 24' - TFA 10:00		NO REPAIR
1	Bedford Rd	8	VCP	1496	1497			1	US	AAC	NOT IN GIS (110 ft, 0 laterals)		9' - TFC 10:00 12' - TFC 2:00 54' - TFC 10:00 56' - TFC 2:00 102' - TFC 10:00 104' - TFC 2:00		NO REPAIR
1	Bedford Rd	8	VCP	UNK	1502			1	DS	AAC	NOT IN GIS (66 ft, 2 laterals)		5' - TFC 10:00 7' - TFC 2:00 51' - TFA 2:00 54' - TFC 10:00 56' - TBA 10:00		NO REPAIR
1E	Bedford Rd	8	VCP	1502	1486	205	4	1	DS	AAC/HMD		0' - Fracture in channel of US MH 1502 5' - RFJ 84' - Deposits 83' - RFJ	20' - TFC 2:00 40' - TFC 10:00 70' - TFA 2:00 85' - TFC 10:00 97' - TFA 2:00 98' - TBA 10:00 133' - TFC 10:00 138' - TFD 2:00 (WYE BROKEN)	0' - Rehab channel in US MH 1502	REHAB MH CHANNEL CLEAN & CIPP
1E	West Dr	8	VCP	1486	1485	226	6	1	DS	AAC/HMD		RF at multiple joints	45' - TBA 1:00 66' - TFC 10:00 75' - TFC 2:00 111' - TFA 2:00 116' - TFC 10:00 167' - TFD 10:00 (roots) 185' - TFD 2:00 (roots) 191' - TBA 10:00 215' - TFC 10:00 217' - TFD 2:00 (roots)		CLEAN & CIPP
1E	West Dr	8	VCP	1485	1484	282	6	1	US	AAC/HMD	108' - Bend in pipe	RF at multiple joints 109', 124' - Joint Offset Medium	18' - TFA 10:00 66' - TFA 10:00 141' - TFC 2:00 146' - TFD 10:00 (WYE BROKEN) 191' - TFC 2:00 200' - TFA 10:00 205' - TBA 2:00 208' - TFD 2:00 (roots) 238' - TBC 10:00		CLEAN & CIPP
1E	West Dr	8	VCP	1484	1483	221	3	1	DS	AAC/HMD		RF at multiple joints	7' - TFC 10:00 8' - TFC 2:00 74' - TFA 10:00 135' - TFA 2:00 193' - TFD 10:00 (roots) 208' - TFA 2:00		CLEAN & CIPP
1E	West Dr	8	VCP	1483	1482	201	5	1	DS	AAC/HMD		158' - RFJ	36' - TFA 10:00 64' - TFA 2:00 94' - TFA 10:00 139' - TFA 2:00 157' - TFA 10:00		CLEAN & CIPP
1E	West Dr	8	VCP	1482	1481	200	6	1	DS	AAC/HMD		83' - RF 188',197' - FM	11' - TFC 2:00 14' - TBA 2:00 14' - TFA 10:00 62' - TFA 2:00 75' - TFA 10:00 138' - TFA 10:00 148' - TFA 2:00	188' - CIPP POINT REPAIR 197' - CIPP POINT REPAIR	CLEAN & CIPP
1E	Sherwood Rd	8	VCP	1503	1484	274	7	1	US	AAC/HMD	Survey Abandoned at 196'	RF at multiple joints 196' - RB	70' - TFA 10:00 110' - TFA 10:00 120' - TBA 10:00 120' - TBA 10:00 179' - TBA 10:00	196' - Excavtion point repair and repalce broken pipe	EXCAVTION POINT REPAIR CLEAN & CIPP

AREA	LOCATION	DIA (IN)	MATERIAL	US MH ID	DS MH ID	LENGTH (FT)	ACTIVE LATERALS	CCTV RUN NO.	CCTV DIRECTION	DUDEK REVIEWER	REMARKS	CCTV CONDITION NOTES	LATERAL NOTES	POINT REPAIR NOTES	RECOMMENDATION
1E	Sherwood Rd	8	VCP	1503	1484			1	DS	AAC/HMD	Survey Abandoned at 78'	40' - CM 78' - BSV	25' - TFA 2:00 67' - TFA 10:00		CLEAN & CIPP
1E	Sherwood Rd	8	VCP	1504	1503	278	6	1	US	AAC/HMD	278' - Flush Tank	RF at multiple joints 131' - FM	31' - TFA 10:00 89' - TFA 10:00 155' - TFC 10:00 160' - TBA 9:00 182' - TFA 2:00 218' - TFC 10:00 219' - TBA 8:00 266'- TFC 2:00 271' - TFC 10:00 273' - TBA 9:00		MODIFY FLUSH TANK CLEAN & CIPP
1E	West Dr	8	VCP/PVC	1697	1489	294	4	1	US	LJP/HMD	99' - Material change PVC 113' - Material change VCP 142' - Material Change PVC 215' - Material VCP 294' - Flush Tank	23', 40' - DSC 222', 225' - HSV RF in multiple joints 293' - RT	100'-TFA 12:00 182'-TFA 12:00 228'-TFD 10:00 (RBL) (Broken) 288'-TFA 10:00 294'-ACOM	222' to 225' - Excavation point repair	CLEAN AND CIPP MODIFY FLUSH TANK
1E	West Dr	8	VCP	1489	1488	252	1	1	DS	LJP/HMD			66'-TFC 10:00 69'-TFC 2:00 117'-TFC 10:00 120'-TFC 2:00 168'-TFC 10:00 171'-TFC 2:00 209'-TFA 10:00 221'-TFC 2:00		CLEAN & CIPP
1E	West Dr	8	VCP	1488	1487	276	4	1	DS	LJP/HMD		0' - Hole in US MH 1488 RF in multiple joints	15'-TFC 10:00 21'-TFC 2:00 68'-TFA 10:00 71'-TFC 2:00 118'-TFC 2:00 136'-TFA 10:00 166'-TFC 10;00 169'-TFC 2:00 222'-TFC 10:00 225'-TFC 2:00 234'-TBA 2:00 261'-TFA 2:00 263'-TFC 10:00	0' - Rehab channel in US MH 1488	REHAB MH CHANNEL CLEAN & CIPP
1E	Lorain Rd	8	VCP	1512	1511	171	4	1	DS	LJP/HMD	Light grease buildup in pipe	83' - FM	9'-TFD 10:00 (FM) 61'-TFD 2:00 (RBL) 63'-TFA 10:00 125'-TFA 10:00	83' - CIPP POINT REPAIR	CLEAN & CIPP
1E	Lorain Rd	8	VCP	1511	1510	178	4	1	DS	LJP/HMD	Light grease buildup in pipe	RF/RM in multiple joints	13'-TFA 10:00 67'-TFA 10:00 113'-TFA 2:00 (RFL) 128'-TFA 10:00 (RFL)		CLEAN AND CIPP
1E	Lorain Rd	8	VCP	1510	1481	178	4	1	DS	LJP/HMD	Light grease buildup in pipe	RF/RM in multiple joints	10'-TFA 10:00 (Grease) 52'-TFA 2:00 75'-TFA 10:00 136'-TFD 10:00 (RBL)		CLEAN AND CIPP
1E	Lorain Rd	8	VCP	1481	1661	158	3	1	DS	LJP/HMD	Light grease buildup in pipe 107' to 138' - Camera went underwater	RF in multiple joints	80'-TFA 2:00 83'-TFA 10:00 137'-TFA 10:00	107' to 138' - Excavation point repair and replace pipe	EXCAVATION POINT REPAIR CLEAN & CIPP
1E	Lorain Rd	8	VCP	1661	1473	157	3	1	DS	LJP/HMD	Light grease buildup in pipe		37'-TFA 2:00 39'-TFD 10:00 (RBL) 101'-TFA 10:00		CLEAN AND CIPP
1D	Virginia Rd	8	VCP	1465	1466	251	5	1	US	LJP/HMD	Cockroach Infestation		58'-TFC 10:00 61'-TFA 2:00 129'-TFA 10:00 131'-TFC 2:00 199'-TFA 10:00 202'-TFA 2:00 242'-TBA 10:00		NO REPAIR
1D	Virginia Rd	8	VCP	1464	1465	251	4	1	US	LJP/HMD	Light grease buildup in pipe Cockroach Infestation 251' - Flush Tank	4' - FM	19'-TFA 10:00 21'-TFC 2:00 90'-TFA 10:00 92'-TFC 2:00 160'-TFA 10:00 163'-TFC 2:00 232'-TFA 10:00 234'-TFC 2:00	4' - CIPP POINT REPAIR	CLEAN CIPP POINT REPAIR MODIFY FLUSH TANK
1D	Virginia Rd	8	VCP	1466	1467	221	3	1	DS	LJP/HMD		0' - Hole in channel of US MH 1466	20'-TFC 10:00 88'-TFA 10:00 91'-TFA 2:00 159'-TFC 10:00 162'-TFA 2:00	0' - Rehab Channel of US MH 1466	REHAB MH CHANNEL
1D	Virginia Rd	8	VCP	1467	1468	302	5	1	DS	LJP/HMD		RF in multiple joints 67', 85' - CM? 300' - Hole in DS MH 1468	8'-TFC 10:00 11'-TFD 2:00 (RBL) 79'-TFC 10:00 82'-TFD 2:00 (RBL) 150'-TFC 10:00 153'-TFA 2:00 216'-TFC 10;00 218'-TFD 2:00 (RBL) 282'-TFC 10:00 284'-TFA 2:00	300' - Rehab Channel of DS MH 1468	REHAB MH CHANNEL CLEAN AND CIPP

Appendix B

Pump Station Inspection Notes

City of San Marino
2019 Wastewater Collection System Condition Assessment
Pump Station Inspection Notes

Pump Station Name: Avondale

Inspection Date: August 3, 2018

Inspector Name: Michael Hill, P.E. (Dudek)

Site/Civil

- Inadequate paving: Y [N] N/A Comments:
- Drainage problems Y [N] N/A Comments:
- Access/security issues: Y [N] N/A Comments:
- Emergency storage: None
  - Type: N/A
  - Volume: N/A
  - Condition problems: Y N [N/A] Comments:

Mechanical

- Pumps
  - Type: Centrifugal dry pit (submersible motor?)
  - Outlet diameter: ~3"?
  - Capacity: unknown
  - Motor size: 10 hp
  - Condition: operational
  - Redundancy: 1 duty + 1 standby
  - Excessive vibration: Y [N] N/A Comments:
  - Excessive noise: Y [N] N/A Comments:
  - Clogging issues: Y [N] N/A Comments: none reported
  - Difficult to remove: [Y] N N/A Comments: 1st pump could be removed easily from dry well with utility truck crane. 2nd pump is under roof and would be difficult to remove, but likely possible with utility truck crane.
  - Spare parts not avail.: Y N N/A Comments: unknown
- Sump Pump: unknown condition. Likely not operational due to dry well sump being filled with dirt covering pump
- Piping
  - Missing supports: Y [N] N/A Comments: none observed from surface
  - Excessive corrosion: Y [N] N/A Comments: none observed from surface
  - Paint peeling: [Y] N N/A Comments:
  - No bypass connection: [Y] N N/A Comments:
- Valves
  - Operational problems: Y [N] N/A Comments: none reported
  - Leaks: Y [N] N/A Comments: none observed from surface

- Clogging: Y [N] N/A Comments: none reported

- Gages:
  - Nonfunctional: Y N N/A Comments: unknown, did not enter drywell
  - Inaccurate: Y N N/A Comments: unknown, did not enter drywell
- Ventilation:
  - Type: fan with close-coupled motor in drywell
  - Problems: Y N N/A Comments: unknown; fan never run by operator

Structural

- Building: none
- Drywell
  - Poor appearance: Y [N] N/A Comments:
  - Needs repainting: Y [N] N/A Comments: rusted vent stand pipes
  - Framing damage: Y [N] N/A Comments:
  - Water leakage: Y [N] N/A Comments: none observed from surface
  - Roof damage: Y [N] N/A Comments: Rusty hatch
  - Concrete problems: Y [N] N/A Comments: none observed from surface
  - Hatch problems: Y [N] N/A Comments:
- Wet well
  - Corrosion: [Y] N N/A Comments: exposed aggregate. Underside or roof not observed
  - Spalling concrete: [Y] N N/A Comments:
  - Cracks: Y [N] N/A Comments: none observed from surface
  - Liner problems: Y N [N/A] Comments: no liner
  - Hatch problems: Y [N] N/A Comments: manhole lid
- Vaults: None
- Pads
  - Concrete problems: Y [N] N/A Comments:

Electrical & Instrumentation

- Power type: 240 V, 3 phase
- Alarms problems: Y [N] N/A Comments:
- Level sensors:
  - Type: unknown
  - Problems: Y [N] N/A Comments:
- Meters: none
- Conduit
  - Corrosion: Y [N] N/A Comments: none observed from surface

- Code issues: Y N N/A Comments: unknown

- Lighting: None
- Motor starter/breakers
  - Water intrusion: Y [N] N/A Comments:
  - Dirt intrusion: Y [N] N/A Comments:
  - Over loads: Y [N] N/A Comments: none reported
  - Parts unavailable: Y N N/A Comments: unknown
  - Other problems: [Y] N N/A Comments: deteriorated gasket on control panel enclosure
- PLC/controller problems:
  - Parts unavailable: Y N N/A Comments: unknown
  - Compatibility issues: Y N N/A Comments: unknown
  - Other problems: [Y] N N/A Comments: One of the pumps will sometimes not start and the other pump shows many more run hours after 1 week. Operator will reset the pump at control panel to alleviate the problem and get the pump to start. Cause of pump not starting is unknown.
- Communication
  - Type: Dial-out to text message for pump station faults
  - Problems: Y [N] N/A Comments: none reported
- Generator: None. Have connection for temporary generator
- General Comments:
  - Dudek did not enter pump station wet well and dry well because of confined space requirements.
  - Operator visits site 1 time per week, fills wet well with water to verify pumps turn on.
  - No maintenance contract in place
  - Per operator who has worked for City 4 years, there have been no failures of this pump station

Pump Station Name: Orlando

Inspection Date: August 3, 2018

Inspector Name: Michael Hill, P.E. (Dudek)

Site/Civil

- Inadequate paving: Y [N] N/A Comments:
- Drainage problems Y [N] N/A Comments:
- Access/security issues: Y [N] N/A Comments:
- Emergency storage: None
  - Type: N/A
  - Volume: N/A
  - Condition problems: Y N [N/A] Comments:

Mechanical

- Pumps
  - Type: submersible centrifugal
  - Outlet diameter: ~3" ?
  - Capacity: unknown
  - Motor size: 5 hp
  - Condition: operational
  - Redundancy: 1 duty + 0 standby
  - Excessive vibration: Y [N] N/A Comments: none reported
  - Excessive noise: Y [N] N/A Comments: none reported
  - Clogging issues: Y [N] N/A Comments: none reported
  - Difficult to remove: Y N N/A Comments: unknown
  - Spare parts not avail.: Y N N/A Comments: unknown
- Piping
  - Missing supports: Y [N] N/A Comments: none observed from surface
  - Excessive corrosion: Y [N] N/A Comments: none observed from surface
  - Paint peeling: [Y] N N/A Comments: piping appears uncoated
  - No bypass connection: [Y] N N/A Comments:
- Valves
  - Operational problems: Y [N] N/A Comments: none reported
  - Leaks: Y [N] N/A Comments: none reported, valves partially buried by dirt.
  - Clogging: Y [N] N/A Comments: none reported
- Gages: None
- Ventilation: None

Structural

- Building: None
- Wet well
  - Corrosion: Y [N] N/A Comments: none observed from surface. Only steps are corroded
  - Spalling concrete: Y [N] N/A Comments: None observed from surface. Wet well is brick lined circular wet well
  - Cracks: Y [N] N/A Comments: None observed from surface
  - Liner problems: Y N [N/A] Comments: no liner
  - Hatch problems: Y [N] N/A Comments: manhole lid
- Vaults
  - Concrete problems: Y [N] N/A Comments:
  - Hatch problems: Y [N] N/A Comments:
- Pads
  - Concrete problems: Y [N] N/A Comments:

Electrical & Instrumentation

- Power type: 240 V
- Alarms problems: Y [N] N/A Comments: None reported
- Level sensors:
  - Type: unknown
  - Problems: Y [N] N/A Comments: None reported
- Meters: none
- Conduit
  - Corrosion: Y [N] N/A Comments: none observed from surface
  - Code issues: Y N N/A Comments: unknown
- Lighting: None
- Motor starter/breakers
  - Water intrusion: Y [N] N/A Comments:
  - Dirt intrusion: Y [N] N/A Comments:
  - Over loads: Y [N] N/A Comments: None reported
  - Parts unavailable: Y N N/A Comments: unknown
  - Other problems: [Y] N N/A Comments: No gasket on panel enclosure
- PLC/controller problems:
  - Parts unavailable: Y N N/A Comments: unknown
  - Compatibility issues: Y N N/A Comments: unknown
  - Other problems: Y [N] N/A Comments: none reported
- Communication

- Type: dial-out to text message for pump station faults
- Problems: Y [N] N/A Comments: None reported

- Generator: none. Have connection for temporary generator
- General Comments:
  - Dudek did not enter pump station wet well because of confined space requirements.
  - Operator visits site 1 time per week, fills wet well with water to verify pumps turn on.
  - No maintenance contract in place
  - Per operator who has worked for City 4 years, the pump station failed over 4 years ago; cause of failure is unknown.

Pump Station Name: Monterey Pump Station

Inspection Date: August 3, 2018

Inspector Name: Michael Hill, P.E. (Dudek)

Site/Civil

- Inadequate paving: Y [N] N/A Comments:
- Drainage problems Y [N] N/A Comments:
- Access/security issues: Y [N] N/A Comments:
- Emergency storage: None

Mechanical

- Pumps
  - Type: Not observed. Essco Dry pit pump? Pump not observed because it is inside locked drywell.
  - Outlet diameter: unknown
  - Capacity: unknown
  - Motor size: 3 hp
  - Condition: operational
  - Redundancy: none. 1 duty + 0 standby
  - Excessive vibration: Y [N] N/A Comments: none reported
  - Excessive noise: Y [N] N/A Comments: none reported
  - Clogging issues: Y [N] N/A Comments: none reported
  - Difficult to remove: Y N N/A Comments: unknown
  - Spare parts not avail.: Y N N/A Comments: unknown
- Piping
  - Missing supports: Y N N/A Comments: unknown. In locked drywell
  - Excessive corrosion: Y N N/A Comments: unknown. In locked drywell
  - Paint peeling: Y N N/A Comments: unknown. In locked drywell
  - No bypass connection: [Y] N N/A Comments:
- Valves
  - Operational problems: Y [N] N/A Comments: none reported
  - Leaks: Y N N/A Comments: unknown. In locked drywell
  - Clogging: Y [N] N/A Comments: none reported
- Gages:
  - Nonfunctional: Y N N/A Comments: unknown
  - Inaccurate: Y N N/A Comments: unknown
- Ventilation: Existence unknown, in locked drywell

Structural

- Building: none
- Dry well: Condition unknown. Access not possible due to locked hatch.
- Wet well
  - Corrosion: Y [N] N/A Comments: none observed from surface
  - Spalling concrete: [Y] N N/A Comments: minor spalled section observed
  - Cracks: Y [N] N/A Comments: none observed from surface
  - Liner problems: Y N [N/A] Comments: No liner
  - Hatch problems: Y [N] N/A Comments: manhole lid
- Vaults: none
- Pads
  - Concrete problems: Y [N] N/A Comments:

Electrical & Instrumentation

- Power type: 230 V
- Alarms problems: Y [N] N/A Comments: None reported
- Level sensors:
  - Type: unknown
  - Problems: Y [N] N/A Comments: None reported
- Meters: none
- Conduit
  - Corrosion: Y N N/A Comments: unknown. In locked drywell
  - Code issues: Y N N/A Comments: unknown. In locked drywell
- Lighting: None
- Motor starter/breakers
  - Water intrusion: Y [N] N/A Comments:
  - Dirt intrusion: Y [N] N/A Comments:
  - Over loads: Y [N] N/A Comments: None reported
  - Parts unavailable: Y N N/A Comments: unknown
  - Other problems: Y [N] N/A Comments: None reported
- PLC/controller problems:
  - Parts unavailable: Y N N/A Comments: unknown
  - Compatibility issues: Y N N/A Comments: unknown
  - Other problems: [Y] N N/A Comments: No level control display (possibly because there are only floats at this pump station)
- Communication
  - Type: Dial-out to text message for pump station faults
  - Problems: Y [N] N/A Comments: None reported

- Generator: None. Have connection for temporary generator
- General Comments:
    - Dudek did not enter pump station wet well because of confined space requirements.
    - Dudek did not observe the pump station wet well because it is under a locked hatch.
    - Operator visits site 1 time per week, fills wet well with water to verify pumps turn on.
    - No maintenance contract in place
    - Per operator who has worked for City 4 years, there have been no failures of this pump station

Appendix C

SSMP Update



CITY OF SAN MARINO

SEWER SYSTEM MANAGEMENT PLAN

MAY 2019

CITY OF SAN MARINO

SEWER SYSTEM MANAGEMENT PLAN (SSMP)

CITY OF SAN MARINO PARK AND PUBLIC WORKS DEPARTMENT
2200 Huntington Drive
San Marino, California 91108

Pursuant to the provisions of the
CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
ORDER NO. 2006.0003-DWQ
STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS (WDR)
FOR SANITARY SEWER SYSTEMS

May 2019

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ABBREVIATIONS / ACRONYMS

APWA	American Public Works Association
BMP	Best Management Practice
CCTV	Closed-Circuit Television
CFR	Code of Federal Regulations
CIP	Capital Improvement Program
CIWQS	California Integrated Water Quality System
CSCS	Collection System Crew Supervisor
CWEA	California Water Environment Association
City	City of San Marino
ERP	Emergency Response Plan
FOG	Fats, Oils, and Grease
gpm	Gallons per minute
GPS	Global Positioning System
GWDR	General Waste Discharge Requirements also referred to as the Waste Discharge Requirements (WDR)
I/I	Inflow / Infiltration
LACSD	Los Angeles County Sanitation District
LRO	Legally Responsible Official
MRP	Monitoring and Reporting Program
MS4	Municipal Separate Storm Sewer System
O&M	Operation and Maintenance
OES	Office of Emergency Services
Order	SWRCB Order No. 2006-0003-DWQ adopted May 2, 2006
PM	Preventative Maintenance
PPWD	Park and Public Works Department
PWWF	Peak wet weather flow
RWQCB	Regional Water Quality Control Board
SECAP	System Evaluation and Capacity Assurance Plan
SMMC	San Marino Municipal Code
SOP	Standard Operating Procedure or Standard Maintenance Procedure
SSO	Sanitary Sewer Overflow and any sewer spill or overflow of sewage
SSORP	Sanitary Sewer Overflow Response Plan
SSMP	Sewer System Management Plan
SWRCB	State Water Resources Control Board
WDR	Waste Discharge Requirements also referred to as the General Waste Discharge Requirements (GWDR)
WWTP	Wastewater Treatment Plant

INTRODUCTION

On May 2, 2006 the SWRCB adopted Order Number 2006-0003-DWQ that requires all publicly-owned sewage collection systems having more than one mile of pipeline develop, implement and fund a Sewer System Management Plan (SSMP), which establishes the minimum requirements under which a public collection system must be operated and maintained. The purpose of the Order is to prevent sanitary sewer overflows (SSOs), to provide a plan and schedule for measures to be implemented to prevent SSOs, as well as measures to effectively clean up and report the spills.

The City of San Marino (City) Park and Public Works Department (PPWD) operates and maintains its own sanitary collection system. The City's sanitary collection system consists of approximately 50 miles of gravity pipelines, serving the majority of parcels within the City's 3.8 square mile City limits. The City's wastewater collection system conveys untreated wastewater to Los Angeles County Sanitation District's (LACSD) trunk sewer system via 197 separate connections.

The system has three City-owned lift stations and seven privately owned lift stations. The City-owned lift stations include:

- Avondale
- Orlando
- Monterey

In preparation for this SSMP, the City has undertaken some major projects to ensure the sustained reliability of the sanitary collection system. In particular, a comprehensive Sewer System Master Plan Update is currently underway that includes an initial system condition assessments use to recommend projects for the CIP.

This SSMP reflects the ongoing day-to-day activities of the City of San Marino for the management, operation, maintenance, and funding of the City's sanitary collection system. As such, this SSMP becomes a living document subject to constant review and revision as conditions and needs of the collection systems change. This SSMP relies on numerous supporting documents, also subject to change, that form the basis for how the City conducts its collection system operation. The most current version, although it may be subject to update at any time, will be found at the City of San Marino's Park and Public Works Department offices.

In September, 2013, the SWRCB made substantial changes to the Monitoring and Reporting requirements for sanitary sewer overflows. These new requirements, Order Number WQ 2013-0058-EXEC to the Monitoring and Reporting Program are discussed in Chapter 3, Section 3.4.1 and details how the City is organized to respond and report sanitary sewer overflows.

DEFINITIONS

1. **Sanitary sewer overflow (SSO)** - Any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:

   (i) Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;

   (ii) Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and

   (iii) Wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publicly owned portion of a sanitary sewer system.

2. **Sanitary sewer system** – Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a wastewater treatment plant headworks used to collect and convey wastewater to the publicly owned treatment facility. Temporary storage and conveyance facilities (such as vaults, temporary piping, construction trenches, wet wells, impoundments, tanks, etc.) are considered to be part of the sanitary sewer system, and discharges into these temporary storage facilities are not considered to be SSOs.

   For purposes of this Order, sanitary sewer systems include only those systems owned by public agencies that are comprised of more than one mile of pipe or sewer lines.

3. **Enrollee** - A federal or state agency, municipality, county, City, and other public entity that owns or operates a sanitary sewer system, as defined in the general WDRs, and that has submitted a complete and approved application for coverage under this Order. The City of San Marino is the Enrollee.

4. **SSO Reporting System** – Online spill reporting system that is hosted, controlled, and maintained by the State Water Board. The web address for this site is http://ciwqs.waterboards.ca.gov. This online database is maintained on a secure site and is controlled by unique usernames and passwords.

5. **Untreated or partially treated wastewater** – Any volume of waste discharged from the sanitary sewer system upstream of a wastewater treatment plant headworks.

6. **Satellite collection system** – The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility to which the sanitary sewer system is tributary.

7. **Nuisance** - California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:

a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
c. Occurs during, or as a result of, the treatment or disposal of wastes.

8. **WDR –** State Water Resources Control Board (SWRCB) Order No. 2006.0003-DWQ, known as the WASTE DISCHARGE REQUIREMENTS (WDR), which was adopted May 2, 2006.

CHAPTER 1 – PROHIBITIONS AND PROVISIONS

This chapter describes the sewage discharge prohibitions and thirteen provisions prescribed in the Order.

1.1 Prohibitions

To meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, the discharger is required to comply with the following prohibitions:

- Any SSO that results in a discharge of untreated or partially treated wastewater to waters of the United States is prohibited.
- Any SSO that results in a discharge of untreated or partially treated wastewater that creates a nuisance as defined in California Water Code Section 13050(m) is prohibited.

1.2 Provisions

The discharger must meet the following thirteen provisions:

1. The Enrollee must comply with all conditions of this Order. Any noncompliance with this Order constitutes a violation of the California Water Code and is grounds for enforcement action.

2. It is the intent of the State Water Board that sanitary sewer systems be regulated in a manner consistent with the general WDRs. Nothing in the general WDRs shall be:

   (i) Interpreted or applied in a manner inconsistent with the Federal Clean Water Act, or supersede a more specific or more stringent state or federal requirement in an existing permit, regulation, or administrative/judicial order or Consent Decree;

   (ii) Interpreted or applied to authorize an SSO that is illegal under either the Clean Water Act, an applicable Basin Plan prohibition or water quality standard, or the California Water Code;

   (iii) Interpreted or applied to prohibit a Regional Water Board from issuing an individual NPDES permit or WDR, superseding this general WDR, for a sanitary sewer system, authorized under the Clean Water Act or California Water Code; or

   (iv) Interpreted or applied to supersede any more specific or more stringent WDRs or enforcement order issued by a Regional Water Board.

3. The Enrollee shall take all feasible steps to eliminate SSOs. In the event that an SSO does occur, the Enrollee shall take all feasible steps to contain and mitigate the impacts of an SSO.

4. In the event of an SSO, the Enrollee shall take all feasible steps to prevent untreated or partially treated wastewater from discharging from storm drains into flood control channels or waters of the United States by blocking the storm drainage system and by removing the wastewater from the storm drains.

5. All SSOs must be reported in accordance with Section G of the general WDRs.

6. In any enforcement action, the State and/or Regional Water Boards will consider the appropriate factors under the duly adopted State Water Board Enforcement Policy. And, consistent with the Enforcement Policy, the State and/or Regional Water Boards must consider the Enrollee's efforts to contain, control, and mitigate SSOs when considering the California Water Code Section 13327 factors. In assessing these factors, the State and/or Regional Water Boards will also consider whether:

   (i) The Enrollee has complied with the requirements of this Order, including requirements for reporting and developing and implementing a SSMP;

   (ii) The Enrollee can identify the cause or likely cause of the discharge event;

   (iii) There were no feasible alternatives to the discharge, such as temporary storage or retention of untreated wastewater, reduction of inflow and infiltration, use of adequate backup equipment, collecting and hauling of untreated wastewater to a treatment facility, or an increase in the capacity of the system as necessary to contain the design storm event identified in the SSMP. It is inappropriate to consider the lack of feasible alternatives, if the Enrollee does not implement a periodic or continuing process to identify and correct problems.

   (iv) The discharge was exceptional, unintentional, temporary, and caused by factors beyond the reasonable control of the Enrollee;

   (v) The discharge could have been prevented by the exercise of reasonable control described in a certified SSMP for:

   - Proper management, operation and maintenance;
   - Adequate treatment facilities, sanitary sewer system facilities, and/or components with an appropriate design capacity, to reasonably prevent SSOs (e.g., adequately enlarging treatment or collection facilities to accommodate growth, infiltration and inflow (I/I), etc.);

- Preventive maintenance (including cleaning and fats, oils, and grease (FOG) control);
- Installation of adequate backup equipment; and
- Inflow and infiltration prevention and control to the extent practicable.

(vi) The sanitary sewer system design capacity is appropriate to reasonably prevent SSOs.

(vii) The Enrollee took all reasonable steps to stop and mitigate the impact of the discharge as soon as possible.

7. When a sanitary sewer overflow occurs, the Enrollee shall take all feasible steps and necessary remedial actions to 1) control or limit the volume of untreated or partially treated wastewater discharged, 2) terminate the discharge, and 3) recover as much of the wastewater discharged as possible for proper disposal, including any wash down water.

   The Enrollee shall implement all remedial actions to the extent they may be applicable to the discharge and not inconsistent with an emergency response plan, including the following:

   - Interception and rerouting of untreated or partially treated wastewater flows around the wastewater line failure;
   - Vacuum truck recovery of sanitary sewer overflows and wash down water;
   - Cleanup of debris at the overflow site;
   - System modifications to prevent another SSO at the same location;
   - Adequate sampling to determine the nature and impact of the release; and
   - Adequate public notification to protect the public from exposure to the SSO.

8. The Enrollee shall properly, manage, operate, and maintain all parts of the sanitary sewer system owned or operated by the Enrollee, and shall ensure that the system operators (including employees, contractors, or other agents) are adequately trained and possess adequate knowledge, skills, and abilities.

9. The Enrollee shall allocate adequate resources for the operation, maintenance, and repair of its sanitary sewer system, by establishing a proper rate structure, accounting mechanisms, and auditing procedures to ensure an adequate measure of revenues and expenditures. These procedures must be in compliance with applicable laws and regulations and comply with generally acceptable accounting practices.

10. The Enrollee shall provide adequate capacity to convey base flows and peak flows, including flows related to wet weather events. Capacity shall meet or exceed the design criteria as defined in the Enrollee's System Evaluation and Capacity Assurance Plan for all parts of the sanitary sewer system owned or operated by the Enrollee.

11. The Enrollee shall develop and implement a written Sewer System Management Plan and make it available to the State and/or Regional Water Board upon request. A copy of this document must be publicly available at the Enrollee's office and/or available on the Internet. This SSMP must be approved by the Enrollee's governing board at a public meeting.

12. In accordance with the California Business and Professions Code sections 6735, 7835, and 7835.1, all engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. Specific elements of the SSMP that require professional evaluation and judgments shall be prepared by or under the direction of appropriately qualified professionals, and shall bear the professional(s)' signature and stamp.

13. The mandatory elements of the SSMP are specified below. However, if the Enrollee believes that any element of this section is not appropriate or applicable to the Enrollee's sanitary sewer system, the SSMP program does not need to address that element. The Enrollee must justify why that element is not applicable. The SSMP must be approved by the deadlines listed in the SSMP Time Schedule per Section D.15 of the WDR.

CHAPTER 2 – GOALS

This chapter describes the goals of the Sewer System Management Plan (SSMP). The goal of the SSMP is to provide a documented plan that describes all collection system activities and programs employed by an Enrollee to ensure proper management of all collection system assets. Implementing an SSMP will ensure proper management, operation, and maintenance of all parts of the sanitary sewer system, ultimately helping to reduce and prevent SSOs, as well as mitigate any SSOs that do occur including meeting all applicable regulatory notification and reporting requirements. Commitment to continual improvement will also ensure that the SSMP is both a living and sustainable document that is continually updated, revised, and tailored towards the City's needs. The City of San Marino is required to comply with the "State Water Resources Control Board (SWRCB), Order No. 2006-0030 DWQ" (Order) on General Waste Discharge Requirements (WDR) for publicly owned sewage collection agencies having more than one mile of collection pipelines.

The San Marino PPWD is charged with the implementation and enforcement of this SSMP. Through this charge, the PPWD will coordinate with other City and non-City agencies to meet the goals and objectives of this SSMP. In particular, the PPWD's Engineering group ensures the proper design of new and replacement City sewers and with the City's Environmental Services department to ensure compliance with the City's proactive Fats, Oil, and Grease Program (FOG).

2.1 Purpose

This element describes the City of San Marino's stated goals of the SSMP and is intended to clarify the City's desired level of service being provided to their customers. The purpose of the Order is to prevent sanitary sewer overflows (SSOs). The City is required to prepare and maintain an SSMP to support this purpose.

2.2 Goals

The City of San Marino's SSMP outlines the City's plan to achieve the goal of properly managing, operating, and maintaining the sanitary sewer system to prevent and reduce SSOs, and to mitigate any SSOs that may occur. More specifically, the goals of San Marino's SSMP are:

1. That the City's sanitary sewer collection system facilities are properly operated, maintained and managed to reduce frequency and severity of sanitary sewer overflows (SSOs) and their potential impacts on public health, safety, and on the environment; and,
2. That when SSOs occur, prompt action is taken to identify, contain, remove the cause and then to promptly report the event to appropriate regulatory authorities and that the public is adequately and timely notified; and,
3. That all SSOs and system deficiencies and remedial actions taken are well

documented; and,

4. That the City's sewer system operators, employees, contractors, responders, or other agents are adequately trained and equipped to address an SSO event; and,
5. That the City's sewer system is adequately designed, constructed and funded to provide adequate capacity to convey base flows and peak flows while meeting or exceeding applicable regulations, laws and the generally acceptable practices relative to sanitary sewer system operations and maintenance.

As required by the Order, a copy of the SSMP is maintained at the City of San Marino PPWD and is available to the public, state, and RWQCB upon request (as discussed in, Section D, Provisions, Item 11) and is available to the sanitary collection system operating and maintenance personnel at all times.

The City will also comply with the Order Number WQ 2013-0058-EXEC to the Monitoring and Reporting Program and all future revisions, included by reference in the Order.

2.3 About This Document

The City has prepared this SSMP to ensure compliance with the Order. This SSMP pertains to the management, operation, and maintenance of the collection system. This SSMP document is divided into chapters with each chapter dedicated to a specific element of the WDR. Within each chapter the compliance efforts of the City are listed.

Each chapter contains the requirement taken from the WDR and the plan the City utilizes to comply with that requirement. The Compliance Summary of each chapter summarizes the program or activities the City utilizes for compliance. The Compliance Documents section lists the supporting documents, and their location, that the City has developed as part of its SSMP. Roles and Responsibilities (located only in Chapter 3 – Organization) contain the title and description of duties for the City staff positions responsible for developing and/or implementing the elements of the SSMP.

Actual contact information for the listed job titles is maintained as a separate file available at the City of San Marino. This is done to facilitate staff changes and protect staff privacy.

CHAPTER 3 – ORGANIZATION

This chapter describes the City's organization and chain of communication. The Order requires the following:

(a) The name of the responsible or authorized representative as described in Section J of the WDR.

(b) The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and

(c) The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable (as County Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services [OES]).

3.1 Name of Responsible or Authorized Representative

The Parks and Public Works Director is the Legally Responsible Official (LRO) listed on the Notice of Intent (NOI) and is responsible for the certification of SSO reports.

Table 3-1 lists in descending order the persons authorized to administer the provisions of this SSMP.

Table 3-1. Authorized SSMP Administrators

Title	Department	Phone	Email
Parks and Public Works Director	PPWD	626-300-0787	publicworks@cityofsanmarino.org
Public Works Manager	PPWD	626-300-0793	publicworks@cityofsanmarino.org

3.2 Administrative and Maintenance Positions

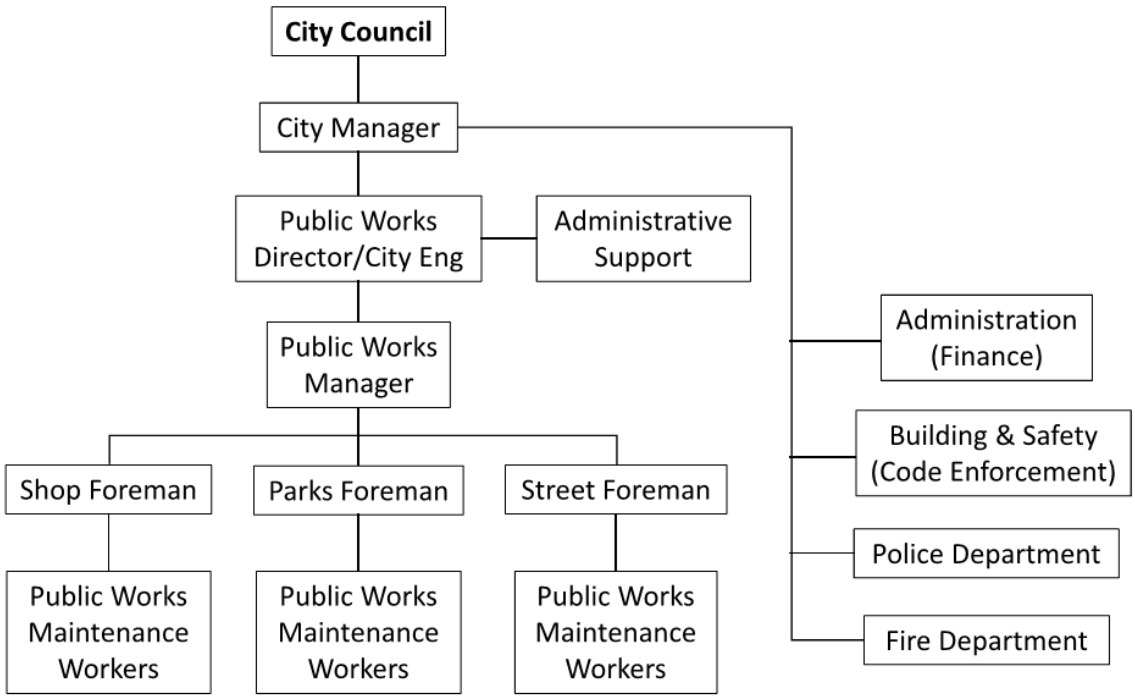
The Order requires the names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation. The Roles and Responsibilities section of this chapter outlines the various positions responsible for the development and implementation of the SSMP for the City of San Marino. The included organizational chart lists the titles of the positions responsible for the development and

implementation of the SSMP in a hierarchal format. Current names and contact information for all positions is available at the City of San Marino PPWD.

3.2.1 Compliance Summary

The Organization Chart includes the titles of all responsible officials in hierarchal format. Included is the role that each position is responsible for in the development and implementation of the SSMP. The City's organization is revised as necessary to meet changing conditions. Organizational charts are periodically modified to reflect changes in the organization with updated organizational charts being available at the City of San Marino PPWD. Names and contact information for all City of San Marino staff are available at the City of San Marino PPWD offices. A narrative description of each positions involvement in the development and implementation of the SSMP is included in the Roles and Responsibilities section of this chapter.

Figure 3-1. WDR Organizational Chart for the City of San Marino



3.2.2 Compliance Documents

The following lists and organizational charts detail the filled positions of the City's organizational structure. Each is located at the City of San Marino PPWD office.

- Updated organizational charts
- Updated listing of staff positions
- Updated staff contact information

3.2.3 Roles and Responsibilities

- The USEPA is authorized under the Clean Water Act to enforce the Capacity Management, Operations, and Maintenance (CMOM) requirements on the states. In response, the SWRCB and R9WRCB have adopted various orders. Relevant to this SSMP Development Plan are the **SWRCB Order DWQ 2006-0003** and **R9WQCB Order 2006-0013**.
- The **LACSD** operates and manages the wastewater treatment services for the member cities, including the City of San Marino.
- City Council is responsible for establishing new and amending existing ordinances and policies governing municipal operations, including the operations of the City's sanitary sewer system.
- City Manager is responsible for the overall management and application of all legal and policy directives that relate to the City's activities, including the operation and maintenance of the City's sanitary sewer system.
- City Manager directs the accomplishment of statutory and policy criteria, within the scope of the City Council's policy and legal requirements.
- Public Works Director/City Engineer, at the direction of the City Manager, implements the statutory and policy criteria, and evaluates work accomplished within areas of responsibility, including the O&M program. Also directs the planning, budgeting, design, and construction of new and rehabilitation of existing sewage collection systems, and assists with claims and litigation against the City relative to Public Infrastructure.
- Public Works Manager facilitates all sewer collection system operation and maintenance activities. Responsible for the day-to-day management and operation oversight of the City sewer system. Authorizes contractors to perform services, including emergency repairs and SSO response.
- Street and Shop Foremen have oversight of all contracted maintenance and repair services for City's facilities. Documents activities through pictures and reports as necessary.
- PW Maintenance Workers work with contractor field crews to handle emergencies. Provide verbal and written reports to Public Works Manager. Routinely inspects the lift stations, making sure that they are operating properly.
- Administrative Support assists in the preparation of reports, budgets, other correspondence, and for coordination and facilitation of city and contracts personnel and local citizen issues relative to sewer service. Handles all required spill reporting.

3.2.3.1 City Departments and Other Agencies Support

Other Divisions or Departments within the City, and specific contracted services, are currently and will continue to be responsible for carrying out some of the compliance actions called for by the WDR's on the City. The key support units and their responsibilities are described below:

- Administration - Responsible for procuring equipment and as needed contract services for emergency sewer repair projects, printing and mailing of public education outreach program materials, and for procuring material and supplies needed for the day to day operation and maintenance activities, accounting services and training of personnel. Also responsible for investigating SSOs related claims and litigations against the City.
- Planning and Building Department - Responsible for reviewing various building permit applications, their relationship to public easements and facilities, and issuing permits for sewer connections. Also the enforcement of the Plumbing Codes involving proper connection and discharge into the public sewer system and the property owner's maintenance of their respective sewer laterals between the structure served and the public sewer collection main.
- Code Enforcement - Responsible for the enforcement of the Health and Safety Codes regarding waste disposal such as the FOG program, point source control inspection of commercial waste and grease generating facilities, and investigation of cases of illicit discharge of chemicals, debris, etc. into the public sewer system. This is undertaken in concert with the LACDPW Environmental Programs Division.
- City Engineer - Responsible for preparing plans and specifications for sewer construction and rehabilitation projects, and the administration of contracts for accomplishing such projects and emergency sewer repair projects. Also responsible for subdivision or development project plan checks to ensure compliance with the City's standards for construction of new sewer collection systems. Plan checks sewer capacity studies to size proposed sewer lines and sets requirements to ensure adequate capacity in existing systems. Prepares easement documents or identifies and procures access rights for public sewer facilities located within private properties.
- Fire Department - Responsible for assisting with protecting the public in the event of an SSO that expands into high use public travel ways and/or those that reach storm drains or water courses and spread the effect of public risk to health and safety impacts.
- Police Department - Responsible for operating the Emergency Operation Center for the entire City including handling after-hours service calls reporting SSOs, and pump station malfunction calls and forwarding those reports to the LACDPW.

3.3 Chain of Communication

The Order requires the chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable.

3.3.1 Compliance Summary

The SSO Chain of Communications flow chart shows the chain of communication for reporting SSOs. This flowchart, along with the reporting guidelines, was developed to

manage the reporting process. The Reporting Guidelines explains the thresholds for SSO reporting, the agencies that must be notified, and the reporting timeframes. The detailed procedures utilized by the City for SSO reporting is in the City of San Marino Sewer Overflow Response Plan. This plan is kept updated by the Public Works Manager under the direction of the Public Works Director and is executed and signed by the LRO.

In September 2013 the SWRCB changed the reporting of SSOs from appearance based to event based. Under the event based system one SSO report is required for each SSO that occurs regardless of the number of appearance points although each appearance point must be noted in the report. Previously, a separate SSO report had to be filed for each appearance point sometimes requiring numerous SSO reports for the same SSO event.

3.3.2 Compliance Documents

The following documents and charts describe the City of San Marino's SSO reporting.

- SSO Chain of Communications instructions and flowchart – included in this SSMP.
- SSO Reporting Guidelines – included in this SSMP.
- City of San Marino SSO Sewer Overflow Response Plan – located at the Public Works Division.

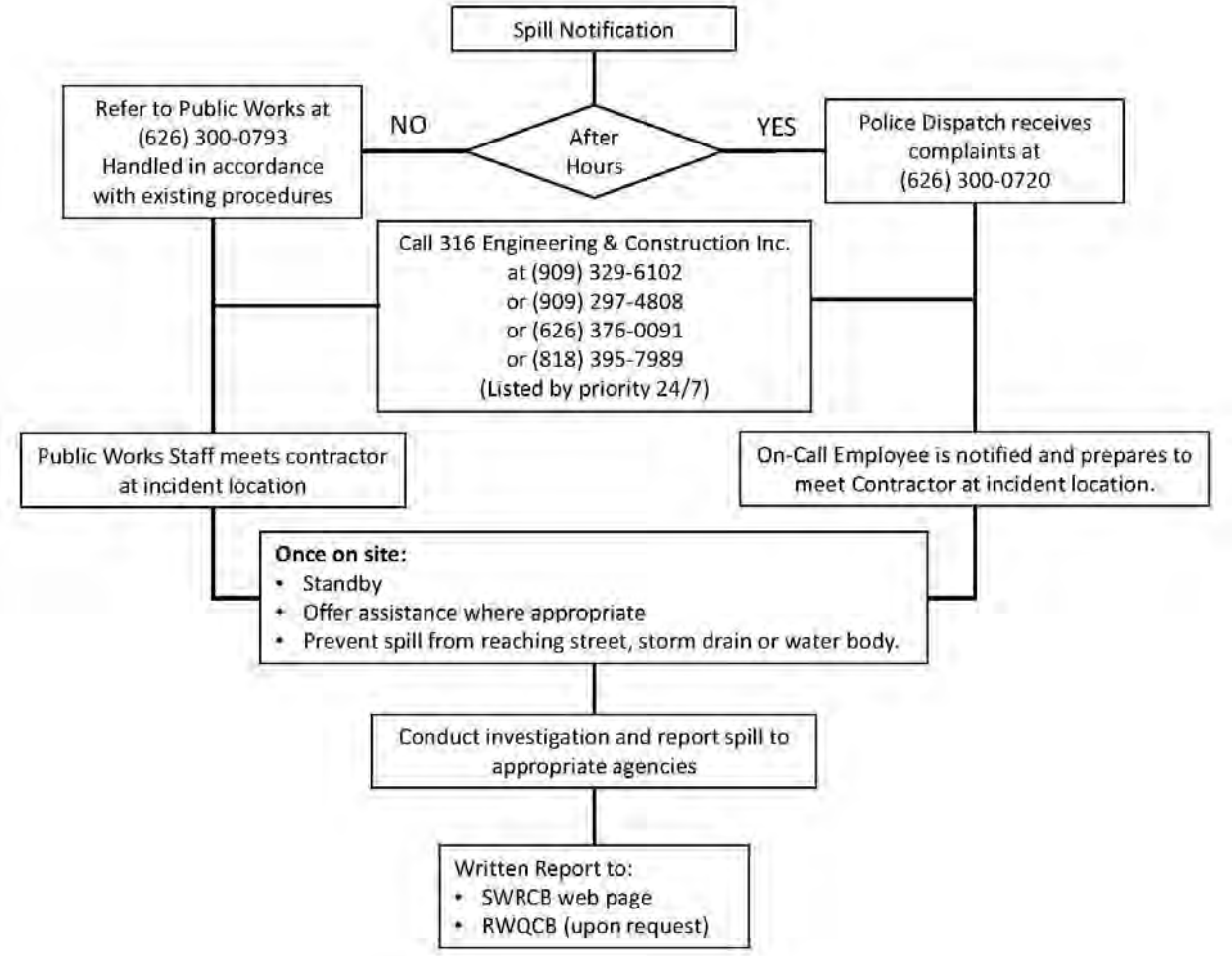
3.3.2.1 Chain of Communication Instructions and Flowchart

- The chain of communication for reporting SSOs, from receipt of a complaint or other reliable information source to reporting to appropriate regulatory agencies, is presented in the figure.
- It is the policy of the City to promptly respond to and correct problems with the sewer system. Once the City receives a complaint or information regarding and SSO event, the chain of communication is as follows:
    1. The Public Works Manager or his designee shall be notified immediately.
    2. City personnel shall attempt to limit the spread of sewage by safe and appropriate means.
    3. The Public Works Manager, or his designee upon determining that the sewer problem is the City's responsibility, will contact the City's sewer maintenance services contractor for emergency service.
    4. If the spill is contained within private property, and is the responsibility of the private party. City personnel shall assist the responsible private property owner in contacting a qualified contractor to remove the waste material from their property.
    5. City personnel involved in the Sewer Spill Response shall forward a report of the incident to their department head. The report shall detail the cause of the spill, actions taken to limit the spill, damage caused by the spill and action taken to remove the waste.

6. The Public Works Division Manager, or his designee shall report the SSO event to the State and Regional Water Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services).

The SSO Emergency Response Plan will be discussed in greater detail in Chapter 6 of this document.

Chain of Communications Flow Chart



3.3.2.2 SSO Reporting Guidelines

Reporting of all unauthorized discharges from the City's sanitary sewer collection systems is required by the Order. Discharges are rated by category. A Category I SSO is an unauthorized SSO of any volume that reaches surface water or a storm drain or channel that is tributary to surface water. A Category II SSO is any unauthorized discharge of 1,000 gallons or greater that does not reach surface waters, a drainage channel or storm water system (MS4) and is not fully captured and properly disposed of. A Category III SSO is all other unauthorized discharges from the City's collection systems.

Private lateral discharges are sewage discharges that occur from private sewer lateral or other privately-owned sewer assets. The City is not responsible for private lateral discharges but is required to report them as the City becomes aware of them. Updated SSO Reporting Flow Charts, staff titles, and staff contact information is maintained at the San Marino PPWD offices.

Failure to comply with the monitoring and reporting requirements of the State could result in civil liabilities of up to $5,000 a day per violation pursuant to Water Code section 13350; up to $1,000 a day per violation pursuant to Water Code section 13268; or referral to the Attorney General for judicial civil enforcement.

Notification Requirements. The City is required to notify Cal OES and obtain a notification control number for any SSO from the City's system that is greater than or equal to 1,000 gallons that discharges to, or probably will discharge to surface water directly or by way of a drainage channel or MS4. Notification is to be immediate but not later than 2 hours after the City becomes, (A) aware of the SSO, (B) notification is possible, and (C) notification is possible without substantially impeding the cleanup or other emergency activities.

To satisfy the notification requirements for each applicable SSO the City must provide the information requested by Cal OES before receiving a control number. The requested spill information may include the following:

1. Name of person notifying Cal OES and direct return phone number.
2. Estimated SSO volume discharged (gallons).
3. If ongoing, estimated SSO discharge rate (gallons per minute).
4. SSO Incident Description:
    a. Brief narrative.
    b. On-scene point of contact for additional information (name and cell phone number).
    c. Date and time enrollee became aware of the SSO.
    d. Name of sanitary sewer system agency causing the SSO.
    e. SSO cause (if known).

5. Indication of whether the SSO has been contained.

6. Indication of whether surface water is impacted.

7. Name of surface water impacted by the SSO, if applicable.

8. Indication of whether a drinking water supply is or may be impacted by the SSO.

9. Any other known SSO impacts.

10. SSO incident location (address, city, state, and zip code).

After the initial notification to Cal OES and until the City has certified the SSO report in the CIWQS Online Database, the City is required to provide updates to Cal OES regarding substantial changes to the SSO's estimated volume or known impacts.

Reporting Requirements. All SSOs occurring within the City's sanitary sewer collection system must be reported to the CIWQS Online SSO Database. SSOs from the City's collection system are classified as Category 1, Category 2 or Category 3 depending upon their size and whether they spilled to surface waters.

- A Category 1 SSO is any unauthorized volume discharge that reaches surface water or a drainage channel that is tributary to surface water or an MS4 and is not fully captured and disposed of properly. Any volume of wastewater not recovered from an MS4 is considered to have reached surface waters unless the storm drain system discharges to a dedicated storm water or ground water infiltration basin.

- A Category 2 SSO is any unauthorized wastewater discharge equal to or greater than 1,000 gallons and does not reach surface waters, a drainage channel, or MS4 unless the entire volume of the SSO is recovered and disposed of properly.

- A Category 3 SSO is any other unauthorized discharge of wastewater resulting from a failure or flow condition in the City's sanitary sewer collection system.

Category 1 and category 2 SSOs must have a draft report submitted to the CIWQS Online Database within 3 business days of the City becoming aware of the SSO. A final SSO report must be certified within 15 calendar days to the CIWQS Online Database. A Category 3 SSO must be reported to CIWQS and be certified within 30 calendar days after the month that the SSO occurred.

At a minimum, the following mandatory information shall be reported for a *draft* **Category 1 SSO Report**:

1. SSO Contact Information: Name and telephone number of enrollee contact person who can answer specific questions about the SSO being reported.
2. SSO Location Name.
3. Location of the overflow event (SSO) by entering GPS coordinates. If a single overflow event results in multiple appearance points, provide GPS coordinates

for the appearance point closest to the failure point and describe each additional appearance point in the SSO appearance point explanation field.

4. Whether or not the SSO reached surface water, a drainage channel, or entered and was discharged from a drainage structure.
5. Whether or not the SSO reached a municipal separate storm drain system.
6. Whether or not the total SSO volume that reached a municipal separate storm drain system was fully recovered.
7. Estimate of the SSO volume, inclusive of all discharge point(s).
8. Estimate of the SSO volume that reached surface water, a drainage channel, or was not recovered from a storm drain.
9. Estimate of the SSO volume recovered (if applicable).
10. Number of SSO appearance point(s).
11. Description and location of SSO appearance point(s). If a single sanitary sewer system failure results in multiple SSO appearance points, each appearance point must be described.
12. SSO start date and time.
13. Date and time the enrollee was notified of, or self-discovered, the SSO.
14. Estimated operator arrival time.
15. For spills greater than or equal to 1,000 gallons, the date and time Cal OES was called.
16. For spills greater than or equal to 1,000 gallons, the Cal OES control number.

At a minimum, the following mandatory information shall be reported for a *certified* **Category 1 SSO Report**, in addition to all fields required in the *draft* Category 1 SSO Report:

1. Description of SSO destination(s).
2. SSO end date and time.
3. SSO causes (mainline blockage, roots, etc.).
4. SSO failure point (main, lateral, etc.).
5. Whether or not the spill was associated with a storm event.
6. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the overflow; and a schedule of major milestones for those steps.
7. Description of spill response activities.
8. Spill response completion date.
9. Whether or not there is an ongoing investigation, the reasons for the investigation and the expected date of completion.

10. Whether or not a beach closure occurred or may have occurred as a result of the SSO.
11. Whether or not health warnings were posted as a result of the SSO.
12. Name of beach(es) closed and/or impacted. If no beach was impacted, NA shall be selected.
13. Name of surface water(s) impacted.
14. If water quality samples were collected, identify parameters the water quality samples were analyzed for. If no samples were taken, NA shall be selected.
15. If water quality samples were taken, identify which regulatory agencies received sample results (if applicable). If no samples were taken, NA shall be selected.
16. Description of methodology(ies) and type of data relied upon for estimations of the SSO volume discharged and recovered.
17. SSO Certification: Upon SSO Certification, the CIWQS Online SSO Database will issue a final SSO identification (ID) number.

At a minimum, the following mandatory information shall be reported for a *draft* **Category 2 SSO Report:**

1. SSO Contact Information: Name and telephone number of enrollee contact person who can answer specific questions about the SSO being reported.
2. SSO Location Name.
3. Location of the overflow event (SSO) by entering GPS coordinates. If a single overflow event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the SSO appearance point explanation field.
4. Whether or not the SSO reached surface water, a drainage channel, or entered and was discharged from a drainage structure.
5. Whether or not the SSO reached a municipal separate storm drain system.
6. Whether or not the total SSO volume that reached a municipal separate storm drain system was fully recovered.
7. Estimate of the SSO volume, inclusive of all discharge point(s).
8. Estimate of the SSO volume that reached surface water, a drainage channel, or was not recovered from a storm drain.
9. Estimate of the SSO volume recovered (if applicable).
10. Number of SSO appearance point(s).
11. Description and location of SSO appearance point(s). If a single sanitary sewer system failure results in multiple SSO appearance points, each appearance point must be described.
12. SSO start date and time.

13. Date and time the enrollee was notified of, or self-discovered, the SSO.
14. Estimated operator arrival time.

At a minimum, the following mandatory information shall be reported for a *certified* **Category 2 SSO Report**, in addition to all fields required in the *draft* Category 2 SSO Report :

1. SSO Contact Information: Name and telephone number of enrollee contact person who can answer specific questions about the SSO being reported.
2. SSO Location Name.
3. Location of the overflow event (SSO) by entering GPS coordinates. If a single overflow event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the SSO appearance point explanation field.
4. Whether or not the SSO reached surface water, a drainage channel, or entered and was discharged from a drainage structure.
5. Whether or not the SSO reached a municipal separate storm drain system.
6. Whether or not the total SSO volume that reached a municipal separate storm drain system was fully recovered.
7. Estimate of the SSO volume, inclusive of all discharge point(s).
8. Estimate of the SSO volume that reached surface water, a drainage channel, or was not recovered from a storm drain.
9. Estimate of the SSO volume recovered (if applicable).
10. Number of SSO appearance point(s).
11. Description and location of SSO appearance point(s). If a single sanitary sewer system failure results in multiple SSO appearance points, each appearance point must be described.
12. SSO start date and time.
13. Date and time the enrollee was notified of, or self-discovered, the SSO.
14. Estimated operator arrival time.
15. Description of SSO destination(s).
16. SSO end date and time.
17. SSO causes (mainline blockage, roots, etc.).
18. SSO failure point (main, lateral, etc.).
19. Whether or not the spill was associated with a storm event.
20. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the overflow; and a schedule of major milestones for those steps.

21. Description of spill response activities.
22. Spill response completion date.
23. Whether or not there is an ongoing investigation, the reasons for the investigation and the expected date of completion
24. SSO Certification: Upon SSO Certification, the CIWQS Online SSO Database will issue a final SSO identification (ID) number.

At a minimum, the following mandatory information shall be reported for a *certified* **Category 3 SSO Report**, in addition to all fields required in the *draft* Category 2 SSO Report :

1. SSO Contact Information: Name and telephone number of enrollee contact person who can answer specific questions about the SSO being reported.
2. SSO Location Name.
3. Location of the overflow event (SSO) by entering GPS coordinates. If a single overflow event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the SSO appearance point explanation field.
4. Whether or not the SSO reached surface water, a drainage channel, or entered and was discharged from a drainage structure.
5. Whether or not the SSO reached a municipal separate storm drain system.
6. Whether or not the total SSO volume that reached a municipal separate storm drain system was fully recovered.
7. Estimate of the SSO volume, inclusive of all discharge point(s).
8. Estimate of the SSO volume that reached surface water, a drainage channel, or was not recovered from a storm drain.
9. Estimate of the SSO volume recovered (if applicable).
10. Number of SSO appearance point(s).
11. Description and location of SSO appearance point(s). If a single sanitary sewer system failure results in multiple SSO appearance points, each appearance point must be described.
12. SSO start date and time.
13. Date and time the enrollee was notified of, or self-discovered, the SSO.
14. Estimated operator arrival time.
15. Description of SSO destination(s).
16. SSO end date and time.
17. SSO causes (mainline blockage, roots, etc.).
18. SSO failure point (main, lateral, etc.).

19. Whether or not the spill was associated with a storm event.
20. SSO Certification: Upon SSO Certification, the CIWQS Online SSO Database will issue a final SSO identification (ID) number.

SSO Technical Report. The City must submit an SSO Technical Report to the CIWQS Online SSO Database within 45 calendar days of the end date for any SSO of 50,000 gallons or greater was spilled to surface waters. The Technical Report shall include:

Causes and Circumstances of the SSO:

a. Complete and detailed explanation of how and when the SSO was discovered.
b. Diagram showing the SSO failure point, appearance point(s), and final destination(s).
c. Detailed description of the methodology employed and available data used to calculate the volume of the SSO and, if applicable, the SSO volume recovered.
d. Detailed description of the cause(s) of the SSO.
e. Copies of original field crew records used to document the SSO.
f. Historical maintenance records for the failure location.

Enrollee's Response to SSO:

a. Chronological narrative description of all actions taken by enrollee to terminate the spill.
b. Explanation of how the SSMP Overflow Emergency Response plan was implemented to respond to and mitigate the SSO.
c. Final corrective action(s) completed and/or planned to be completed, including a schedule for action not yet completed.

Water Quality Monitoring:

a. Description of all water quality sampling activities conducted including analytical results and evaluation of the results.
b. Detailed location map illustrating all water quality sampling points.

No spill certification. If no spills occurred during a calendar month the City must:

1) certify, within 30 calendar days after the end of the month that no spills occurred that there were no spills during that designated month or

2) certify quarterly, within 30 calendar days of the end of the quarter, that there were no spills during that quarter.

Quarters are Q1-January/February/March, Q2-April/May/June, Q3-July/August/ September, Q4-October/November/December. If the City reports a private property sewage discharge during a month (or quarter) that no spills occurred from the City's system, the City is still required to file a no spill certification.

Amended SSO Reports. The City may update or add additional information to a certified SSO report within 120 calendar days after the SSO end date by amending the report or adding an attachment to the SSO report in the CIWQS Online SSO Database.

Updated SSO Reporting Flow Charts, staff titles, and staff contact information are maintained at the San Marino City Hall. SDCDEH has requested to be notified of any discharge from the City's collection system or from any private lateral or other private sewer asset that the City become aware of. San Marino Public Works has requested to be notified of any sewage spills that impact their storm water system.

CIWQS Online Database Unavailability. Should the CIWQS Online Database be unavailable, the City is to fax or e-mail the required spill information to the Region 9 Water Quality Control Board. The City must also enter all required spill information into the CIWQS Online Database once it becomes available.

Collection System Questionnaire. Every twelve months the City must complete and certify their Collection System Questionnaire.

The following table summarizes the required reporting and reporting time frames the City utilizes to comply with the Order.

Type of Spill	Agency(s) to notify	Notification Timeframe	Report Timeframe
Category 1 – any volume discharge of sewage resulting from a failure or flow condition in the City's sanitary sewer collection system that: A. Reach surface waters and/or reach a drainage channel tributary to a surface water; or B. Reach a Municipal Separate Storm Sewer System (MS4) and are not fully captured and disposed of properly. (Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g. infiltration pit, percolation pond).)	Cal OES RWQCB per staff request.	Within 2 hours of City staff becoming aware of any Category 1 SSO greater than or equal to 1,000 gallons, notify the Cal OES and obtain a notification control number. Additionally, certify to RWQCB that OES was notified within 24 hours.	Submit draft report on CIWQS within **3** business days of becoming aware of the SSO. Certify within **15** calendar days of the SSO end date. SSO Technical Report: Submit within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater is spilled to surface waters.
Category 2 – Discharges of untreated or partially treated wastewater of **1,000 gallons or greater** that **do not** reach surface water, a drainage channel, or MS4 unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.	RWQCB per staff request.	Immediate	Submit draft report on CIWQS within **3** business days of becoming aware of the SSO. Certify within **15** calendar days of the SSO end date.

Category 3 – All other discharges of untreated or partially treated wastewater resulting from a flow condition or failure in the sanitary collection system.	RWQCB per staff request.	Immediate	Must report and certify on CIWQS within 30 days after the end of the calendar month in which the SSO occurred.
Private lateral sewage discharges that are caused by blockages or other problems within a privately owned lateral or other private sewer assets.	RWQCB per staff request.	Immediate as the City becomes aware.	Private lateral sewage discharges must be reported to the Online SSO Database based upon the SDRWQCB order. The Enrollee must identify the sewage discharge as occurring and caused by a private lateral, and a responsible party should be identified, if known.
No Spill Report	CIWQS		"No Spill" Certification: Certify that no SSOs occurred within 30 calendar days of the end of the month or, if reporting quarterly, the quarter in which no SSOs occurred.

The following table lists the contact information for the various agencies requiring notification of an SSO.

Normal Hours	*After Hours*
RWQCB – Los Angeles Region 4 (213) 576-6600	RWQCB: (213) 434-3773 (voice mail)
Cal OES (Office of Emergency Services) (800) 852-7550	24 hours
Caltrans District 7 (213) 897-3656	24 hours
San Marino Environmental Services (626) 300-0789	NA
San Marino Police Department (626) 300-0720	24 hours

3.3.4 Roles and Responsibilities

The City's SSO response is conducted in accordance with the City of San Marino's Sewer Overflow Response Plan. The roles and responsibilities of each position in the line of communications flowchart are described below:

Public Works Department — During normal working hours receives call of SSO and dispatches the Public Works staff (lead responder) to respond to the reported SSO. After the SSO remediation, the LRO completes necessary spill reporting to the

	CIWQS online database compliant with the MRP.
Police Dispatch	Receives SSO calls after normal working hours and dispatches the Lead Responder (standby person) to the scene.
Lead Responder	Evaluates the reported SSO and requests additional resources if needed to remediate the condition.
Public Works Manager (or designee)	Oversees the remediation efforts, gathers field data for spill reporting, and notifies necessary authorities compliant with the MRP.
LRO	Certifies spill reports to CIWQS online SSO database.

CHAPTER 4 – LEGAL AUTHORITY

This chapter describes the legal authority to implement the SSMP plans and procedures.

The SSMP must include the legal authority, through sewer use ordinances, service agreements, or other legally binding procedures, to:

(a) Prevent illicit discharges into its sanitary sewer system (examples may include I/I, stormwater, chemical dumping, unauthorized debris and cut roots, etc.);

(b) Require that sewers and connections be properly designed and constructed;

(c) Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the Public Agency;

(d) Limit the discharge of fats, oils, and grease and other debris that may cause blockages, and

(e) Enforce any violation of its sewer ordinances.

4.1 Compliance Summary

The primary statute governing the authority of the City of San Marino to operate and maintain a sewer system is in California Government Code Section 38900. The City has adopted local ordinances governing all aspects of the use and operation of its sewer systems.

In addition to the ordinances adopted by the City, use of the sewerage system is also regulated by LACSD. Wastewater generated by users within the jurisdiction of the City ultimately flows to the LACSD treatment plants for treatment prior to discharge. The City cooperates with LACSD in the enforcement process, if one is deemed necessary. Additionally, the City may prosecute violations of its Municipal Code by criminal complaint, and such violations constitute a misdemeanor under Chapter 1, Article 4 of the San Marino Municipal Code.

The City and LACSD have a number of legal tools to prevent illegal discharges; to ensure that sewers and connections meet required construction standards; ensure access to sewer lines; limit FOG discharge; and to enforce violations of their respective sewer ordinances.

Codified ordinances include:

Legal Authority Order Requirements	Applicable Sections of City Municipal Code
a) Prevent illicit discharges into its sanitary sewer system (examples may include I/I, stormwater, chemical dumping, unauthorized debris and cut roots, etc.)	N/A
b) Require that sewers and connections be properly designed and constructed	Chapter 16, Article 6: Connection to Public Sewers (16.06.01 and 16.06.02)
c) Ensure access for maintenance, inspection, or repairs for collection system owned or maintained by the Public Agency	Section 16.03.05: Supervision and Inspection
c) Limit the discharge of fats, oils, and grease and other debris that may cause blockages	Chapter 14, Article 15: Fats, Oils and Greases (14.15.01 through 14.15.05)
e) Enforce any violation of its sewer ordinances	Chapter 1, Article 4: Violations; and Chapter 14, Article 15: Fats, Oils and Greases (14.15.01 through 14.15.05)

The City will establish an ordinance to prevent illicit discharges into the City-owned collection system facilities. The City will also modify the municipal code to clearly define the responsible party for sewer laterals.

4.2 Compliance Documents

City ordinances have been codified into Title 4, Title 8 and Title 13 of the Municipal Code to provide the City with the legal authority to manage, operate, maintain, and fund its sanitary sewer system. These Titles and other Ordinances adopted to amend existing ordinances may be reviewed at the City of San Marino located at 2200 Huntington Drive, San Marino, California 91108 or on the internet at the City's website http://www.sterlingcodifiers.com/codebook/index.php?book_id=825.

Chapter 1 – General Provisions

Article 4: Violations

Chapter 14 – Miscellaneous

Article 15: Fats, Oils and Greases

Chapter 16 – Streets and Sidewalks

Article 3.05: Supervision and Inspection

Article 6: Connection to Public Sewers

CHAPTER 5 – OPERATIONS AND MAINTENANCE

The Enrollee shall properly, manage, operate, and maintain all parts of the sanitary sewer system owned or operated by the Enrollee, and shall ensure that the system operators (including employees, contractors, or other agents) are adequately trained and possess adequate knowledge, skills, and abilities.

The SSMP must include those elements listed below that are appropriate and applicable to the Enrollee's system:

(A) Maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities;

(B) Describe routine preventive operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The Preventative Maintenance (PM) program should have a system to document scheduled and conducted activities, such as work orders;

(C) Develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed for the capital improvement plan;

(D) Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and require contractors to be appropriately trained; and

(E) Provide equipment and replacement part inventories, including identification of critical replacement parts.

5.1 Mapping

The requirement for this section is to maintain an up-to-date map of the collection system showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and stormwater conveyance facilities.

5.1.1 Compliance Summary

Updated mapping of the City's sewer system was performed as part of the 2018 Wastewater Plan. This update was completed and integrated in the City's Geographic Information System (GIS).

The City utilizes a combination of hard copy maps and a GIS system. The GIS system, started in 2009, includes the locations of pipelines and manholes. The City is in the process of attributing the GIS data with relevant information, such as invert elevations, pipeline diameters, pipe material, pipe slope, identification numbers, etc. The GIS was updated as part of the 2019 Wastewater Master Plan to include results of the condition assessment performed as part of the master plan. The City's most used and updated information is on the hard copy maps. These maps are updated regularly by City operations staff and are kept in the PPWD offices. Once the GIS update of the collection system is complete, the City will establish a program to regularly update the GIS and print updated hard copy atlas maps to be kept in each maintenance vehicle. Additionally, proper databases containing information on pump stations technical specifications, wet well dimensions, and pipe and manhole attributes will also be regularly maintained.

5.1.2 Compliance Documents

The documents supporting compliance with the requirements for mapping are as follows:

- Engineering Division Sewer GIS.
- Sewer system hard copy and atlas maps.

5.2 Preventive Maintenance Program

The Order requires the City to describe routine preventive operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The Preventative Maintenance (PM) Program should have a system to document scheduled and conducted activi55tties, such as work orders.

5.2.1 Compliance Summary

The City of San Marino PPWD is responsible for the operation and maintenance of all City-owned sewer collection and pumping facilities, including responding to and reporting all SSOs. In general, the costs associated are borne by the City of San Marino's General Fund.

The City contracts preventative maintenance work to a subcontractor. The City just awarded a new contract to 316 Construction. The previous pipe cleaning subcontractor, PipeTec, had been contracted to clean half of the collection system each year.

Enhanced maintenance areas are being cleaned every 6 months. This cleaning schedule will be maintained with the new pipeline contractor.

Prevention of insect (cockroach) infestation within the City's sewer lines is performed by a chemical dosing program. The program is handled by an outside firm (Bill Industries) under contract to the City. Approximately half of the City's manholes are dosed per year with the understanding of a two-year chemical residual following each treatment; however, due to the level infestation, the City may implement an annual dosing schedule.

In addition to these ongoing cleaning and maintenance activities, the City supports the assessment of sewer pipeline condition through video inspection services. The City now contracts CCTV inspection out to 316 Construction, a pipeline repair and CCTV contractor for diagnostic assessment. 316 Construction will perform CCTV inspection to half of the City's collection system every year, ensuring that the entire collection system is video inspected every two years.

Enhanced Maintenance Area Program

The City has an Enhanced Maintenance Area (EMA) Program in place for more frequent maintenance of sewers prone to blockage due to FOG or root intrusion. The most current list of the City's EMA pipelines is included in the following table. These areas area cleaned once every six months.

Table 5.1 – Enhanced Maintenance Areas

#	Location	Description	Pipe Diam (in)	Total Length (ft)
1	2601 Mission St to Mission St at El Molino Ave	2601 Mission St to 2650 Mission St to Mission St at El Molino Ave	8	436
2	835 Huntington Dr to 1225 Granada Ave	835 Huntington Dr to Huntington Dr at Granada Ave to 1225 Granada Ave	8 10	241 281
3	Del Mar Ave at Huntington Drive to 1480 Del Mar Ave (East Line)	Del Mar Ave at Huntington Drive to w/o 2560 Huntington Dr to 1480 Del Mar Ave	8	423
4	1700 Del Mar Ave to 1770 Del Mar Ave	1700 Del Mar Ave to 1750 Del Mar Ave to 1770 Del Mar Ave	10	607
5	1930 Del Mar Ave to Del Ma Ave at Rose Ave	1930 Del Mar Ave to 1970 Del Mar Ave to 2010 Del Mar Ave to 2040 Del Mar Ave to Del Mar Ave at Rose Ave	8	932
6	2395 Huntington Dr to 2185 Huntington Dr	2395 Huntington Dr to 2335 Huntington Dr to 2285 Huntington Dr to 2185 Huntington Dr	8	859
7	San Gabriel Blvd at Sheffield Rd to 1941 San Gabriel Blvd	San Gabriel Blvd at Sheffield Rd to 1941 San Gabriel Blvd	8	243
8	Sierra Madre Blvd south of Huntley Circle to 1203 Sierra Madre Blvd	Sierra Madre Blvd 200-ft south of Huntley Circle to Sierra Madre Blvd 500-ft south of Huntley Circle to 1203 Sierra Madre Blvd	8	605

#	Location	Description	Pipe Diam (in)	Total Length (ft)
9	Gainsborough Dr at Cumberland Rd to 2725 Gainsborough Dr	Gainsborough Dr at Cumberland Rd to 2725 Gainsborough Dr	8	184
10	1477 Bradbury Rd to 1515 Bradbury Rd	1477 Bradbury Rd to 1515 Bradbury Rd	8	283
11	836 Winthrop Rd to Wilson Ave at Granada Ave	836 Winthrop Rd (driveway) to 836 Winthrop Rd (sideyard) to 1595 Wilson Ave (backyard) to Wilson Ave at Granada Ave	8	548
12	1662 Lorain Rd to Lorain Rd at Virginia Rd	1662 Lorain Rd to Lorain Rd at Virginia Rd	8	261
13	937 Avondale Rd to Avondale Rd at Orlando Rd	937 Avondale Rd to Avondale Rd at Orlando Rd	8	241
14	1895 Rose Ave to Rose Ave at Sharon Pl	1895 Rose Ave to Rose Ave at Sharon Pl	8	241
15	Behind 2111 Huntington Dr (Alley) to Alley at Westhaven Rd	Behind 2111 Huntington Dr (Alley) to Alley at Westhaven Rd	8	282
16	1460 Park Pl to Virginia	1460 Park Pl to Virginia	N/A	N/A
17	Rose Ave at Duarte Rd to Rose Ave at Woodlawn Ave	Rose Ave at Duarte Rd to Rose Ave at Woodlawn Ave	8	629
18	Mill Canyon Rd t to Encino (across from 1280 Encino)	Mill Canyon Rd #20, #40, #70 to Encino (across from 1280 Encino)	N/A	N/A
19	1877 McFarlane St to 1935 Marino Ter.	1877 McFarlane St to 1877 McFarlane St (driveway) to 1877 McFarlane St (backyard) to 1935 Marino Ter (parkway) to 1935 Marino Ter.	8	471
20	Orlando Rd at Avondale Rd to Orland Rd at Cameron Dr.	Orlando Rd at Avondale Rd to Orland Rd at Cameron Dr.	8	254
21	1046 Oak Grove Pl to 1335 Oak View Ave	1046 Oak Grove Pl to 1335 Oak View Ave	N/A	N/A
		TOTAL LENGTH ENHANCED MAINTENANCE AREAS (ft):		**8,021**

Reporting of all unauthorized discharges from the City's sanitary sewer collection system is required by the Order (Order No. WQ 2013-0058-EXEC).

Existing Pump Station Procedures

As described in Section 2 of the 2019 Wastewater Master Plan, the City of San Marino operates three sewer pump stations. Operations staff monitor the pump stations to assure that they are operating properly on a weekly basis. No routine maintenance is currently being performed on the pump stations. Emergency repair is contracted out to Gemini on an as-needed basis. It is recommended the City establish a regular maintenance and replacement schedule for the pump station equipment, pumps, and motors with a local pump contractor, as the risk of pump failure and backup.

Section 3 of the 2019 Wastewater Master Plan lists several existing conditions at the City's pump stations that will require repair or retrofitting. Budgets for such repairs are

presented in Section 5 of the 2019 Wastewater Master Plan. When put into effect, these improvements will reduce the amount of City staff time required at the pump stations.

5.2.2 Compliance Documents

Documents which support compliance of this section include the following:

- Enhanced Maintenance Area Log - located at the PPWD.
- GIS - located at the PPWD.

5.3 Rehabilitation and Replacement Plan

In accordance with the Order, the City must develop and maintain a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. The video inspection information that follows reflects the City's program and its ability to meet this section of the Order.

The goal of the video inspection program is to video inspect the entire wastewater collection system approximately every two years, with an increased frequency of up to once every six months for enhanced maintenance areas.

5.3.1 Compliance Summary

The City utilizes its CCTV inspection program to identify and prioritize system deficiencies. Deficiencies are scored using the PACP system. Review of CCTV videos as well as the capacity evaluation as performed for the 2019 Wastewater Master Plan was the basis of the development of the City's 10-year Capital Improvement Program, which serves as the basis of its rehabilitation and replacement program. Refer to Section 5 of the 2019 Wastewater Master Plan for the proposed projects, phasing and estimated costs for the City's 10-year CIP.

5.3.2 Compliance Documents

The documents supporting compliance with the rehabilitation and replacement plan requirements are as follows:

- CCTV Videos and assessments – located at the City of San Marino.
- GIS – located at the PPWD.
- City of San Marino Capital Improvement Plan – to be located at the City of San Marino and on the City's website.
- 2019 Wastewater Master Plan – to be located at the City of San Marino and on the City's website.

5.4 Training Program

The City is required to provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and to require contractors to be appropriately trained.

5.4.1 Compliance Summary

A training program is in place for all wastewater employees. The City's PPWD uses a combination of in-house classes, on the job training, and conferences to train its staff. Formalized components of this training include weekly tailgate meetings, monthly safety meetings, annual SSO response training, and training manuals for the various aspects of operations and maintenance activities. While training records have not been formally kept, the City will commence maintaining training records of staff for formal SSO trainings performed.

Once the mini jetter and vacuum trailer are purchased for emergency spill response, as discussed in Chapter 7 of this document, these items be included in the annual SSO training procedures to ensure staff is fully trained in the use of this equipment.

The City requires contractors to be appropriately trained and licensed with either a C-36 or C-42 State Contractor's License. The City's contract language requires contactors to submit Performance and Payment Bonds for 100% of the contract amount and guaranteeing the work against faulty workmanship and materials for a period of one year. In addition, prior to performing any work within the City, contractors are required to submit a signed Workplace Certification in compliance with Government Code Section 8355 in matters relating to providing a drug-free workplace.

5.4.2 Compliance Documents

The following documents demonstrate the type of training provided to staff and what training requirements are required of contractors:

- Employee Training Records – located at the PWWD.

5.5 Equipment and Parts Inventories

Each Enrollee is required to provide equipment and replacement part inventories, including identification of critical replacement parts for the operation and maintenance of its sewer collection system.

5.5.1 Compliance Summary

The City of San Marino is comprised of various standard sized gravity pipelines and three pump facilities that that the City is responsible for. Maintenance and repair is contracted out; therefore the City does not keep any spare parts in inventory. The City monitors their lift stations only; repair is performed by a contractor (Gemini), therefore the City does not keep pump station replacement parts in inventory. The City has a

current contract established with a pipeline contractor for emergency pipeline repairs to ensure necessary pipeline repairs can happen in a timely manner.

5.5.2 Compliance Documents

Because the City contracts out maintenance and repair of their collection system and pump stations to pipeline contractors and does not perform maintenance and repair themselves, no equipment and parts inventory is kept on file.

CHAPTER 6 – DESIGN AND PERFORMANCE PROVISIONS

This chapter references the design and construction standards & specifications for new sewer systems, pump stations, and other appurtenances, and for the rehabilitation and repair of existing sewer systems. Also included are the procedures and standards for the inspection and testing of these facilities. The Order requires the following:

(a) Design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems; and

(b) Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

6.1 Compliance Summary

Design and Construction Standards and Specifications

The City of San Marino uses the current edition of the "Standard Specifications for Public Works Construction" (Greenbook) as their standard specifications for the installation of new, rehabilitated or repaired sewer facilities. A copy of the Greenbook is kept in the PPWD office. The City also uses LACDPW's Private Contract Sanitary Sewer Procedural Manual (Appendix 1).

Procedures and Standards for Inspection and Testing

The City uses the most current edition of the Greenbook as their standards for inspection and testing for the installation of new sewers, pumps and other appurtenances and for rehabilitation and repair projects. All new, rehabilitated and repaired sewer assets that require inspection involving pressure testing, mandrilling, water exfiltration and/or post construction CCTV inspection are overseen by a City inspector prior to acceptance of work.

6.2 Compliance Documents

The documents used for design and performance evaluations include the following:

- "Greenbook" Standard Specifications for Public Works Construction
- LACDPW's Private Contract Sanitary Sewer Procedural Manual

CHAPTER 7 – OVERFLOW EMERGENCY RESPONSE PLAN

Under the Order, each Enrollee shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:

(a) Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;

(b) A program to ensure an appropriate response to all overflows;

(c) Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g. health agencies, Regional Water Boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the MRP. All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDRs or NPDES permit requirements. The SSMP should identify the officials who will receive immediate notification;

(d) Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the Emergency Response Plan and are appropriately trained;

(e) Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and

(f) A program to ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from the SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

7.1 Compliance Summary

The City currently contracts out their emergency spill response to their on-call pipeline contractor, 316 Construction. City staff respond initially to SSO calls and perform spill containment until the City's pipeline contractor arrives to correct blockages, perform spill recovery and any necessary emergency repairs.

This section provides the step-by-step procedures explaining the actions to be taken in response to an SSO.

The City of San Marino has the immediate responsibility to protect people, property, and the environment from the effects of a sewage spill overflow. To meet these objectives in a rapid, effective, and organized manner, staff will respond and fulfill the duties as directed by the following plan.

1. Contain the spill overflow immediately. Sand bags and plastic sheets for blocking storm drain structures and berm construction are available at several locations around the City. Pay special attention to blocking storm drain inlets of any kind. Setup traffic control per the WATCH Manual. Should you need traffic or crowd control assistance, call police dispatch at (626) 300-0740.

2. Capture the overflow, clear the obstruction and ensure the downstream manholes are clear and flowing.

    a. If necessary, berm flow and start pumping into the closest clear and flowing manhole.

    b. Contact the Public Works Manager. If he cannot be reached, the Foreman will contact the Public Works Director.

    c. Evaluate the sewer system overflow rate. The most senior employee on scene will evaluate the overflow rate.

    d. If necessary, Police Officers should be dispatched to assist street closure, traffic diversion, or crowd control.

3. If spill overflow location calls for it, the Utilities Superintendent will contact the Public Works Director to arrange for a partial activation of the Emergency Operations Center (EOC).

4. For spills reaching the storm drain system, contact the Los Angeles County Department of Public Health Services at (626) 430-5360 (after hours 213-974-1234), the Regional Water Quality Control Board at (213) 576-6657 (after hours leave message (213) 305-2284), and the State Office of Emergency Services at (800) 852-7550, and report the spill as soon as possible.

5. Determine cause of spill (i.e. grease or other obstructions). Describe what caused the overflow and what actions were taken to correct the situation. This information is required for the Department Incident Report and Sewer Spill Report.

6. Cleanup spill area and pickup containment material. Leave the area as clean as possible picking up rags, papers, etc. Emphasis should be placed on removing all materials that are on or around the contaminated area. BEFORE PRESSURE WASHING CONTAMINATED AREA, ALL CONTAMINATED MATERIALS AND CONTAMINATED SOIL MUST BE REMOVED AND CATCH BASINS MUST BE BLOCKED. VACUUM MUST BE READY TO PICK UP WATER FROM PRESSURE WASHING. No water, sewage or containment materials are to be washed into the storm drain system.

7. Report spill on the CIWQS website at https://ciwqs.waterboards.ca.gov/.

For improved emergency response, the City plans to acquire a mini jetter and vacuum trailer to clear obstructions and capture smaller contained spill volumes as well as other necessary items to have in stock, such as absorbent mats and containment pools. This will help reduce spill volumes and improve spill recovery for smaller incidents.

7.2 Compliance Documents

The compliance documents that detail the City of San Marino's Sewer Overflow Response Plan are as follows:

- Sanitary Sewer Overflow Response Plan – located at the PPWD.
- CIWQS Incident Report Log – located at the PPWD.
- Emergency Response Training Records – to be located at the PPWD.

CHAPTER 8 – FATS, OILS, AND GREASE CONTROL PROGRAM

Under the Order, each Enrollee is required to evaluate its service area to determine whether a FOG control program is needed. If the Enrollee determines that a FOG program is not needed, the Enrollee must provide justification for why it is not needed. If FOG is found to be a problem, the Enrollee must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. This plan shall include the following as appropriate:

(a) An implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG;

(b) A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area;

(c) The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG;

(d) Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, BMP requirements, record keeping and reporting requirements;

(e) Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the FOG ordinance;

(f) An identification of sanitary sewer system sections subject to FOG blockages and establishment of a cleaning maintenance schedule for each section; and

(g) Development and implementation of source control measures for all sources of FOG discharged to the sanitary sewer system for each section identified in (f) above.

8.1 Compliance Summary

The City of San Marino addresses Fats, Oils, and Grease (FOG) control through the resources of multiple City departments. Provisions for a FOG control program have existed in Chapter 14, Article 15, Fats, Oils and Greases, of the City of San Marino City Code.

As described in Section 5 of this SSMP, the PPWD provides prioritized cleaning and maintenance of the City's sanitary sewer system. In addition, the City Engineer approves the location of grease interceptors. The City uses its inspection and enforcement resources to identify and monitor likely sources of FOG into the sewer system. This is accomplished by requiring and verifying the installation and use of grease interceptors or traps. The Engineering Department in conjunction with the San Marino Planning & Building Department assists in the requirement and approval of the design of grease interceptors or traps through plan checking procedure.

The following sections are provided to document the City's FOG program and identify additional activities or authorities as appropriate to meet the goals of the Order.

Public Outreach and Education

The City is committed to informing its residents about the consequences of disposing of FOG into the sewer system. The City plans to continue to educate the community on methods to handle FOG and to reduce the disposal of FOG into the collection system. The City will develop educational materials on San Marino City sewers that will be available to the public on the City's website. In addition, the City's ten food service establishments (FSEs) will receive description of FOG best management practices and a copy of the City's FOG municipal code in a brochure at each annual inspection that pertains to grease removal devices.

FOG Disposal

FOG can be separated from other liquid waste using a grease interceptor or trap. Storage of FOG is dependent on the device used. An interceptor is designed to store FOG in its tank. Grease interceptors are to be emptied as needed of stored FOG in order to maintain minimum design capacity. Facilities using grease traps are directed to remove FOG from the trap as frequently as necessary to maintain proper working condition. FOG removed from a grease trap should be stored in a leak-proof container until it is recycled. Removal of stored FOG from grease interceptors and traps for recycling should occur as often as needed to maintain a condition free of nuisance.

The City does not provide FOG disposal services for private businesses and property owners. It is the responsibility of the private business and property owner to hire a licensed grease hauler as needed. All companies doing business in California that transport inedible kitchen grease must obtain a registration sticker for each of their trucks from the Department of Food and Agricultural pursuant to provisions of the Food and Agriculture Code as well as the vehicle code. Those companies doing business within San Marino must also obtain a business license from the City.

Legal Authority

Original authority to control FOG in the sewer was established by Chapter 14, Article 15: Fats, Oils and Greases of the City's municipal code that forbids the disposal of FOG into the sanitary sewer system and requires wastewater discharge from FSEs to be drained into the sanitary waste system through a FOG disposal system.

FSEs are required to control their FOG discharge through the use of grease removal devices. Section 14.15.03: FOG Disposal Systems; Installation Requirements establishes the installation requirements for gravity grease interceptors. Compliance is enforced through Chapter 1, Article 4: Violations as well as Chapter 14, Article 15: Fats, Oils and Greases via inspections, violations and penalties.

Design and BMP Standards

The City requires FSEs to install FOG removal devices and has developed a means to standardize their installation. The City has standardized its procedure of requiring

grease removal devices based on California Plumbing Code Sections 1014 and 1015 for new FSEs and for tenants who make major improvements to their kitchen area. In addition, the City requires FSEs to maintain a grease trap or interceptor cleaning log as part of its permitting program.

Inspection and Enforcement Plan

The City currently has the legal authority to inspect and enforce FOG noncompliance. The San Marino Municipal Code does contain language that prohibits the discharge of any substance that can create a public nuisance. The City will inspect FSEs annually.

The inspection and public outreach of FSEs in the identified enhanced maintenance areas is a critical component of the City's source control program for FOG. The FSEs are required to maintain a regular cleaning schedule for its grease removing devices (either grease trap or interceptor) and must be able to furnish proof upon request. The City's municipal code also grants the City the legal authority to prohibit illegal discharges, FOG blockages and prevent sanitary sewer overflows.

FOG Enhanced Maintenance Areas

FOG enhanced maintenance areas are included in the City's Enhanced Maintenance Area Program. Enhanced maintenance areas are areas of the collection system that require maintenance above the normal scheduled maintenance. The City maintains a list of these FOG-impacted areas in their complete list of enhanced maintenance areas, included in Table 5-1. Enhanced maintenance areas are cleaned every six months, or more frequently if required. The City has not had an SSO related to FOG (or any other reason) in over three years and intends to maintain its regular maintenance/cleaning schedule to maintain this outcome.

FOG Source Control Program

The City is required to develop and implement source control measures for FOG control. The City's FOG source control program consists of public outreach and education and the requirement to install grease removal devices for new businesses that produce grease and tenants who make major improvements to their site. The public outreach and education program will include distributing information on FOG BMPs to FSEs and may also include mail inserts to residents and articles in the Community newsletter.

8.2 Compliance Documents

The FOG control program activities are documented under the following ordinances, reports, and studies:

- Chapter 8.14, Grease and Oil Disposal Ordinance, City of San Marino Municipal Code.

CHAPTER 9 – SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

The Order requires that each Enrollee shall prepare and implement a capital improvement plan (CIP) that will provide hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event. At a minimum, the plan must include:

(a) **Evaluation**: Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs that escape from the system) associated with conditions similar to those causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events;

(b) **Design Criteria:** Where design criteria do not exist or are deficient, undertake the evaluation identified in (a) above to establish appropriate design criteria; and

(c) **Capacity Enhancement Measures:** The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.

(d) **Schedule:** The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a)-(c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D. 14.

9.1 Compliance Summary

The following sections provide compliance information on each of the four conditions of this section.

Evaluation:

Due to the timing of the 2019 Wastewater Master Plan project contract, flow monitoring was not able to be performed during winter months; therefore, the master plan did not specifically assess the capacity of the City's wastewater collection system. However, the City is built out and, as such, condition assessment is often of higher concern than capacity limitations for preventing sewer overflows. The City's lack of sewer overflows due to capacity limitations points to a sufficient capacity in the system; however, the 2018 Master Plan is recommending a program be performed in the winter of 2020 using

Smart Cover technology to confirm system capacity and assess the impact of rainfall dependent inflow and infiltration. Advanced Smart Cover technology is a cost effective method for gathering real-time monitoring of pipeline water depths and flow trends over time in some of the City's largest sewer basins. Flow monitoring may be used as an alternative method should the Smart Cover results warrant more detailed analysis.

The 2019 Wastewater Master Plan did assess the City's collection system for capacity-related defects and found for the pipelines 13.3 miles of CIPP lining, 717 LF of pipeline replacement, 19 excavation point repairs, 30 in-situ point repairs and 44 trim intruding laterals. For the manholes, 63 trough rehabilitations, three wall rehabilitations and 59 flush tank modifications were identified. Additionally, upgrades are recommended for the three City-owned sewer lift stations.

Design Criteria:

The City does not currently maintain wastewater design criteria. It was recommended in the 2019 Wastewater Master Plan that the City's design criteria match LACSD's because LACSD has pipelines within the City boundary. The recommended design criteria was be used for evaluating performance of the existing collection system and for the planning of new facilities to address current performance issues or address future increases in sewer flows.

Recommended Sewer Design Criteria

Evaluation Criteria[1]	Design Value
Maximum d/D (< 12-inch)	0.5
Maximum d/D (12-inch and larger)	0.75
Minimum Velocity (fps)	2.0
Note: [1] d/D = ratio of wastewater depth to pipeline diameter	

Capacity Enhancement Measures:

The Wastewater Master Plan did not assess the collection system for capacity-related defects due to the timing of the contract for the project; though capacity assessment and I/I reduction using Smart Covers is included as a recommended CIP project for an upcoming winter to confirm capacity of the City's built-out system.

The Wastewater Master Plan did identify several condition-related defects from review of the City CCTV inspection videos. By estimating the rehabilitation costs, the Wastewater Master Plan identified a recommended set of CIP projects necessary to address identified condition related problems. This information allows for the development of a precise CIP program based upon an up-to-date pipeline condition assessment.

Schedule and Funding:

The CIP developed for the 2019 Wastewater Master Plan recommended improvements and improvement programs through 2027. Refer to the 2019 Wastewater Master Plan for more detailed information.

9.2 Compliance Documents

The documents used for system evaluation and capacity assurance are as follows:

- 2018 Wastewater System Master Plan – to be located at the City of San Marino and on the City's website.
- City of San Marino CIP Program – located at the City of San Marino PPWD.
- Collection System CCTV Inspection Videos - located at the City of San Marino PPWD.
- Engineering Division Sewer GIS - located at the City of San Marino PPWD.
- City of San Marino Annual Budget – located at the City of San Marino.

CHAPTER 10 – MONITORING, MEASUREMENT AND PROGRAM MODIFICATIONS

The Enrollee shall monitor and measure the effectiveness of the SSMP and shall make modifications as necessary to maintain the programs effectiveness. Under the Order, the Enrollee shall:

(a) Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;

(b) Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP;

(c) Assess the success of the preventative maintenance program;

(d) Update program elements, as appropriate, based on monitoring or performance evaluations; and

(e) Identify and illustrate SSO trends, including: frequency, location, and volume.

10.1 Compliance Summary

The City has a number of tools available to monitor and measure the progress of its SSMP. Data from the system wide CCTV inspections will be used for comparison with future CCTV inspection data. Enhanced Maintenance Area Program is in place for more frequent maintenance of sewers prone to blockage due to FOG or root intrusion.

The City reports all public and private property spills. Spill reports are maintained at the City and on the California Integrated Water Quality System's (CIQWS) online SSO database. Spill reports are analyzed by management to determine strategies to prevent future occurrences. Spill response efforts are also analyzed by management to determine their efficiency and effectiveness. Spill data along with on-site inspection data is utilized by the FOG Control Program Manager to monitor the progress of the City's FOG Reduction Program.

The City plans to track facility repairs (manhole, pipeline, pump station) in the GIS. As part of the 2019 Wastewater Master Plan, recommended CIP projects were added to the GIS.

The City will routinely conduct an update to its Sewer Master Plan. The Sewer Master Plan Updates will review multiple aspects of the City's management, operation, maintenance, funding, and CIP progress for the collection system.

Results of the SSMP Audits, discussed in Chapter 11, will be used to create a checklist of SSMP program modifications recommended to ensure modifications are made.

10.2 Compliance Documents

The compliance documents are as follows:

- SSO Reports – located at the City of San Marino PPWD offices.
- Engineering Division Sewer GIS - located at the City of San Marino PPWD offices.

CHAPTER 11 – PROGRAM AUDITS

As part of the SSMP, the Enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the Enrollee's compliance with the SSMP requirements identified in this subsection (D.13), including identification of any deficiencies in the SSMP and steps to correct them.

11.1 Compliance Summary

The City of San Marino will audit its SSMP on a two year cycle from the date of initial City Council approval of the SSMP. If conditions change that warrant increased audit frequency, the City will adjust its audit cycle accordingly. Audits will review the City's SSMP activities from the time of the last audit and will summarize the data accumulated through its monitoring, measuring, and program modification efforts. Particular attention will be paid to each program's effectiveness in meeting its goals, objectives, and priorities while ultimately being tied into the budgetary process.

The audit process will include the review of additions or improvements made to the collection system during the current audit period and describe planned additions and improvements for the upcoming audit period. Supporting documents will be reviewed to ensure they are up to date and the most recent documents are available and referenced. This process will also ensure that historical documents are kept for future reference.

The results of the audit, including identification of any deficiencies and the steps taken or planned to correct them, will be included in the audit report. The audit report will be used in the City's budgeting process when planning future CIP projects.

Employee training will be reviewed to ensure programs and mechanisms are in place to provide necessary training, and that all staff is up to date with required training. Training includes on the job requirements, safety, required licenses and/or certificates, and professional development.

Completed audits will be retained on file by the City.

11.2 Compliance Documents

The documents used for audit evaluations include the following:

- SSO Reports – located at the City of San Marino's PPWD offices.
- Sewer GIS - located at the City of San Marino's PPWD offices.

CHAPTER 12 – COMMUNICATIONS

The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the Enrollee as the program is developed and implemented.

The Enrollee shall also create a plan of communication with systems that are tributary and/or satellite to the Enrollee's sanitary sewer system.

12.1 Compliance Summary

The San Marino City Council encourages public participation in City activities. Time is allowed at each open City Council meeting for public comment. The City maintains a website where information about the collection system, including a copy of the latest SSMP, is publically available. The City also posts collection system documents, such as the upcoming 2019 Wastewater Master Plan, for public review. The City's Municipal Code, which provides the legal authority to manage, operate, and maintain the sanitary collection system, is also online.

The City may utilize newsletters, specialized publications in community events, and local community groups to disseminate information and solicit feedback on its programs. Outside public relations consultants may be used to develop folders, door hangers, logos, catchy phrases, etc. to inform the public of new or ongoing programs.

The City communicates with interested local and regional parties as part of its ongoing sanitary sewer and storm water management programs. With the addition of the SSMP requirements, the City will communicate with the LACSD prior to plan finalization, at least one time per year, and prior to the submittal of any updates to the SWRCB. The City will also coordinate any changes to its FOG program with LACSD to enhance local source control efforts and improve local wastewater effluent as appropriate.

12.2 Compliance Documents

The documents used for the communications program include the following:

- City of San Marino website www.CityofSanMarino.org

CHAPTER 13 – GENERAL COMPLIANCE REQUIREMENTS

SSMP and Program Certification

Both the SSMP and the City's program to implement the SSMP must be certified by the City to be in compliance with the requirements set forth above and must be presented to the City's governing board for approval at a public meeting. The City shall certify that the SSMP, and subparts thereof, are in compliance with the general WDRs within the time frames identified in the time schedule provided in subsection D.15.

In order to complete this certification, the City's authorized representative must complete the certification portion in the Online SSO Database Questionnaire by checking the appropriate milestone box, printing and signing the automated form, and sending the form to:

State Water Resources Control Board
Division of Water Quality
Attn: SSO Program Manager
P.O. Box 100
Sacramento, CA 95812

The SSMP must be updated every five (5) years, and must include any significant program changes. Re-certification by the governing board of the City is required in accordance with D.14 when significant updates to the SSMP are made. To complete the re-certification process, the City shall enter the data in the Online SSO Database and mail the form to the State Water Board, as described above.

13.1 Compliance Summary

The SSMP will be presented to the San Marino City Council for approval on June 12, 2019. Re-certification of the SSMP will occur every five (5) years from the date of the initial SSMP approval.

13.2 Compliance Documents

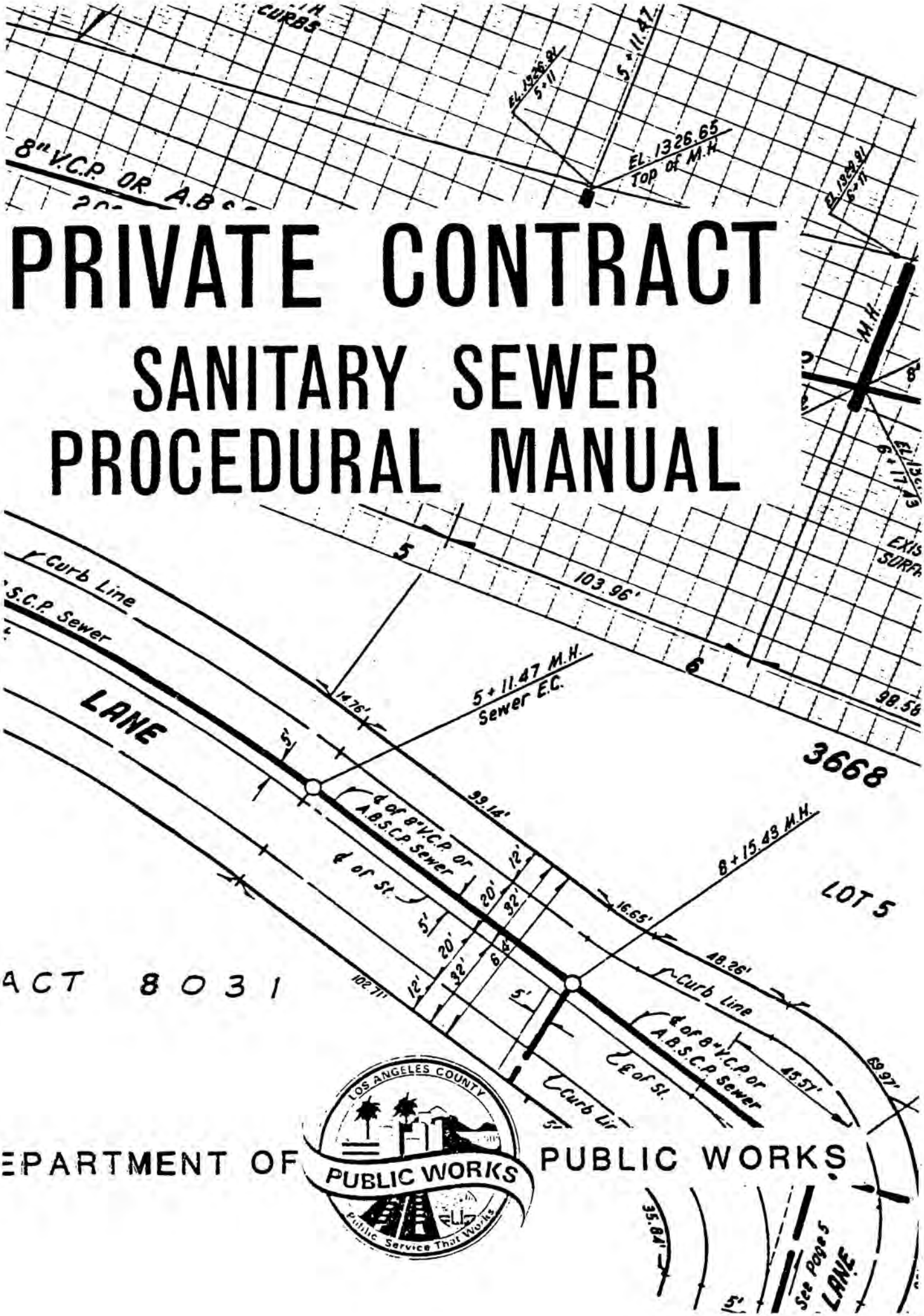
The following documents provide the legal basis for the City of San Marino approval of the SSMP.

- San Marino City Council meeting minutes from June 12, 2019 – located at the City of San Marino and online.
- Approved SSMP – located at the City of San Marino PPWD offices.

State Water Resources Control Board Order Number 2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems – located at the City of San Marino.

APPENDIX 1

PRIVATE CONTRACT SANITARY SEWER PROCEDURAL MANUAL



PRIVATE CONTRACT

SANITARY SEWER PROCEDURAL MANUAL

STANDARD PROCEDURES for PROCESSING PRIVATE CONTRACT SANITARY SEWER PLANS

DEPARTMENT OF PUBLIC WORKS

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REVISED
DECEMBER 1987

INTRODUCTION

This Manual sets forth the standards for the preparation and processing of plans of sanitary sewers to be constructed under a private contract, and all documents supplemental to the plans required by the Department of Public Works for construction of the sewers.

The preparation of plans in conformity with these instructions will expedite the work of checking and shorten the time needed to process them through the Department of Public Works Office.

The preparation and processing of all plans and construction of all sewerage facilities shall comply with the Los Angeles County Code Title 20 - Utilities - Sanitary Sewers and Industrial Waste, the Standard Specifications for Public Works Construction, Special Provisions and Standard Drawings.

Several cities within the County have designated the Director of Public Works as City Engineer and have contracted for engineering services. In such "contract cities," these same procedures and regulations are to be followed, except that all fees (excepting Sewer Maintenance Charges) are paid directly to the city.

These instructions supersede any previous instructions covering the same subjects. Answers to questions on matters of design not covered may be obtained by contacting the Land Development Division Central Office (see title page).

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PART I

SUBMISSION OF PLANS

A. CLASSIFICATIONS

Private contract sanitary sewer projects processed through the Department of Public Works are classified as follows:

1. Private Contracts in Unincorporated Area

   Plans designed for the consruction of sewage facilities serving areas in unincorporated territories of Los Angeles County.

2. Private Contracts in Contract Cities

   Plans designed for the construction of sewage facilities serving areas in a contract city.

3. Private Contract Involving Reimbursements

   Any private contract involving reimbursement processing in accordance with Section 20.28.050 of the Los Angeles County Code-Title 20, under Section 66485 of the Business and Professions Code, Section 15007 of the Education Code, Sections 23010.3 and 50140 of the Government Code of the State of California, or under special city procedures. Refer to Part IV, Section G of this Manual for further details.

4. Private Contracts for the Construction of Private Sewers

   Occasionally, a private contract sewer serving only a single property must be constructed in accordance with Los Angeles County Code-Title 20. The Building and Safety Division will make recommendations regarding facilities which cannot be sewered in accordance with the Plumbing Code (Title 28). Normally sewers of this type are to serve large industrial developments. If in the future this "private sewer" is extended-public easements and offers of Dedication will be required.

5. Preliminary Private Contract Plans for Subdivisions

   Preliminary sewer plans are processed for subdivisions, either in the County, or a contract city, for which a Bond and Agreement is required as a condition for filing of the tract. However, final sewer plans must be approved prior to the issuance of the construction permit. See Part IV, Section F of this Manual for further requirements

6. Water Pollution Control Plant and Sewage Pumping Stations.

Public water pollution control plants, disposal systems, and sewage pump stations must be plan-checked, approved and inspected by the Department of Public Works. Also, privately owned sewage pumping or lift stations which are part of a private or building sewer as required by subsection (f) of Section 1105 of the Plumbing Code, including private pumping stations which discharge directly into a public sewer through a large or extensive force main, must be processed as a private contract through the Land Development Division. Plans are processed through the Sewer and Water Design Section of the Design Division.

B. SUBMISSION OF PLANS FOR PROCESSING

Sanitary sewer plans must be prepared and signed by a Civil Engineer registered in the State of California.

The processing of a private contract will not commence until the required plan checking fees have been submitted. The items necessary for plan check include:

1. Required plan checking fee. If improvement is located within a contract city, this fee shall be deposited with the city.

2. If project involves easement acquisition, required sketches and fees must be submitted.

3. Two ozalid blue line prints of plans.

4. Separate reproducible index map.

5. Area study.

6. Field notes showing ties to existing outlet sewer, elevations of existing inlets and outlets, and existing elevations of surface over proposed sewer.

7. Approved road plans are required if public sewers are to be located in dedicated or private streets of a new subdivision.

8. Plot plan and approved grading plan on certain projects.

9. Print of approved private drain plans where drainage structures are required.

10. Print of tract or parcel map for all such developments.

The above listed items are fully described elsewhere in this Manual.Private contract sanitary sewer plans are checked and approved in the Road, Sewers and Water Section of the Land Development Division and then transmitted by the engineer for final approval to the agency responsible for treatment and disposal of the sewage.

The plans will be checked for accuracy, compliance with Public Works Standards, and conformity with prevailing laws and ordinances. Before the checking can be completed, you will be required to submit the necessary Letters of Participation, Offers of Dedication, Underground Letters, Bonds and Agreements, and other required documents, fees and deposits.

PART II

DESIGN REQUIREMENTS

A. PLAN AND PROFILE

1. Sample Plan and Profile

A sample plan and profile is enclosed with this Manual. Current procedures and instructional notes have been shown and referral to these plans will answer many questions.

2. Standard Sheet Size

Standardized tracing cloth sheets (32 inches long) with preprinted title pages are available from local blueprint agencies. The use of these sheets will greatly expedite plan and profile preparation. Upon complete approval of the plans, these sheets become the property of the County of Los Angeles.

3. Depth of Main Line Sewer

The minimum depth of a residential sewer is that depth necessary to obtain a house lateral depth of 6 feet below curb elevation at property line. The depth is 7.5 feet if the grade of curb is accurately known and 8.0 feet if curb grades are accurate to ±6 inches. However, in some cases, if the existing outlet sewers are too shallow to obtain such a depth, a shallower depth may be approved. The County may require greater depths when it is necessary to extend the main line sewers to serve other areas.

4. House Lateral Sewers

A 4-inch or 6-inch internal diameter house lateral sewer shall be provided in the street from the main line sewer to the property line for each lot as specified in Section 20.32.510 of Los Angeles County Code-Title 20.

5. Depth of House Laterals

a. The minimum depth at the property line for house laterals shall be 6 feet below the curb grade or street center line as specified in Section 20.32.520 of Los Angeles County Code-Title 20.

b. Depth shall also be sufficient to provide service to the lowest or farthest point to be served on each lot at a minimum grade of 2% with not less than two feet of cover over the top of the pipe. A subminimum grade of 1% on private property may be acceptable if approved by the Building and Safety Division.

c. When ground water is present the depth of house laterals at the property line may be 5 feet below the curb grade or street center line.

d. Where street widening lines have been established by Title 22, the Zoning Ordinance, the minimum depth shall be measured at such established lines. If house laterals are constructed before the existing street is widened, the depth at the property line shall be such that extension at the same straight grade and alignment to the new property line will produce the required depth.

B. AREA STUDY

An area study must be made for all private contract sewer projects. The private engineer should consult with the Road, Sewers and Water Section of the Land Development Division whenever there are questions on the study area. Normally the area study should be made in pencil on vellum to a scale of 1"=600'. The study must show not only the district being served but all areas tributary to the sewers under study. A North Point must be shown normally pointing towards the top of the sheet.

As an adequate area study is necessary to determine depth, capacities, and other critical design data, it is required that the study show the following:

1. Major street names.

2. Contour lines (on back of vellum).

3. Zoning, when it will affect the quantities.

4. Existing or proposed utilities, storm drains, State highways, etc. which may have a bearing on sewer design.

5. Sanitation District, Municipal Water District, Improvement District, Reimbursement District, City and other boundary lines of influence.

6. Depths of existing sewers that could be used for an outlet connection where depth is critical.

7. Tributary areas served should be identified and acreages should be noted. Color contributing areas by outline only on the back of the vellum so prints can be made.

8. Capacities of existing systems shall be thoroughly investigated and noted.

9. Existing and proposed sewers showing pipe size and grade should be identified.

10. Directions of sewer flows if not clearly understood.

11. Existing and proposed pipe sizes over 8 inches in size and grades in critical areas.

C. DATUM REQUIREMENTS

The elevation shown on all sewer plans must be the Sea Level Datum of 1929, as established by the U.S. Coast and Geodetic Survey.

Information and recent adjusted elevations of established bench marks may be obtained by contacting the Survey Division, by telephone, 226-8257.

Bench marks are assigned to all tracts by the Road Element of the Department of Public Works. The elevation of all existing inlets and outlets relative to a sewer design must be determined by actual field survey. These field notes must be submitted by the private engineer when the sewer plans are submitted for checking. In no case will there be any equation between the elevations as shown on the profile and the acceptable bench mark.

The bench mark note is to appear in the upper left hand corner of Page 1 of the plans (Title Page).

The bench mark is to be shown within a flag as noted below.

	Name or Number	USC & G ELEV.	Book	Page
Line 1.	"H-145"	726.142 feet	CEFB 852	92

General Location

Line 2. City of South El Monte, 1st Avenue and 2nd Street, N.E. Corner.

Specific Point

Line 3. Spk. in P. P. So. Cal. Ed. Co. No. 699454 or L & T 5' E of East end of C.R.

EXAMPLE: BM H-145 Elev. 726.142 CEFB 852-92

City of South El Monte, 1st Avenue and 2nd Street NE Cor. L & T 5' E of East end of C.R.

D. SURFACES AND PROFILE

It is very important that the elevation of the existing ground surface or of the proposed finished surface be shown on the profile. This surface serves to determine the elevation at which the main line sewer and the house laterals are designed. Refer to the Sample Plan and Profile for information concerning the proper method of showing curb grades, top of manhole elevations, grades for alleys, surface over sewer and grade of street center line.

E. UNDERGROUND UTILITY INTERFERENCE

One of the most important design requirements of a sewer plan is the study of existing, and, in some cases proposed, underground pipes and utilities. These will affect both the location and depth of the main line sewer and house laterals.

1. Source of Information

Prior to beginning the sewer layout, acquire data of existing or proposed pipes and utilities from the Construction Division, Underground Section, and the private or public companies involved.

The County is not responsible for the accuracy of the location of these underground lines, and a note to this effect is required on the Title Page of each plan.

2. Showing Underground Lines on Plans

Show and label and dimension on the plan all existing underground work that crosses or parallels the sewer, the size of pipe or conduit, and the name of the company owning it. Show, label and dimension on the profile all telephone, gasoline and oil lines, and any other line 12" or more in diameter. In the event any proposed underground work, such as a large storm drain, necessitates a special design of the sewer, show the proposed work by dashed lines in both Plan and Profile and designate thus: "Proposed 48" Storm Drain." Careful studies should be made of gas, gasoline and oil lines, which, if broken during construction, could cause considerable damage and injury.

3. Required Letter

A form letter (refer to Plate No. 13) is furnished to the designing engineer during the plan checking. This

letter must be completed and signed by the Registered Engineer preparing the sewer plans.

4. Design Criteria Near Water Wells and Mains

The location of water well sites in the vicinity of a proposed sewer must be thoroughly investigated. If design requirements dictate that a sewer or structure be closer than 50 feet to a water well, special approval must be obtained from local health agencies. The Road, Sewers and Water Section of the Land Development Division should be contacted regarding such situations prior to design.

Refer to Standard Chart S-C1 for the design requirements of a sewer to be constructed in the immediate vicinity of pressure water mains.

Note: When a main line sewer is being designed parallel to a water line, a minimum of 10 feet of clearance must be maintained between the outsides of the two pipes. Any distance less than 10-feet requires special approval.

F. GEOLOGIC INVESTIGATION

The Department of Public Works requires the drilling of test holes in any area suspected of having high perched ground water or peculiar soil conditions. These test holes may be made with a regular post-hole digger and should be dug at least two feet deeper than the proposed sewer depth. This is mandatory in the design of a sewage pump station. The results of the test holes must be shown on the plans. Refer to Standard Chart S-C3 for standard soil symbols and a standard test hole symbol used by this office. Particular attention is directed to the elevations on the test holes. It is mandatory that the elevation of the top of the test hole be shown on the plans. The location of the test holes must be shown on the Index Map on Page 1 of the plans.

Test holes are required so that construction conditions will be known, and necessary design procedures can be shown beforehand.

A geologic investigation and approved grading plans may be required to ensure that the proposed main line and house lateral sewers will be constructed in stable ground.

G. INDEX MAPS

Index maps for all private contract sanitary sewer projects, besides appearing on Page 1 of the plans, must also be made on a separate drawing. Such maps will be drawn on tracing cloth or vellum 8-1/2" x 11" in size.

1. A scale of 1" = 600' is to be used.

2. At least one major intersection must be shown on the map for orientation.

3. North Points must point up or to the left.

4. Show streets, alleys, rights of way, and railroads with appropriate labels on the map. Show and label all existing sewers in the vicinity. All sewers greater than 8 inches in diameter should be labeled showing pipe sizes.

5. Show the sewer to be constructed with heavy solid lines and indicate plan page numbers in circles.

6. City boundary lines must also be shown and labeled. Use a medium dash-double dot line.

Refer to Plate No. 7 for a sample Index Map and the information to be shown in the title block.

H. TRUNK SEWER CONNECTIONS

Before designing a connection to a trunk sewer, it is always necessary for the private engineer to contact the outlet agency to determine their requirements. They will designate the method and at what point and elevation to make the connection. Agencies providing trunk sewer outlet systems include the following:

a. Los Angeles County Sanitation Districts
1955 Workman Mill Road
Whittier, California 90601
Telephone (213) 699-7411, ext. 417

b. Las Virgenes Municipal Water District
4232 Las Virgenes Road
Calabasas, California 91302
Telephone (818) 880--4110

c. Newhall County Water District
24356 San Fernando Road
Newhall, California 91321
Telephone (805) 259-3610

All inlets shall be designed so as to minimize turbulence in the manhole. Copies of letters to or from County Sanitation Districts, Las Virgenes Municipal Water District, and Newhall County Water District regarding connections to a trunk sewer should be submitted to the Road, Sewers and Water Section of the Land Development Division during plan checking.

1. Trap Manholes.

Trap manholes are installed in collector sewer lines which outlet into a trunk sewer in order to provide a water seal which prevents any gases present in the trunk sewer from reaching the local sewer system.

Under present operating conditions, trap manholes must be installed in all local sewers in metropolitan areas which connect to a trunk sewer, except:

a. Baldwin Hills (Sanitation District No. 11).

b. West Hollywood and Sherman (Sanitation District No. 4).

c. All areas north of the Monterey Hills and Puente Hills (Sanitation District Nos. 15, 16, 17, 21 and 22).

d. Lancaster and Palmdale (Sanitation District Nos. 14 and 20).

e. Saugus-Newhall area (Sanitation District Nos. 26 and 32).

f. Las Virgenes Municipal Water District.

However, no trap manhole is required if the inlet is from a sewer which is not over 350 feet long, has only one manhole which is located at its end, and is never to be extended. Each house lateral from such a sewer must contain a running gas trap as specified in Section 1105.d of the Plumbing Code, which states the type, location and size required.

Double trap manholes may be used, but shall be included in a design only when necessary. Triple trap manholes are not acceptable. In such cases, a junction chamber with three inlets shall outlet into an additional manhole which is a single trap manhole, which in turn outlets into the trunk sewer.

The invert elevation of the inlet to, and the outlet from, a trap manhole, shall be the same. However, if design considerations make it necessary, the outlet may be 0.05 foot lower than the inlet.

For details of a Trap Manhole Base and Castings for sewers of not more than 12 inches in diameter, refer to Standard Drawings, S-10 and S-18.

For details of a Trap Manhole Base and Castings for sewers of fifteen inches in diameter or more, refer to Standard Drawings, S-11 and S-19.

2. Running Trap.

A running trap is required on every house connection made directly to a trunk sewer.

I. SPECIAL TRENCH BACKFILL AND PIPE PROTECTION IN FILL AREAS

In order to design sewers which are to be constructed in filled ground, the relative compaction of the soil must be known. However, in the case of Private Contract projects, the sewers must often be designed before the fills are made.

The following design criteria have been developed to insure that sewers will not fail due to uneven settlement in filled areas, creating a health and safety hazard and a major maintenance problem.

1. Designation of Filled Areas

All proposed or completed filled areas must be shown on the profile. The finished surface over sewer or curb grade must be shown by a solid line; and the original surface by a dashed line labeled "Original Ground Surface." The filled area shall be labeled "Compacted Fill" with arrows to the limits.

2. Trench Backfill in Fills Within New Subdivisions

All trench backfills within new subdivisions shall meet the requirements of the grading plan approved by the Building and Safety Division.

Trenches within street areas shall be backfilled in accordance with Section 306 of the Standard Specifications for Public Works COnstruction and the Special Provisions for the Construction of Sanitary Sewers.

Trenches within easements shall be compacted sufficiently to meet the requirements of the grading plan. This can be accomplished by backfilling to one foot above the pipe with sand and the remainder backfilled in layers not exceeding four inches in thickness with each layer dampened and thoroughly mechanically tamped as specified in Section 306 of the Standard Specifications for Public Works Construction and the Special Provisions for the Construction of Sanitary Sewers.

The following procedures should be noted on the plans for any sewers within easements within the new tract:

a. Show the following note within each area affected with the limits arrowed:

"SPECIAL COMPACTION REQUIRED-SEE NOTE (X), PAGE 1"

b. Add the following note to general notes, page 1:

(X) SPECIAL BACKFILL IN DESIGNATED AREAS

(a) BACKFILL TRENCH AND REPLACE OTHER EARTH REMOVED SO AS TO ACHIEVE THE NATURAL OR FINISHED GRADES AND SLOPES SHOWN ON THE GRADING PLAN APPROVED FOR THIS TRACT BY THE BUILDING AND SAFETY DIVISION.

(b) ALL BACKFILL AND EARTH REPLACED SHALL BE COMPACTED TO A MINIMUM OF 90% OF MAXIMUM DENSITY PER A.S.T.M. STANDARD METHOD OF TEST D698-57T AS MODIFIED. ACCEPTABLE CERTIFICATION OF SUCH COMPACTION SHALL BE SUBMITTED TO THE CONSTRUCTION INSPECTION SECTION OF THE CONSTRUCTION DIVISION.

3. Trench Backfill In Existing Fill Areas

Sewer trench backfilling in fill areas outside of new tracts must be thoroughly reviewed. The Standard Specifications for Public Works Construction and the Special Provisions for the Construction of Sanitary Sewers would apply in such cases for surface restoration, and reference to the grading plan is not necessary. Note (a) under X would not be shown on the plans.

If a fill area is encountered either in a street or easement which has less than 90% relative density of compaction, then Section 306-1.2 of the Standard Specifications for Public Works Construction and the Special Provisions for the Construction of Sanitary Sewers would apply and note (b) under X would be shown on the plans.

4. Protection and Backfill near Building Sites

Special precautions must be taken for any sewer construction near existing or proposed building sites whether in a fill area or not. The load distribution line will commence at and extend downward at a 45 degree angle from the bottom outside edge of the foundation.

If the sewer pipe is below the 45 degree line, it will be encased per S-23 Case I. Also all backfill below the 45 degree line will be in accordance with note (b) of X.

Special methods must be used by a contractor to insure protection to existing buildings while construction is underway. The locations of such buildings must be precisely shown on the plans. However, the construction methods used will be the contractor's prerogative unless indicated on the plans in special cases.

5. Special Support and Protection

If the filled area in which the sewer is being constructed is found by the required field tests to have a relative density of compaction less than 90%, special design for adequate support and protection of the sewers is essential.

If the relative density of compaction is found to be between 80% and 90%, all main line and house latrerals shall be cradled per S-23, Case III or have special base course per S-21, Case III. Special manhole bases per S-14 are also required. If the relative density of compaction is found to be less than 80%, contact the Land Development Division, Road, Sewers and Water Section.

J. SEWAGE PUMP STATIONS

The Engineer should check with the Design Division, telephone 226-8267, before any design work is done on a sewage pump station to determine the type of structure required, and its location. Frequently it is necessary to get a zoning variance, which this office can advise you in obtaining. Building, Electrical and Plumbing permits may be required in addition to the Sewer Construction permit.

However, the applicable permits will be indicated on the plans upon completion of the plan check. When a station is located within a street right of way, the engineer must secure approval of the plans for the structure from the Permit Section of the Construction Division.

K. WATER POLLUTION CONTROL PLANTS AND DISPOSAL FACILITIES

Whenever the need arises for the submission of plans for Water Pollution Control Plants, or other special disposal means for checking, it is mandatory that you contact the Design Division, before any design work is started. A preliminary report covering the exact type of treatment, effluent disposal, location, size, etc., must be submitted and approved by this office, the Los Angeles County Health Department and other regulatory agencies before design work commences.

PART III

FEES AND CHARGES

A. PAYMENTS

All personal checks, cashiers checks, certified checks and money orders for the payment of fees, deposits, charges and permits submitted to this Department are to be made payable to "County of Los Angeles-Department of Public Works." For work within a contract city, payments are made directly to the City.

B. ESTIMATED VALUATION

Whenever the fees are based on valuations, the Department of Public Works will determine the estimated valuation based on approved estimating practices.

C. REFUNDS

When certain fees have been paid and the project is abandoned or cancelled before any work is performed, a refund in the amount of 80% may be authorized. Refer to Section 20.28.070 of Title 20 for further details.

D. REQUIRED FEES

1. Plan checking fees

No plan checking will be performed until the required fee is paid. See Plate No. 1 for a sample plan checking application form.

The plan checking fees are based on the valuation of the project. Refer to Section 20.32.230 of Title 20 for the schedule of fees.

In certain cases, supplemental plan checking fees are required.

2. Reimbursement Charges

Throughout the county, and in some contract cities, several sewer reimbursement districts have been established.

Maps of these districts are maintained by the Land Development Division, Road, Sewers and Water Section, and can be checked for areas involved and connection charges. Such charges may be based on frontage benefit

or acreage, or both, and the total amount due the County will be calculated by the Road, Sewers and Water Section during the plan checking process.

3. Inspection and Record Plan Fees

See Plate No. 2 for a sample Construction Permit Application Form. Unit prices used in computing the valuation of the work are subject to change as conditions warrant. The fees as set forth in Sections 20.32.120 and 20.32.210 of Title 20 are required to cover the cost of field inspection of the proposed construction, preparing record plans, automobile mileage and all overhead and indirect costs. For additional approved work not included in the original permit, an additional fee is required. The Construction Permit will not be issued until a Road Excavation Permit or State Highway Encroachment Permit is obtained, an OSHA Permit from the State of California is obtained and a certificate of Worker's Compensation Insurance is on file with the Department of Public Works, Land Development Division.

Also, the required sets of prints of the plans as outlined in Part V, Section A, must be submitted prior to the issuance of the Construction Permit.

4. Fees for Processing Sewer Easements

For each private contract requiring the processing of sewer easements, a fee is required as set forth in Section 20.32.240 of Title 20. If it is necessary to rewrite the description because of a realignment or revisions, an additional fee is required. See Plate No. 3 for a sample Easement Processing Application Form.

5. Fee for Processing Reimbursement Jobs

For each private contract requiring the processing of reimbursement documents and maps, the fee as specified in Section 20.32.260 of Title 20 in addition to the plan checking fee is required.

6. Fees for Preparing Special Studies

Before proceeding with the preparation of a special area or reimbursement study to serve a specified area, a fee as set forth in Section 20.32.250 of Title 20 is required.

If, after the fee is paid, a change in the study is requested which will increase the cost of doing the work, a supplemental fee shall be collected in the amount of the estimated additional cost. Area studies prepared by others and submitted for checking by the Department of Public Works shall be subject to a fee as specified in Section 20.32.250 of Title 20.

However, there shall be no additional fee collected for the checking of a study required in connection with plan checking for which a fee has been paid under Section 20.32.230 of Title 20.

E. CONNECTION CHARGES

Whenever the sewer plans indicate that house laterals are to be constructed to an existing sewer, and it has been determined that the property did not participate in the cost of the main line sewer, it will then be necessary for the owner of the property to pay a frontage charge to the County.

This charge, as established by the Board of Supervisors and commonly referred to as the "Ordinance Frontage Charge," is specified in Section 20.32.130 of Title 20. The assessable frontage and amount of the charge will be computed by Land Development Division, Road, Sewers and Water Section personnel.

F. SEWER MAINTENANCE CHARGES

Any person who desires to place a newly constructed public sewage system in operation prior to the inclusion of the property benefited in a sewer maintenance district, must pay an annexation and sewer maintenance charge. The amount determined by the Sewer Maintenance Division will cover such cost from the time the sewer is placed in operation until the property is included in a maintenance district and district monies become available to provide for the maintenance and operation of the sewer.

The charge is computed by Sewer Maintenance Division personnel and includes charges for maintaining main line sewers, sewage pumping plants and water pollution control plants. Refer to Section 20.32.280 of Title 20 for the basis of these charges.

G. OTHER CONNECTION CHARGES

1. Sanitation District Charges

There are some instances where a new sewer system must be annexed to a Sanitation District. The necessary papers, petitions and information regarding annexation fees may be obtained at the Sanitation Districts Office. Sewer plans will not be approved until the annexation arrangements have been completed.

2. Other Outlet Agencies

Sanitary sewers in certain portions of Los Angeles County outlet into outfall sewers under the jurisdiction of agencies other than County Sanitation Districts. For information regarding annexation, connection and capacity charges the proper agency should be contacted.

PART IV

PLAN PROCESSING

A. SANITARY SEWER EASEMENTS

All public sanitary sewers must be located either in public rights of way (streets) or easements granted to the County of Los Angeles or contract cities for sanitary sewer purposes. Such easements must be granted to the County by one of the following methods: by dedication on a tract map, or parcel map or by a separate instrument.

The chart found elsewhere in this manual allows information relative to processing the easement under these methods.

Plan Approval

Any easement shown on a sewer plan must be granted to and recorded by the County of Los Angeles before plan approval can be granted. The exception is when an easement is to be dedicated on a tract map or parcel map.

Instructions

Any questions concerning the preparation of legal descriptions and documents and the execution and processing of such documents should be referred to the Land Title Engineer, Valuation/Acquisition Division of the Facilities-Management Department at 738-2421. All correspondence and telephonic communication should refer to the Private Contract sewer number assigned the project.

SANITARY SEWER EASEMENT PROCESSING

STEP	BY SEPARATE INSTRUMENT	WITH A TENTATIVE TRACT & PARCEL MAP
Approval	Obtain approval from Road, Sewers and Water Section of the Land Development Division for location and dimensions of the easement.	Locations of all easements must be approved by Section Head. Easements needed for future sewers may also be required.
Documentation	3 copies of right of way sketch to be submitted to Road, Sewers and Water Section of the Land Development Division. Refer to Plate No. 8. Right of Way Engineering Section of Valuation/Acquisition Division will prepare the easement document.	Easement to be plotted on original Tract or Parcel Map
Title Report	Upon receipt of the sketch from the Engineer the Land Title Section of Valuation/Acquisition Division shall secure an up to date title report on the parcel granting the easement.	Title Report for Tract or Parcel Map Filing is sufficient.
Fees	Fees in accordance with Section 20.32.240 of Title 20 shall be collected.	None.

SANITARY SEWER EASEMENT PROCESSING (Con't.)

STEP	BY SEPARATE INSTRUMENT	WITH A TENTATIVE TRACT & PARCEL MAP
Easement Document Preparation	All necessary documents are prepared by the Right of Way Engineering Section of Valuation/ Acquisition Division. These documents are given to the Engineer to obtain the necessary signatures.	No documentation required. Easement shown and labeled on Tract or Parcel Map
Final Conveyance	Executed documents will be recorded by Land Title Section of Valuation/Acquisition Division.	Easement is dedicated when Tract or Parcel Map is filed.

B. LETTER OF PARTICIPATION

Letter of Participation for each private contract must be on file in this office before the sewer plans will be approved.

Refer to Plate No. 5 for a sample Letter of Participation. Copies of these forms will be furnished by the Land Development Division during plan checking.

The letter of participation lists those properties that are participating in the project.

All properties listed will be exempt from any ordinance frontage charges at the time connection to the sewer is made.

The letter of participation should give a brief description of these properties.

1. Suggestion Acceptable Notes

   a. Tract No. 39000.

   b. All property fronting on the sewers.

   c. Tract No. 39000 and all that property on the west side of sewer easement.

   d. Lots 5, 9, 10 and 12, First Subdivision Tract.

e. That property on the northeast corner of First Street and Second Avenue with 100 feet of frontage on each street.

2. Acceptable Maps

In some cases where it is difficult to describe the parcels participating, it may be acceptable to attach a map to the letter of participation forms. Long legal descriptions only are undesirable.

3. Unacceptable Notes

a. "1136 Sunshine Lane"

b. "Bob Jones"

c. "Robert Smith's property"

4. Signature

A Letter of Participation must be signed by the property owner or owners constructing the sewer project. For a new subdivision, the developer may sign the Letter of Participation. The engineer preparing the plans does not sign this letter unless he is specifically authorized by the property owners. Notarization of the Letter of Participation is not required.

C. OFFER OF DEDICATION

An offer of Dedication must be prepared for all Private Contracts excepting sewers that are built for a new subdivision, or parcel map, or sewers being constructed as private sewers. Refer to Plate No. 6 for a sample Offer of Dedication form.

Three copies are to be signed, notarized and returned to the Road, Sewers and Water Section of the Land Development Division. If the instrument is executed by a corporation or partnership, appropriate notary acknowledgements must be attached and the corporate seal affixed. An Offer of Dedication for a new subdivision or parcel map will be included in the agreement accompanying the bond guaranteeing the construction of sewers or on the signature sheet of the tract map and therefore no separate Offer of Dedication is needed.

Your attention is directed to the statement on the form that sewers are constructed for public use and are offered for dedication. Upon acceptance, the County (or contract city) assumes all further responsibility for the operation and maintenance of the main line sewers.

D. BONDS AND AGREEMENTS

If the installation of sanitary sewers is required as a condition for the filing of a subdivision, the sewers must either be constructed by the subdivider and accepted by the County, or if the required sewers have not been completed, certain bonds must be posted before the tract or parcel map can be filed.

The cost estimates, for the bonds and agreements are prepared by the Sanitary Engineering Section of the Land Development Division at the time of plan checking.

Four copies of the bonds and agreement forms are furnished the subdivider. After execution, one is retained by the surety, one by the subdivider, and the original and one copy are returned to the Subdivision Section of the Land Development Division for transmittal to the Board of Supervisors for acceptance.

If a reimbursement contract is involved, a special agreement form is prepared and the original and three copies of the executed faithful performance bond, the bond for labor and materials and the reimbursement agreement are returned. One completely executed copy of these documents showing County approval is returned to the subdivider.

All the above-mentioned forms are prepared and furnished by the Subdivision Section except the reimbursement agreement forms which are available in the Road, Sewer and Water Section.

Your attention is directed to the fact that clearance for map filing is never given to the Board of Supervisors by the Department of Public Works until the sewer plans are signed and approved by all agencies concerned.

E. ROAD GRADE APPROVAL

All private contract sewer projects prepared for a new subdivision require street grade approval from the Department of Public Works so that adequate depths and locations can be ascertained.

Until approved road plans are received, the sewer plans cannot be given a thorough and final check nor be approved. If only preliminary road grade approval has been granted, it shall be necessary to deepen or lower the mainline sewer to insure a 6-foot connection at the property line.

F. PRELIMINARY PLAN APPROVAL

Preliminary sewer plans may be approved for any subdivision, except as noted below, either in the County or a contract city, for which a bond and agreement is required as a condition for filing of the subdivision.

1. Preliminary Plans Not Acceptable

Final sewer plans for subdivisions must be approved before the final subdivision map is transmitted to the Board of Supervisors for approval and filing, if:

a. The subdivider applies for reimbursement

b. Another governmental agency, whose approval of the sewer plans is necessary, will not approve preliminary plans.

c. Sanitary sewer rights of way are required outside the subdivision. However, if such rights of way are granted to the County by separate document prior to subdivision filing, preliminary plans may be approved.

2. Requirements

Sufficient engineering data must be submitted to demonstrate that:

a. The design is in accord with the design criteria, Standards and Specifications of the Department of Public Works. b. Final plans will conform to the preliminary plans with only minor changes. The preliminary sewer plans can be submitted at any time after approval of the semi-final tract or parcel map. However, final sewer plans must be approved prior to the issuance of the construction permit.

3. Prints Required

a. Preliminary plans are to be drawn on standard private contract sewer sheets (linen). For preliminary approval, plans may be in pencil, however, final plans must be in ink.

b. Two prints of the preliminary plans shall be submitted by the private engineer for checking.

c. Three sets of prints of the corrected preliminary plans shall be submitted to the Road, Sewers and Water Section for title block stamping and necessary signatures. One approved print will be sent to the Land Development Division, Sanitary Engineering Section, one to the engineer preparing the plans, and one to the outlet agency.

4. Fees Required

a. Plan check fee in full.

b. Right of Way processing fee in full.

c. Maintenance charge.

d. Reimbursement payments and Ordinance connection charges must be paid when applicable.

e. All other applicable fees including annexation charges.

5. Documents and Supporting Data Required

a. Area study.

b. Right of way clearance if not shown on the tract map.

c. Water well locations.

d. Letter of participation.

e. Approved semi-final tract map or parcel map.

6. Additional Supporting Information Required

The private engineer must submit whatever items listed below are needed as requested by the Road, Sewers and Water Section of the Land Development Division.

a. Underground letter if sewers are in existing streets.

b. Field notes.

c. Grading plans.

d. Geology report if project is in critical area.

e. Department of Public Works road requirements and State Highway requirements if special conditions expected. Verbal information and note on check sheet acceptable for preliminary plan.

f. Test borings if ground water or soil conditions critical to job.

g. Print of preliminary road grades by private engineer.

7. Approval of Preliminary Plans

a. The preliminary plans will be approved and signed by:

(1) The Registered Civil Engineer preparing the plans.

(2) The Land Development Division registered Civil Engineer responsible for checking the project in the Road, Sewers and Water Section.

(3) The Assistant Division Engineer of the Land Development Division.

(4) County Sanitation Districts or other similar agency involved.

(5) Any other governmental agency involved with the sewer system.

G. REIMBURSEMENT PROJECTS

In accordance with Section 15007 of the Education Code and Sections 23010.3 and 50140 of the Government Code of the State of California, the Board of Supervisors will enter into reimbursement agreements with individuals, corporations, school districts or subdividers for theconstruction of sewerage facilities that are constructed to serve or benefit additional areas other than the property of the owner constructing the sewer. Payment may be on a long term "deferred basis" or immediate "lump sum."

Generally the steps involved in the processing of a Reimbursement Project are as follows:

1. A comprehensive area study must be prepared. This may be done by the Engineer or it will be prepared by the Land Development Division upon receipt of the special study fee.

2. The reimbursement processing fee must be submitted. This is to provide for the preparation of all agreements, maps, reimbursement calculations, etc.

3. The sewer plans must be completed before final processing can be accomplished.

4. An agreement will be prepared by the Department of Public Works setting forth the maximum amount of reimbursement or an amount equal to a certain percentage of the total cost necessarily incurred in constructing the main line sewer, whichever is the smaller, and also setting forth the terms and conditions under which reimbursement will be paid.

5. After the agreement has been entered into, a Notice Inviting Bids must be published at least once in the "Dodge Construction News-Green Sheet Edition" or in the Daily Construction Service publication. The notice must be approved by the Department of Public Works Department before publishing. Publication must be made at least 7 days prior to the date for opening of bids.

6. Proposal or bid forms must also be submitted to the Department of Public Works for approval before being given to the prospective contractors.

7. Bids submitted by contractors must be accompanied by bid bonds made out to the developer for at least 10% of the total bid price.

8. Sealed bids must be presented at the office of the Department of Public Works on or before the time specified in the Notice Inviting Bids.

   An exception to this is that on school district reimbursement projects, bids may be opened in their offices.

9. Bids will be opened by the Department of Public Works immediately following the time specified in the Notice in the presence of the contractors and any other persons interested in the project.

10. After the bids have been analyzed, the successful bidder will be designated and by written notice the developer will be authorized to enter into a contract for the proposed work. It is mandatory that a contract be entered into with the successful bidder.

11. Upon completion of the construction, receipted bills for the cost of all work relating to the sewer and an Affidavit of Publication must be submitted in triplicate to the Road, Sewers and Water Section of the Land Development Division. The Land Development Division will request these bills and set forth the acceptable form.

12. The Department of Public Works will prepare a claim which, if satisfactory to the subdivider, must be signed by the same persons or corporation who signed the Agreement. If new owners have acquired the property between the time the contract is signed and

the claim for payment is made, authority to pay the new owner in the form of an assignment must be submitted in triplicate. The signatures of individuals and partnerships shall be duly notarized and corporation signatures shall bear the corporation acknowledgement. The signed claim, in triplicate, is to be returned to the Land Development Division. Upon acceptance of the sewers by the Board of Supervisors, the claim will be forwarded to the County Auditor for payment.

13. If the claim is in order, payment will be made in about ten days if lump sum payment was stipulated in the reimbursement agreement. Otherwise payment shall be made as stipulated in the agreement.

H. SPECIAL STUDIES

Quite often it is necessary for an engineer or subdivider to request the Land Development Division to make a special study so that they can determine certain information before they begin the design of a sewer.

These studies may include area studies to determine the most feasible outlet and required pipe sizes; reimbursement studies to determine eligibility and approximate amount of reimbursement and cost to the subdivider; preliminary treatment plant layouts; and other difficult problems.

All such studies will require the Special Study Fee before any work can be started. (Refer to Part III, D-6 for information on fees for Special Studies).

PART V

PROJECT COMPLETION

A. REQUIRED PRINTS OF APPROVED PLANS

The construction permit will not be issued on any private contract sewer project until the approved tracings and prints have been received and distributed as follows:

1. Road, Sewers and Water Section of the Land Development Division (Room 605).

Each Sheet	Original tracing 6 Black and White Prints 1 Van Dyke Negative or reproducible brown line
Index Map	Original tracing 25 Black and White Prints

2. Construction Division, Room 114, 1540 Alcazar Street, Los Angeles, California 90033, (213) 226-8195.

   Each Sheet 4 Black and White Prints

Item "2" applies when a Road Excavation Permit is required for excavation in a public street or highway. The road permit must be obtained before the Sewer Construction Permit will be issued.

The number of prints listed above does not include prints for state encroachment permits, the sewer contractor, the engineer, or the subdivider.

Each approved plan revision will usually necessitate making a new distribution of prints of the pages revised.

B. PERMITS

1. <u>Construction Permit</u>

   This permit covers the charges incurred in inspecting the project while being constructed and the preparation of "as-built" plans.

Before this permit can be issued, the following items must be completed:

a. Plan approval by all agencies concerned.

b. Distribution of prints as enumerated in the preceding section.

c. Obtain Road Excavation Permit and/or State Encroachment Permit if required.

d. Obtain permit to excavate trenches from the State of California, Division of Industrial Safety.

e. Obtain a Certificate of Worker's Compensation Insurance with the Department of Public Works, 550 South Vermont, Los Angeles, California 90020, named as the certificate holder to be notified 30 days prior to cancellation of policy.

f. Complete "Construction Permit Application" and pay fee. If project is located within a contract city fee should be deposited with the City.

The Construction Division, Construction Inspection Section, must be given 24-hour notice before construction is to start so that an inspector can be assigned.

2. Provisional Approval for House Connections

The granting of a provisional permit for a new subdivision authorizes the Building and Safety Division to issue connection permits before construction is entirely completed. However, the subdivider assumes the responsibility for operation and maintenance of the main line sewer. No provisional permit will be issued for "non tract" jobs.

The "95%" completion notice (Refer to Plate No. 9) sent to the subdivider or developer by the Construction Division actually constitutes underground approval of the sewers. Normally, the only work remaining to be done is the new street paving and adjusting of manhole frames and covers.

The request for provisional permits is submitted in quadruplicate on the subdivider's letterhead and should be similar to Plate No. 10. A waiver similar to Plate No. 11 signed by the contractor must also be submitted. Sanitation Districts or other agencies responsible for the final treatment of sewage must grant approval of the project before provisional permits may be issued.

There is no charge for the approval of requests for provisional permits.

3. House Lateral Extension

In some instances, the subdivider wishes to extend the house sewers into the lots to a point 5 feet from the house plumbing outlets while construction of the main line sewer is in progress. If the sample letter shown on Plate No. 12 is submitted to the COnstruction Division prior to final clearance, it will be reviewed and considered for approval. In no case will approval be given unless the letter of request is submitted.

In most cases, these requests will be for new tracts. However, in some particular cases, approval may be given on private contracts other than subdivisions. It is recommended that the main line sewer contractor also put in the extensions. If a second contractor is going to construct the extensions, then the following procedure is required (Refer to Plate No. 12-A): Letters must be submitted by the main line sewer contractor and the permit applicant giving permission for the second contractor to connect to the house laterals before final clearance is given by the COnstruction Inspection Section of the Construction Division. A cleaning deposit and a Construction-Inspection fee must be submitted by the second contractor. The cleaning deposit will be placed in trust and will be refunded if the sewers are cleaned and left in a condition acceptable to the County.

4. Temporary Sewage Disposal

a. Temporary cesspools.

If the sewer system is being constructed in conjunction with a new subdivision, then normally permission for temporary facilities could be given after the Bond of Faithful Performance and Labor and Material Bond is accepted by the Board of Supervisors. Extreme care must be taken to guarantee that all temporary facilities are abandoned and the houses are connected to the new sewer prior to release of the bond. Contact the Construction Division for necessary letters and clearances in all such cases.

b. Tank trucking.

If it is certain that outlet facilities will be available in two to four weeks, requests for tank trucking of sewage from the new system will be considered by the Department of Public Works. A fee to cover inspection and compliance with requirements must be paid if such a request is granted. COntact the Land Development Division for necessary letters and clearances in all such cases.

C. GRADE SHEETS

The County Engineer Standard Sewer Grade Sheets were initiated to standardize the forms on which the private engineer must compile and furnish the necessary construction data to the Construction Division inspector assigned to the project. These grade sheets are setup so that one sheet should be used for each page of plans.

Any questions regarding the use of these forms should be directed to the Construction Division.

A sample grade sheet is shown on Standard Chart S-C2.

D. CHANGE OF PLANS

The procedures listed below are to be followed when a change is desired on any portion of the sewer plans of a private contract.

1. <u>After Plans have Been Checked but Prior to Approval</u>

A fee as specified in Section 20.32.230 of Title 20 shall be paid for any additional work which increases the total valuation.

2. <u>After Plans Approved</u>

a. Letter of Request.

A Letter of Request must be submitted by the private engineer giving adequate information and reasons for the requested plan change. This letter should be directed to the Land Development Division, Road, Sewers and Water Section.

b. Supplemental Fees.

A fee as specified in Section 20.32.230 of Title 20 shall be paid for any additional work which increases the total valuation.

If the construction permit as been issued, a supplemental construction inspection fee will also be required if additional sewer lines or facilities have been added.

c. Revision Approval Box.

A revision box shall be provided on the title page giving a brief but complete description of the revisions. This box shall be prepared as shown below.

REVISION NO._____ DATE _____
Description of revision in full including page number and stationing involved.
APPROVED_____ Department of Public Works/R.E. No.

In some major changes, the signatures of the Assistant Division Engineer of the Land Development Division and the outlet agency Chief Engineer may be required in the above revision box.

d. Revised Prints.

Any revision will require that a complete distribution of new prints be made (refer to Part V, Section A).

A new set of Index Maps will also be required if the revisions affect main line sewer or manhole locations.

e. Rights of Way.

If the plan change involves acquisition of additional sewer easements, the physical construction of any improvements within such easements will not be permitted until the right of way has been granted to the County.

E. AS-BUILT PLANS

The Record (as-built) Plans are prepared by the Land Development Division. All information regarding the sewer construction, as noted by the Construction Division, Construction Inspection Section, is shown on the original tracings of the plan.

A template number is assigned to each page for filing purposes. Upon completion of a sewer project this tracing becomes a permanent public record and is filed in a vault for safekeeping.

Record plans will not be released for placement into the Building and Safety Division District Office permit books for house connection permit issuance until all necessary clearances have been obtained.

Charges for the preparation of record plans are included in the construction permit fee.

PPLICATION FOR PLAN CHECK SERVICES Date _____ D.R. # _____

COUNTY OF LOS ANGELES TR./PM. No. _____

DEPARTMENT OF PUBLIC WORKS Non-Subdiv. Proj. Addr. _____

LAND DEVELOPMENT DIVISION City _____ Location _____

==========

pplicant/Fee Payer _____ Tel. No. ( ) _____

ddress _____ City _____ Zip _____

ngineer/Fee Payer _____ Tel. No. ( ) _____

ddress _____ City _____ Zip _____

==========

.	SUBDIVISION	Map Analysis	Actual	I/S $	F
	9214 - PM's	Easement Checking	Actual	I/S $	F
	9215 - TR's	Monument Checking	Actual	I/S $	F
		Verif. of Conditions	Actual	I/S $	F
		Tax Clearance Proc.	Actual	I/S $	F
		Tax Bond Proc.	Actual	I/S $	F
		Agreemnt/Improvmnt Security	Actual	I/S $	F
		Resubmittal (4th, 6th, 8th)	Actual	I/S $	F
		Overtime - J.N.	$700.PM/$1000.TR	I/S $	D
I.	ROAD	Street Plans	75% of Est. Fee	I/S $	F
		Inspection	Actual	I/S $	D
II.	F.P.M.-0540	J.N. - P.D.	$500.00	I/S $	F/D
V.	F.C.D.	P.D./M.T.D./F.M.	$ 75.00	I/S $	F/D
		Flood Hazard Report	$ 30.00	I/S $	F
.	SEWER-9526	J.N. - P.C.	75% of Est. Fee	I/S $	F
I.	WATER-9229	J.N. 0250.10	$75.00/75% of Est. Fee	I/S $	F/D
ILING/RECORD-0401-				I/S $	F
		San. Sewer Procedural Manual $15.02 + $.98 Tax		I/S $	F
ther _____				I/S $	F/D

.D.M.A. SURCHARGES:

. _____+ II. _____+ III. _____+ V. _____+ VI. _____+ OTHER_____ = $_____ F

UBDIVISION VERIFICATION DEPOSIT:

.N._____ GRDG._____+GEOL._____+II._____+III._____+V._____+VI._____ = $_____ D

OTES: 1. I = Initial, S = Supplemental, F= Fee and D = Deposit
2. Further deposit will be required if actual costs exceed the above amounts.

==========

ashier _____ Check No. _____ TOTAL: $_____
Signature

==========

riginal - Land Dev. Div.
opy - Cashier
opy - Control/LDMA Processed by _____ No. 02231
opy - Fee Payer
/19/85

PLATE I

APPLICATION FOR CONSTRUCTION PERMIT

~~ENVIRONMENTAL DEVELOPMENT DIVISION~~
~~DEPARTMENT OF COUNTY ENGINEER-FACILITIES~~
COUNTY OF LOS ANGELES

Rd. Permit _____

OSHA _____

Work. Comp. _____

Date _____
P.C. No. _____
J.N. _____

Applicant _____ Address _____

City _____ Tele. No. ( ) _____

Name of Project _____ Region _____

Location _____ Thomas Guide Pg. _____

Contractor _____ Address _____

City _____ Tele. No. ( ) _____

Signature of Applicant or Authorized Agent _____

Note: The Contractor shall notify prior to 9:00 A.M.,

Mr. _____, Head Constr. Insp. _____ Region,

Telephone Number _____, 24 hours before starting work under this permit.

DESCRIPTION OF WORK	VALUATION	FEE
I. CONSTRUCTION-INSPECTION AND RECORD PLANS:		
Mainline and House Lateral Sewers	$ _____	
Sewage Pump Station and Force Main	_____	
Treatment and Disposal Facilities	_____	
Others _____	_____	
_____	_____	
TOTAL	$ _____	$ _____
II. SUPPLEMENTAL — Construction-Inspection and Record Plans	$ _____	$ _____
III. L.D.M.A. FEE _____		$ _____
IV. MISCELLANEOUS _____		$ _____
	TOTAL PERMIT FEE $	_____

~~STEPHEN J. KOONCE, County Engineer~~

VALIDATION

By _____ Office No. _____

White — Env. Dev. Div.
Canary — Applicant
Pink — Cashier
Green — Construction Sect.
Goldenrod — LDMA

76A690C (REV. 5/83)

PLATE NO. 2

APPLICATION FOR SEWER EASEMENT PROCESSING

~~ENVIRONMENTAL DEVELOPMENT DIVISION~~
~~DEPARTMENT OF COUNTY ENGINEER FACILITIES~~
COUNTY OF LOS ANGELES

Date _____
P.C. No. _____
J.N. _____

Applicant _____ Address _____

City _____ Tele. No. _____

Name of Project _____

Location _____ Thomas Guide Pg. _____

Engineer _____ Address _____

City _____ Tele. No. _____

Signature of Applicant or Authorized Agent _____

DESCRIPTION OF WORK	FEE

Easement Processing or Vacation Processing Fee:

First Application ☐ Supplemental Application ☐

Rates: First Parcel _____ each Additional _____

Number of Parcels this Application _____ $ _____

Additional Information:

_____

_____

_____

_____

_____

_____

~~STEPHEN J. KOONCE, County Engineer~~

TOTAL FEE $ _____

By _____ Office No. _____

VALIDATION

White — Env. Dev. Div.
Canary — Applicant
Pink — Bus. Mgm't. Div.
Green — Real Prop. Val. & Pl. Div.

76A698E-CE727 (REV. 1/80) PS 8-83

PLATE NO. 3

Application for Sewer Maintenance

SEWER MAINTENANCE DIVISION
DEPARTMENT OF PUBLIC WORKS
COUNTY OF LOS ANGELES

Date _____

P.C. _____

Applicant _____ Address _____

City _____ Telephone No. _____

Name of Project _____

Location _____ Thomas Guide Pg. _____

The above listed applicant hereby applies for immediate maintenance and operation of the sewerage facilities upon acceptance by the County of Los Angeles in accordance with Section 20.32.280 of Los Angeles County Code.

(CHECK ONE BOX)

☐ This fee is to be deposited in the Consolidated Sewer Maintenance District Fund.

☐ This charge is to be placed in the Engineer's Trust Fund and may be expended for the purposes intended until the Sewer Maintenance District is formed. Any amounts remaining are to be transferred to the appropriate Maintenance District when formed.

☐ This donation, for area within the City of _____, is to be placed in the Engineer's Trust Fund to be later transferred to the _____ Sewer Maintenance District.

☐ _____

_____

_____

_____

T.A. TIDEMANSON, DIRECTOR OF PUBLIC WORKS

TOTAL FEE $

By _____ Office No. _____

_____
VALIDATION

White — Sewer Maintenance Division
Yellow — Applicant
Pink — Bus. and Finance Division
Green — Land Development Division

76 A 690 F-CE 697 5/85

PLATE NO. 4

PC-8 10-64

LETTER OF PARTICIPATION

Date _____

Private Contract _____

Director of Public Works
550 South Vermont Avenue
Los Angeles, California 90020

Tract No. _____

Dear Sir:

The following is a full and complete list of all abutting properties which have contributed to the cost of construction of the sewer system constructed under Private Contract No. _____:

(Notarization not required)

_____
(Signature)

NOTE: Properties connecting to public sewers constructed at no cost to the abutting property may be made subject to charges as prescribed by Sections 20.32.130, 20.32.140, 20.32.150 of the Los Angeles County Code as amended.

PLATE NO. 5

OFFER OF DEDICATION

Honorable Board of Supervisors
County of Los Angeles
California

We hereby declare that the sanitary sewers and appurtenant structures constructed under Private Contract No. in accordance with the plans filed in the Office of the Department of Public Works are built for public use and that upon their acceptance by the County of Los Angeles, all right, title, and interest of the undersigned in and to said sewers shall vest in said County.

(Corporate Seal)

(print name under each signature)

Subscribed and acknowledged to before me this _____ day of _____, 19____.

_____
Notary Public in and for the County of Los Angeles, State of California

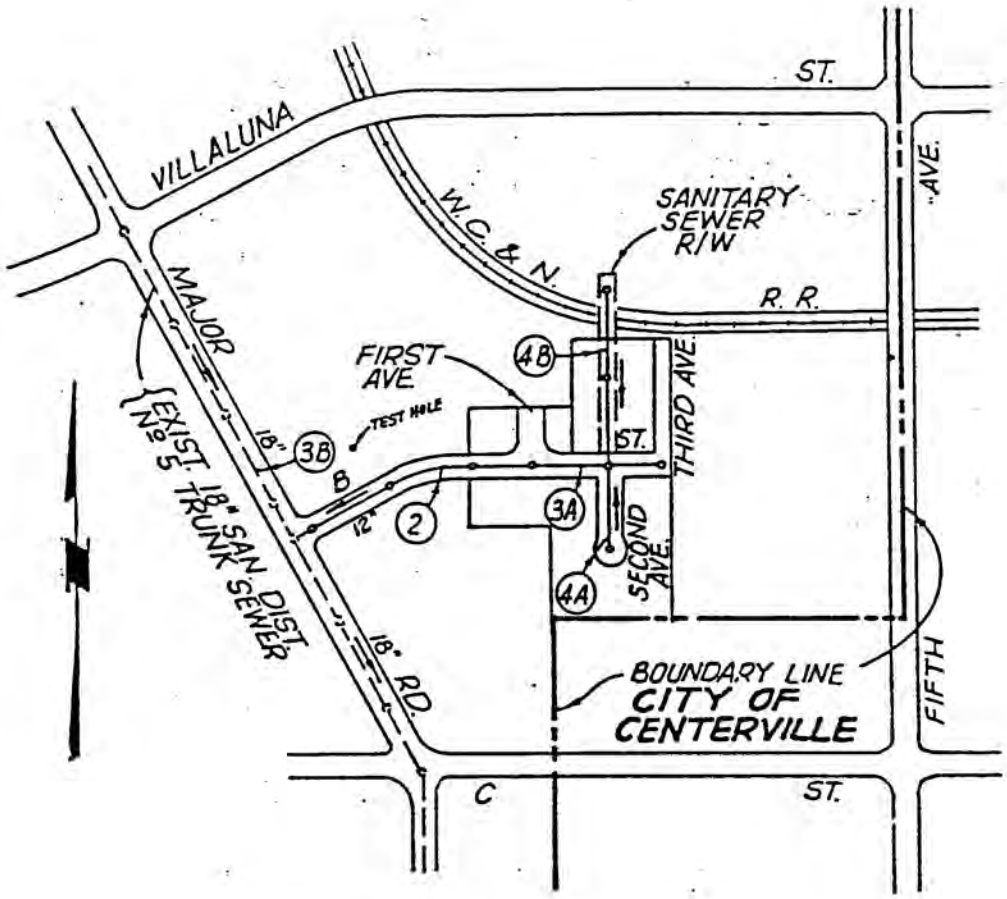
NOTE: If the above instrument is executed by a corporation or partnership, appropriate notary acknowledgments are to be attached.

JMC101

PC-6 2-64
Rev. 10-85

PLATE NO. 6

8½"



1"

11"

NOTES

NUMBERS IN CIRCLES INDICATE PAGE NUMBERS

SHOW NEAREST MAJOR STREETS

USE 8½" x 11" VELLUM

¼"

INDEX MAP
(NAME OF JOB)
P.C. _____
T.G. _____
SCALE: 1" = 600'

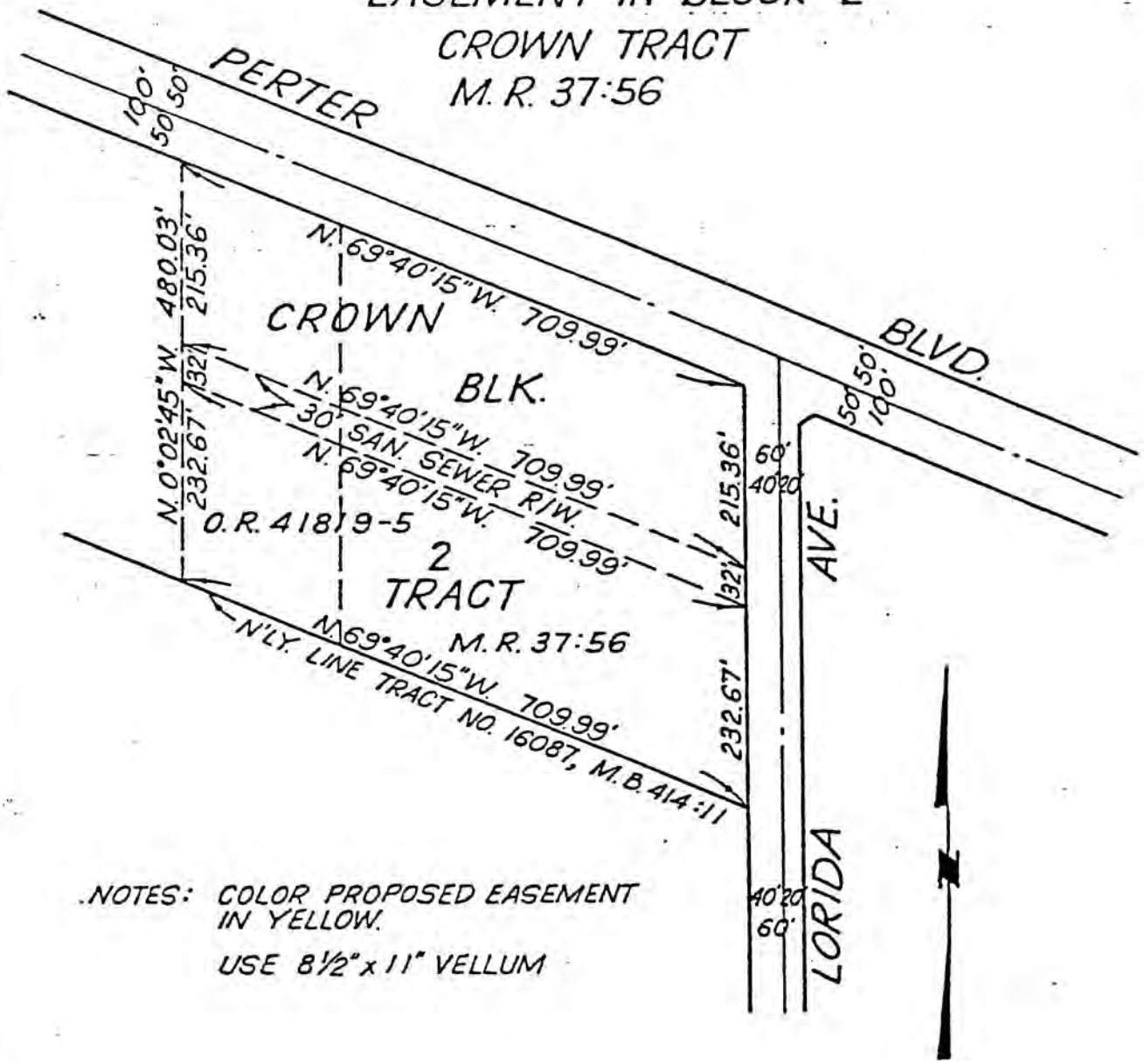
APPROVED:
T. A. TIDEMANSON
DIRECTOR - DEPT. OF P.W.
by _____ Date _____

R.E. Nº _____

DEPARTMENT OF PUBLIC WORKS

PLATE NO. 7

PROPOSED SANITARY SEWER EASEMENT IN BLOCK-2 CROWN TRACT M.R. 37:56



NOTES: COLOR PROPOSED EASEMENT IN YELLOW.

USE 8½" x 11" VELLUM

P.C. Nº _____

W.S. _____

SCALE: 1" = 200'

Rev. 1-80

PLATE NO. 8

(LETTERHEAD)

--SAMPLE--
95% COMPLETION LETTER

This letter sent to permittee,
copy to Central Office.

For your information, construction of the sanitary sewers on the above captioned project has been completed, cleaned, and tested, except for the work described below.

The work which remains to be done consists essentially of adjusting the manholes to finished pavement grade and the removal of sand traps in all outlets; this work cannot be accomplished until the paving is completed.

When the paving is completed, notify this office, telephone 213-226-8281, so that arrangements can be made for a final inspection. You must be represented at this inspection by someone capable of removing and/or replacing sand traps. This inspection will be made to ascertain that manholes have been adjusted properly and that sewer lines are clean.

Provisional permits to connect houses to the sewer may be issued provided the subdivider, by letter, accepts responsibility for cleaning and maintaining the sewer until all work is completed and accepted. The letter (four copies) should agree in form to the attached sample.

Also, four copies of the attached waiver form are required.

Very truly yours,

T. A. TIDEMANSON
Director of Public Works

Supervising Civil Engineer III
Contract Administration &
Construction Division

Attachment

JMC85

Rev. 10-85

PLATE NO. 9

Bring to Subdivision Inspection
Room 107

SAMPLE LETTER
(Subdivider's Letterhead)

(If in a contract City, change the words "Director of Public Works" to "City Engineer).

Mr. T. A. Tidemanson
Director of Public Works

Attention: Mr. C. Rubenacker

REQUEST FOR PROVISIONAL HOUSE CONNECTION PERMITS
SEWERS IN TRACT NO._____
PRIVATE CONTRACT NO._____

Permission is requested to connect the houses on Lots_____ _____of Tract No._____to the main-line sewer constructed under Private Contract No._____. The certificate of partial acceptance pending manhole adjustments and cleaning was issued by the Director of Public Works on_____.

Until such time as the streets have been paved, the manholes adjusted to finished street grade, and the sewer cleaned, inspected and found satisfactory by the Director of Public Works, we will assume all responsibility for the protection and maintenance of the sewers and appurtenances.

We will install three 4" by 4" posts, eight feet long, set three feet into the ground around the perimeter of all manholes in areas where construction equipment travels or operates, such posts to be maintained in place until the start of final paving operations; or as an alternative to the posts described above, we will protect the manhole against physical damage by equipment and will install close-fitting covers of plywood completely covering the manhole channel and shelf so that dirt or other material cannot enter the sewer.

Under the supervision of the Director of Public Works, we will install sand traps per Standard Plan S-20 in the first manhole upstream from any operating sewer in such manner that no dirt, sand, or other debris can be washed into, or enter the existing sewers in operation.

We will maintain in place, the sand traps and any channel covers until the final paving is in place and manhole frames have been adjusted to grade, and remove such sand traps and channel covers after final inspection by and in the presence of the Director of Public Works.

PLATE 10

Also, we will seal the tops of all manholes subject to drainage infiltration in a watertight manner satisfactory to the Director of Public Works. Such watertight sealing will be maintained in effect until final paving of the immediate area.

It is our understanding that if this request is approved by the Director of Public Works, provisional house connection permits will be issued, and upon final acceptance of the sewers, these permits will be considered permanent.

Attached is a signed waiver from our sewer contractor approving the use of the sewer.

_____
Name of Subdivider

_____
Signature of Subdivider
or Authorized Representative

APPROVED: T. A. Tidemanson
Director of Public Works

By_____ Date_____
Subdivision Inspection
Construction Division

CR:mbw
Attachment - 1

PLATE 10A

HOUSE CONNECTION WAIVER

Private Contract No._____

Tract or Parcel Map No._____

County of Los Angeles
Department of Public Works

Date_____

I am the contractor for the above described sewer project, which is now under construction. I hereby approve the issuance by the County of Los Angeles of house connection permits to connect to the sewer prior to acceptance.

_____
Name of Contractor

_____
Address

By_____
Authorized Agent

PLATE 11

SAMPLE LETTER

(Subdivider's Letterhead)

Date

Mr. T. A. Tidemanson
Director of Public Works

Attention Mr. C. Rubenacker

Dear Sir:

FOUR-INCH HOUSE LATERAL EXTENSIONS
P. C. NO._____ TRACT NO._____
VICINITY OF_____

We request permission to extend the sanitary sewer house laterals at the time the main line sewer is laid under Private Contract No._____ to a point within five feet of the houses in the above numbered tract.

Our engineer will set stakes in each case at the point where the house lateral ends.

I understand that this work must be done concurrently with the main line construction.

No final hookups will be made to the house sewers until permits have been obtained from the Division of Building and Safety, and inspection and approval obtained on each such final hookup.

Our Contractor is_____, _____
(Name) (Address)

_____, California.

Lots No._____, to_____are to be connected in this manner.

Yours very truly,

_____
Subdivider

cc: (2)

Rev. 10-85

PLATE NO. 12

SAMPLE LETTER

(Subdivider's Letterhead)

Date

Mr. T. A. Tidemanson
Director of Public Works

Attention Mr. C. Rubenacker

Dear Sir:

4-INCH HOUSE LATERAL EXTENSIONS
P. C. NO._____ TRACT NO._____
BUILDING DISTRICT OFFICE NO._____

We request permission to extend the sanitary sewer house laterals laid under Private Contract No._____ to a point within five feet of the houses in the above numbered tract.

Our engineer will set stakes in each case at the point where the house lateral ends, except in those cases where the location of the plumbing outlet is clearly evident.

No final hookups will be made to the house sewers until permits have been obtained from the Division of Building and Safety, and inspection and approval have been obtained on each such final hookup.

We understand that an amount sufficient to cover the estimated cost of special inspection of the work must be deposited in trust with the Department of Public Works before work can be started.

Our Contractor is_____, _____
(Name) (Address)

_____, California.

Lots No._____to_____ are to be connected in this manner.

Yours very truly,

_____
Subdivider

Rev. 10-85

PLATE NO. 12 A

T. A. Tidemanson, Director of Public Works

Attention: Mr. Brian D. Hooper Date_____

Dear Sir:

PRIVATE CONTRACT NO._____

SEWER IN_____

VICINITY_____

I have checked with the agencies having jurisdiction over the dedicated roadways, (Los Angeles County Department of Public Works and/or State Division of Highways), and they have approved the location of the proposed sewers.

I have made a search of the available records as well as a physical inspection of the site and all water wells found within 200 feet of the sewers, if any, are shown on the plans.

In compliance with Section 20.32.550 of the Los Angeles County Code I have checked and determined from the following utility or other companies having easements or substructures in the affected area, that the location and size of such structures, as shown on the submitted plans are the same as shown upon such company's record and to the best of my knowledge there is no interference with the proposed sewers.

_____

_____

_____

_____

_____

REG. C.E. NO._____

JMC100

PC-11 Rev. 10-85

PLATE NO. 13

PLATE NO. 14

S.M. _____ ELEV. _____

_____ QUAD. 19 _____

SEE SAMPLE PLAN (ENCLOSED)

PLANS TO BE PREPARED ON LINEN

GENERAL NOTES:

CONSTRUCTION NOTES:

MAPPED, ENGINEERED AND CLERED BY

SANITARY SEWERS

PAGE 1

TO BE CONSTRUCTED BY

PRIVATE CONTRACT NO.

W.O.

_____ SHEETS, _____ PAGES

SCALE: HOR. 1" = _____ VERT. 1" = _____ , 19__

PREPARED IN THE OFFICES OF

BY _____

RCE C.E. No. _____

COUNTY OF LOS ANGELES, CALIFORNIA

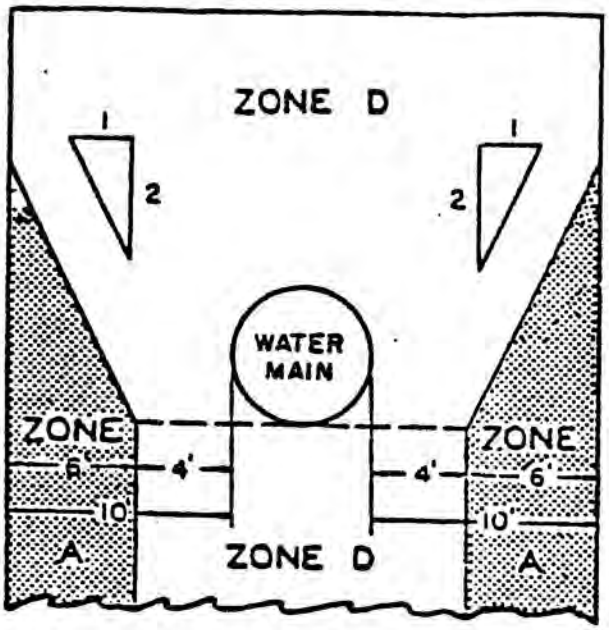
APPROVED _____ APPROVED _____

DIRECTOR _____

ON _____

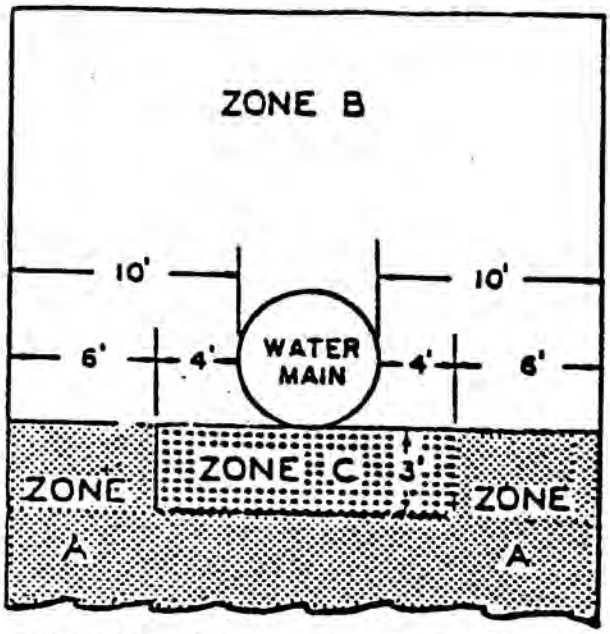
_____ SURVEY DIST. _____ T.M. _____

P. C. _____ PAGE _____



PARALLEL CONSTRUCTION

IF A MAIN LINE SEWER CANNOT BE LOCATED TEN OR MORE FEET FROM A PRESSURE WATER MAIN IT MUST BE LOCATED WITHIN ANY OF THE ABOVE INDICATED ZONES, SPECIAL CONSTRUCTION WILL BE REQUIRED AS SHOWN BELOW



PERPENDICULAR CONSTRUCTION

IF A MAIN LINE SEWER MUST CROSS A PRESSURE WATER MAIN WITHIN ANY OF THE ABOVE INDICATED ZONES, OR IF A HOUSE LATERAL MUST CROSS IN ZONE B, SPECIAL CONSTRUCTION WILL BE REQUIRED AS SHOWN BELOW

ZONE	SEWER CONSTRUCTION REQUIREMENTS
A	V.C.P. WITH MECHANICAL COMPRESSION JOINTS.
B or C	C.I.P. WITH LEAD OR APPROVED MECHANICAL JOINTS; OR V.C.P. WITH SPECIAL CONCRETE ENCASEMENT PER (S-23 CASE III); OR V.C.P. GROUTED IN CONTINUOUS STEEL CASING.
D	DO NOT LOCATE ANY PARALLEL SEWER IN THIS AREA WITHOUT HEALTH DEPARTMENT APPROVAL.

FORCE MAINS:

PARALLEL CONSTRUCTION NOT PERMITTED IN ANY ZONE

PERPENDICULAR CONSTRUCTION IN ANY ZONE REQUIRES C.I.P. WITH LEAD OR APPROVED MECHANICAL JOINTS; OR ASBESTOS CEMENT PIPE WITH SPECIAL CONCRETE ENCASEMENT PER (S-23 CASE III).

THESE CRITERIA WERE ESTABLISHED BY THE LOS ANGELES COUNTY HEALTH DEPARTMENT, IN ACCORDANCE WITH SECTION 542 OF THE HEALTH CODE ORDINANCE 7583.

DESIGN REQUIREMENTS FOR SANITARY SEWERS IN THE VICINITY OF PRESSURE WATER MAINS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

COUNTY ENGINEER STANDARD S-C1

DATE: 3/80

DESIGN RCE 10433

Engineer: ____________

Date: ____________

COUNTY OF LOS ANGELES

STANDARD SEWER GRADE SHEET

Sheet ___ of ___ Sheets ______

P.C. NO. ______

PAGE No. ___ SEC. ___

STREET ______

Station	Main Line Sewer: Surface Elev. over ℄ of M.L.S.	Main Line Sewer: M.L.S. Invert Elev.	Main Line Sewer: Cut	House Laterals: Curb Elev. Above end of H.L.	House Laterals: Elev. of Invert at End of H.L.	House Laterals: Depth of Invert below Curb or ℄/St.	House Laterals: Cut	Stakes Set: / Remarks

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

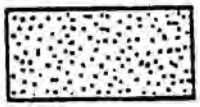
COUNTY ENGINEER STANDARD

DATE: 3/80

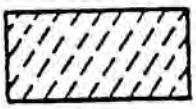
S-C2

DESIGN

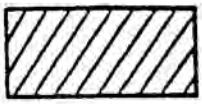
R.C.E. No. 18,594



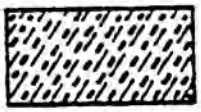
Sand



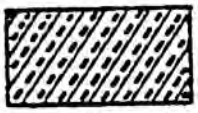
Silt



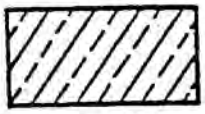
Clay



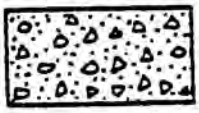
Silty Sand
or
Sandy Silt



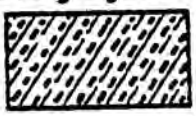
Sandy Clay
or
Clayey Sand



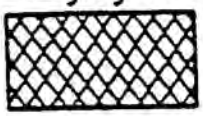
Silty Clay
or
Clayey Silt



Gravel

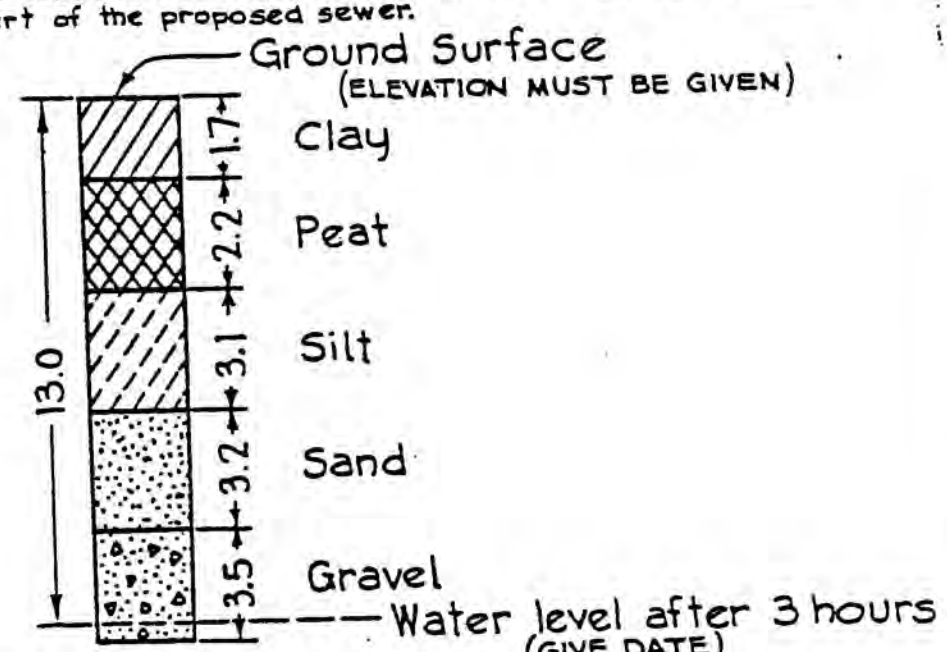


Sandy Silty Clay
Silty Clayey Sand
Clayey Sandy Silty



Muck
and / or
Peat

NOTES: Soil types other than those shown above will be identified by description, not by symbols.
Soil type identification is made by field inspection of test hole samples taken to a minimum depth of at least two feet below the invert of the proposed sewer.



TYPICAL TEST HOLE
(SHOW LOCATION)

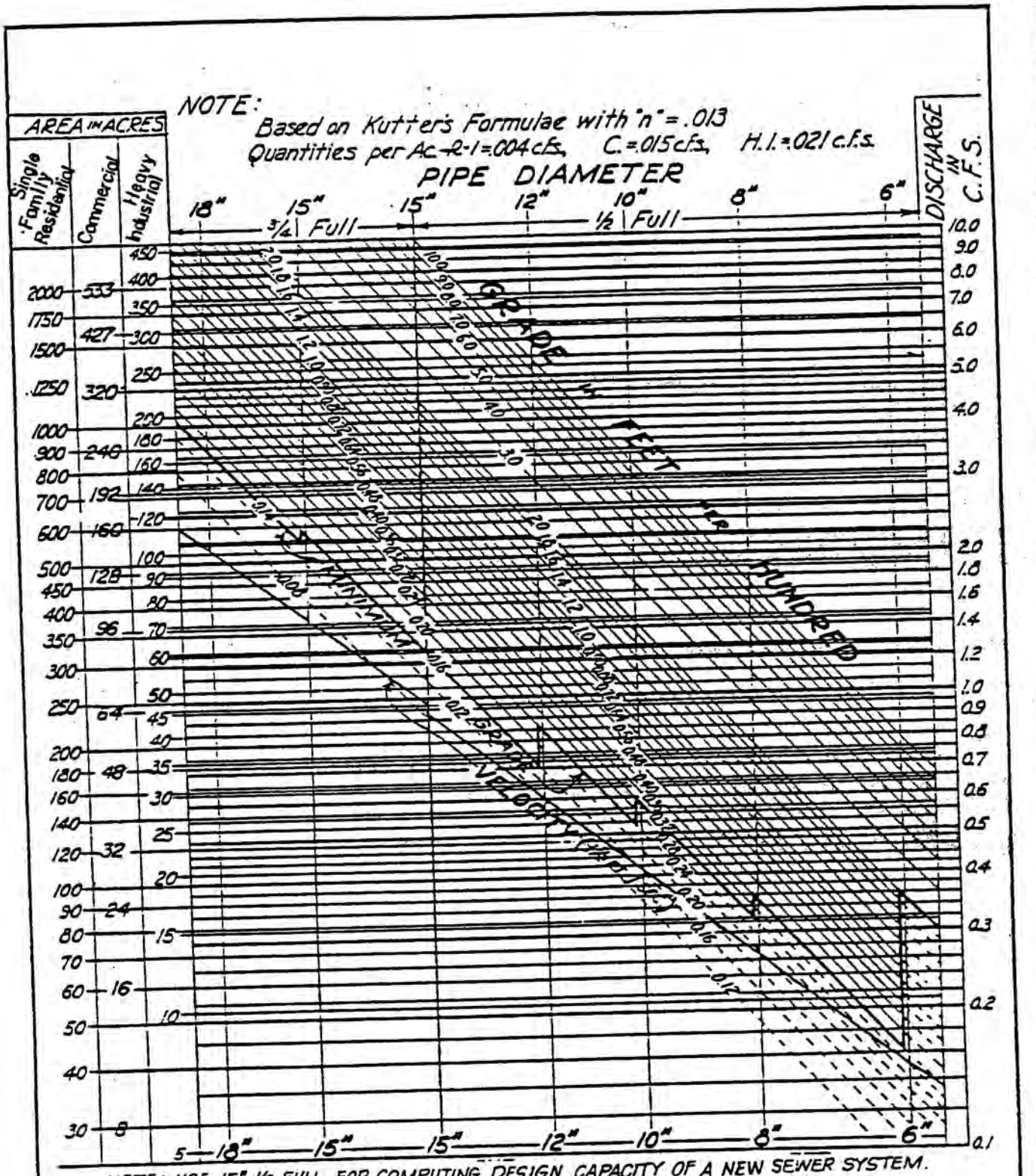
STANDARD SOIL SYMBOLS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

COUNTY ENGINEER
STANDARD S-C3
DATE: 3/80
DESIGN RCE 10493



NOTE: USE 15" ½ FULL FOR COMPUTING DESIGN CAPACITY OF A NEW SEWER SYSTEM.
USE 15" 3/4 FULL FOR CHECKING CAPACITY OF EXIST. SEWER SYSTEM.

FLOW DIAGRAM FOR THE DESIGN OF CIRCULAR SANITARY SEWERS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

COUNTY ENGINEER STANDARD **S-C4**

DATE: 3/80

DESIGN RCE 10443

NORMAL DROPS STRAIGHT THROUGH MANHOLES FOR MINIMUM GRADES OR GREATER EXCEPT AS NOTED BELOW

	INLET	8"	10"	12"	15"	18"
OUTLET	8"	.10	.10	.10	.10	.10
	10"	.17	.10	.10	.10	.10
	12"	.33	.17	.10	.10	.10
	15"	.58	.42	.25	℄	—
	18"	.80	.71	.63	.50	℄

NOTE: FOR RIGHT ANGLE CONNECTIONS, ADD 0.10 OF A FOOT TO EACH OF THE ABOVE VALUES.

WHEN PIPES ON BOTH SIDES OF THE MANHOLE ARE THE SAME SIZE AND THE AVERAGE OF THE GRADES ON BOTH SIDES EXCEEDS 2.50 %, AN AVERAGE DROP SHALL BE TAKEN ACROSS THE MANHOLE, NOT TO EXCEED .60, INSTEAD OF THE VALUES IN THE ABOVE TABLE.

NORMAL DROPS STRAIGHT THROUGH MANHOLES FOR GRADES LESS THAN MINIMUM EXCEPT AS NOTED BELOW

	INLET	8"	10"	12"	15"	18"
OUTLET	8"	℄	—	—	—	—
	10"	.10	℄	—	—	—
	12"	.18	.10	℄	—	—
	15"	.31	.23	.14	℄	
	18"	.80	.71	.63	.50	℄

NOTE: FOR RIGHT ANGLE CONNECTIONS ADD 0.10 OF A FOOT TO EACH OF THE ABOVE VALUES.

NOTES: 1. ℄ INDICATES NO DROP ACROSS M.H. AND ELEV. TO BE SHOWN AT THE CENTER OF MANHOLE.

2. FOR TRAP M.H.'S ALL INLETS TO BE AT SAME ELEVATION. OUTLET MAY BE 0.05 OF A FOOT LOWER.

3. PERMISSION FOR DEVIATIONS FROM THE ABOVE VALUES, OR SMALLER DROPS FOR PIPES OVER 18", TO BE APPROVED BY THE COUNTY ENGINEER.

4. THE MINIMUM GRADES FOR VARIOUS PIPE SIZES ARE DETERMINED BY THE CHART ON COUNTY ENGINEER STANDARD S-C4

TABLE FOR COMPUTING NORMAL DROPS THROUGH MANHOLES

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

COUNTY ENGINEER STANDARD **S-C5**

DATE : 3/80

DESIGN RCE 10443

SANITARY SEWERS

- INDICATES SANITARY SEWERS AND MANHOLES TO BE CONSTRUCTED.
- INDICATES EXISTING SANITARY SEWERS AND MANHOLES.
- INDICATES PROPOSED SANITARY SEWERS AND MANHOLES, OR SHOWN ON ANOTHER VIEW.

Y's & T's

- INDICATES "Y" BRANCH ONLY.
- INDICATES "T" OR "Y" BRANCH. (OPTION)

HOUSE LATERALS

- H.L.'s INDICATES HOUSE LATERALS
- INDICATES HOUSE LATERAL TO BE CONSTRUCTED.
- INDICATES EXISTING HOUSE LATERAL.
- INDICATES PROPOSED HOUSE LATERAL, OR SHOWN ON ANOTHER VIEW.

CHIMNEY PIPE

- (PROFILE) - INDICATES CHIMNEY PIPE PER S-27.
- (PLAN) - INDICATES CHIMNEY BASE.
- (PLAN) - INDICATES A SINGLE AND DOUBLE "Y" BRANCH ON CHIMNEY PIPE.

CONCRETE CRADLE OR ENCASEMENT

- (PROFILE) - INDICATES CONCRETE CRADLE PER S-23, CASE I.
- (PROFILE) - INDICATES CONCRETE ENCASEMENT PER S-23, CASE II.
- (PROFILE) - INDICATES SPECIAL CRADLE PER S-23, CASE III.
- (PROFILE) - INDICATES SPECIAL ENCASEMENT PER S-23, CASE III.
- (PLAN) - INDICATES CRADLE OR ENCASEMENT PER S-23, ALL CASES.

MANHOLES

- INDICATES MANHOLE.
- INDICATES MANHOLE WITH ADDITIONAL INLETS.
- INDICATES SHALLOW MANHOLE.

GENERAL

- ON PLANS INDICATES EXISTING BUILDING.
- INDICATES BOUNDARY LINE OF DISTRICT.
- INDICATES BOUNDARY LINE OF A CITY.
- INDICATES EXISTING CURB.
- INDICATES CURB LINE. (FUTURE)

UNDERGROUND UTILITIES

- —W— WATER
- —G— NATURAL GAS
- —GASO— GASOLINE
- —T— TELEPHONE
- —E— ELECTRICAL

} INDICATES TYPE OF EXISTING UNDERGROUND UTILITIES.

NOTE: ABBREVIATIONS USED ON PLANS, MAPS AND OTHER DOCUMENTS SHALL BE PER SECTION 1-3 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.

LEGEND FOR SANITARY SEWER PLANS AND PROFILES AND DISTRICT MAPS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

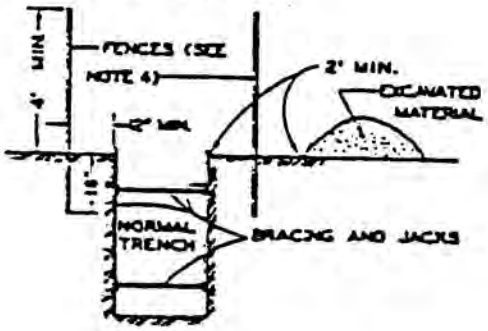
COUNTY ENGINEER STANDARD **S-1**

DATE: 3/80

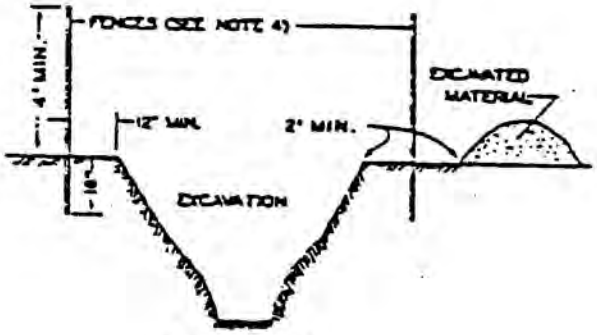
DESIGN RCE 10003

PRIOR TO THE END OF EACH WORK DAY THE CONTRACTOR SHALL EITHER BACKFILL THE TRENCH OR ERECT AND MAINTAIN FENCES OR COVERS. THE FOLLOWING ARE MINIMUM ACCEPTABLE MEASURES ONLY, AND COMPLIANCE WITH THIS STANDARD DOES NOT RELIEVE THE CONTRACTOR OF HIS OBLIGATION TO PROTECT THE PUBLIC BY ALL NECESSARY MEANS.

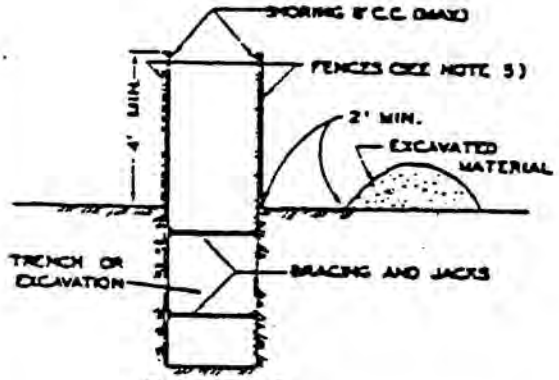
I. FENCES



CASE A

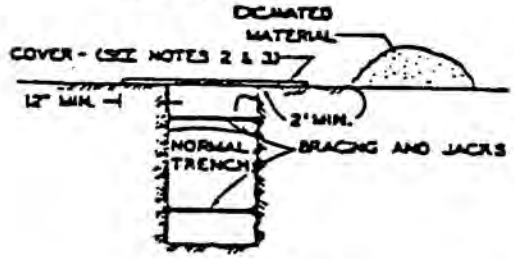


CASE B



CASE C

II. COVER



NOTES

1. EXCEPTIONS: FENCES OR COVERS WILL BE OPTIONAL WITH THE CONTRACTOR IF THE EXCAVATION IS EITHER:
   a.- LESS THAN 3 FEET DEEP.
   b.- LESS THAN 3 FEET DEEP WITH SUFFICIENT WARNING DEVICES SUCH AS LANTERNS, FLASHERS, OR BARRICADES.
   c.- FOR CASE B, LESS THAN 3 FEET DEEP IN THE VERTICAL PORTION WITH UPPER SIDE SLOPES OF 1:1 OR FLATTER.
   d.- IN AN AREA THAT IS NOT ACCESSIBLE TO THE PUBLIC OR THAT IS MORE THAN 1/2 MILE FROM ANY PLACE OF PUBLIC USE OR HABITATION.

2. COVERS MAY BE:
   a.- 1/4" STEEL PLATES
   b.- 2" PLANKS
   c.- 3/4" PLYWOOD
   } NON-VEHICULAR TRAFFIC

3. WHEN STEEL PLATE COVER IS BEING USED FOR VEHICULAR TRAFFIC, IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE PROPER TRENCH BRACING AND STEEL PLATES WITH SUFFICIENT STRENGTH TO WITHSTAND TRAFFIC LOADING.

4. FOR CASES "A" AND "B", FENCES MAY BE:
   a.- WOOD PICKETS TIED WITH WIRE AND POSTS 8' C.C.
   b.- 2" X 4" POSTS 8' C.C. AND WIRE MESH.
   c.- 2" X 4" POSTS 8' C.C. WITH TOP AND BOTTOM RAIL AND CHICKEN WIRE.
   d.- SAME AS NOTE 5 ITEM c.

5. FOR CASE "C", FENCES MAY BE:
   a.- WOOD PICKETS TIED WITH WIRE AND BOTTOM RAIL.
   b.- TOP AND BOTTOM RAIL WITH CHICKEN WIRE.
   c.- THREE RAILS EQUALLY SPACED WITH BOTTOM RAIL 6" ABOVE GROUND.

6. POST FOR FENCES SHALL BE 2" X 4" WOOD OR EQUIVALENT STEEL OR PIPE. IN PAVED AREAS, POSTS MAY BE FLUSH WITH SURFACE IF SUFFICIENTLY ANCHORED AND BRACED. RAILS SHALL BE 1" X 4" WOOD

MINIMUM PUBLIC SAFETY REQUIREMENTS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

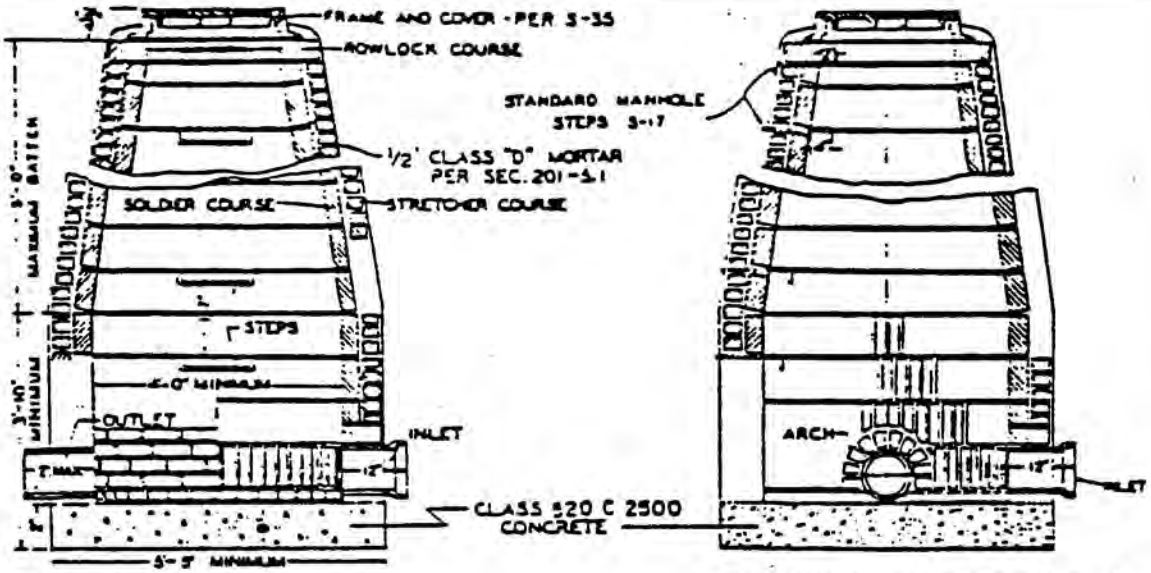
ASSISTANT DEPUTY

COUNTY ENGINEER

COUNTY ENGINEER STANDARD **S-2**

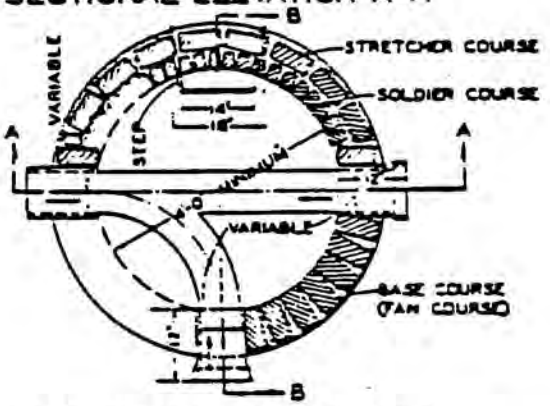
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DESIGN RCE 10013

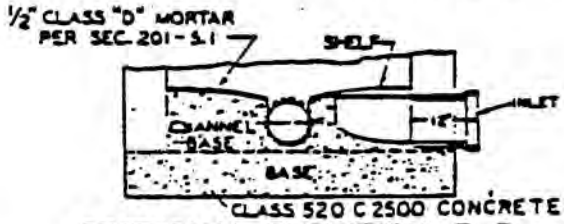


SECTIONAL ELEVATION A-A

SECTIONAL ELEVATION B-B



SECTIONAL PLAN OF BASE



SECTIONAL ELEVATION B-B
CHANNEL BASE

NOTES

1. CONCRETE BASE: DURING CONSTRUCTION, ALL PIPES SHALL BE RIGIDLY SUPPORTED BY BRICK PIERS ONE FOOT DEEP, LOCATED JUST OUTSIDE THE STRUCTURE. CONSTRUCT TOP OF CONCRETE BASE TWO INCHES BELOW INVERT OF LOWEST PIPE. FILL SPACE BENEATH PIPE WITH MORTAR AND SHOVE FROM BOTH SIDES WITH BASE COURSE BRICK TO FORM A WATER TIGHT JOINT. CONCRETE SHALL SET UNDISTURBED FOR 24 HOURS.
2. BASE OR FAN COURSE: LAY BRICK FLAT ON RADIAL LINES WITH TOPS TO SAME LEVEL.
3. ARCHES: LAY SPALLED BRICK ON EDGE TO FORM A TRUE RADIAL ARCH WITH FULL MORTAR JOINT AROUND ALL PIPE OPENINGS. TURN ARCH OF TWO SUCH COURSES OVER PIPES 15 INCH OR MORE IN DIAMETER.
4. SOLDIER COURSES: LAY INSIDE BRICK ON RADIAL LINES VERTICAL FROM THE BASE COURSE TO THE START OF THE BATTER. LAY SUCCEEDING COURSES WITH A UNIFORM BATTER TO OBTAIN AN INSIDE DIAMETER OF 1'-11" AT TOP OF LAST OR FRACTIONAL SOLDIER COURSE USE SPLIT BRICK TO CLOSE SOLDIER COURSE.
5. STRETCHER COURSES: LAY OUTSIDE BRICK FLAT IN A DEEP BED OF MORTAR. SHOVE BRICK HARD TOGETHER AGAINST ADJACENT SOLDIER COURSE.
6. ROWLOCK COURSE: LAY LAST COURSE OF BRICK RADIAL ON EDGE ACROSS SOLDIER AND STRETCHER COURSES, WITH TOPS PARALLEL.
7. WALL THICKNESS: BRICKWORK SHALL BE 8 INCHES THICK EXCEPT AS OTHERWISE SPECIFIED, OR WHEN DEPTH EXCEEDS 22 FEET, WALLS BELOW 22 FEET SHALL BE 12 INCHES THICK AND THE CONCRETE BASE CORRESPONDINGLY EXTENDED.
8. STEPS: SET LOWER STEP ON TOP OF THIRD SOLDIER COURSE AND NOTCH BRICK ABOVE. PLACE UPPER STEP IMMEDIATELY BELOW ROWLOCK COURSE WITH TREAD OF STEP PROJECTING UPWARD AND SET TWO INCHES OUT FROM WALL. OUTSIDE PROJECTION OF TOP STEP TO BE BENT DOWN.
9. JOINTS: INSIDE JOINTS SHALL BE NEATLY STRUCK AND POINTED AND SHALL NOT EXCEED 3/8 INCH IN THICKNESS.
10. CHANNEL BASE: THE DEPTH OF CHANNEL IN CHANNEL-BASE SHALL EQUAL THE PIPE-DIAMETER FOR ALL SIZES OF PIPE. FOR SPECIAL CHANNELS IN TRAP OR GAUGING MANHOLES SEE S-10, S-11, OR SPECIAL PLANS.

BRICK MANHOLE

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

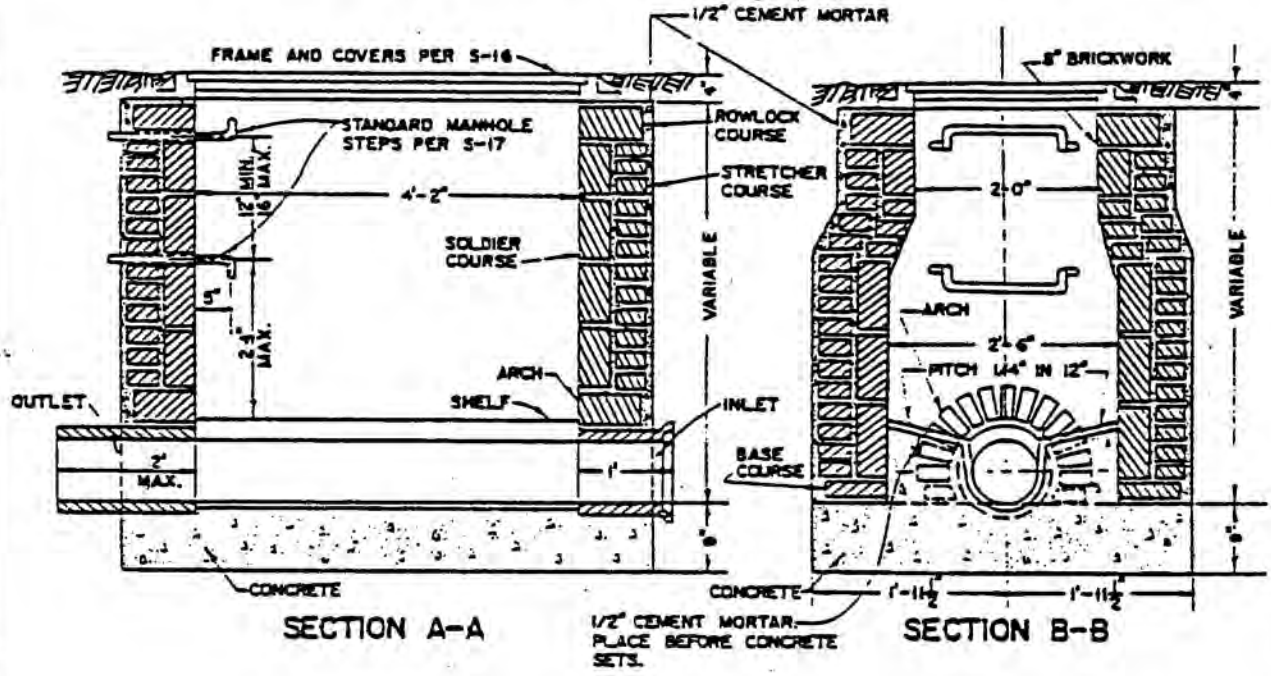
COUNTY ENGINEER

COUNTY ENGINEER STANDARD - S-3

DATE: 3/80

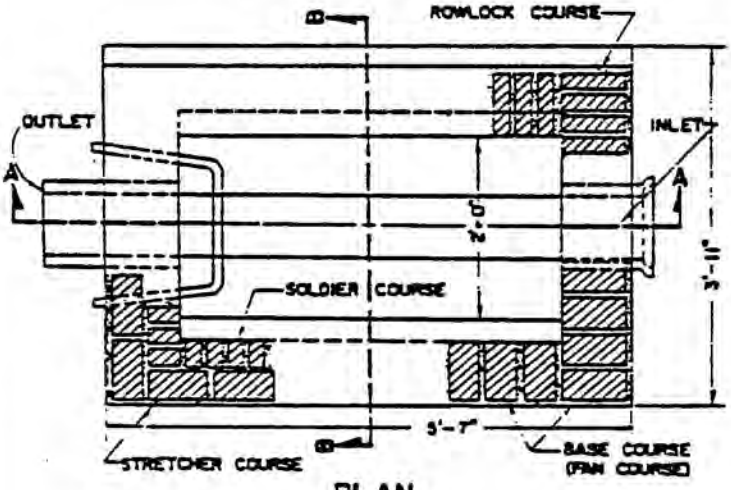
DESIGN RCE 14883

NOTE: TO BE USED FOR DEPTHS LESS THAN 5 FEET FROM THE TOP OF THE MANHOLE TO THE TOP OF THE SEWER PIPE.

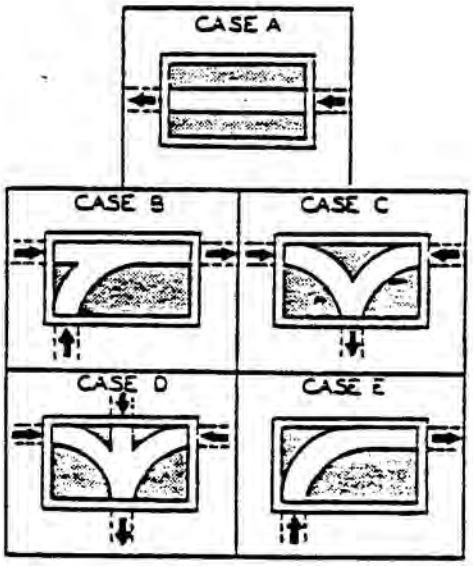


SECTION A-A

SECTION B-B



PLAN



PLACEMENT OF CHANNELS

NOTES

1. THE DEPTH OF CHANNELS SHALL EQUAL THE PIPE DIAMETER FOR ALL SIZES OF PIPE.
2. ALL CONCRETE TO BE CLASS 470-C-2500.
3. ALL CEMENT MORTAR SHALL BE CLASS "D" PER SECTION 201-3.1.

RECTANGULAR SHALLOW MANHOLE

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

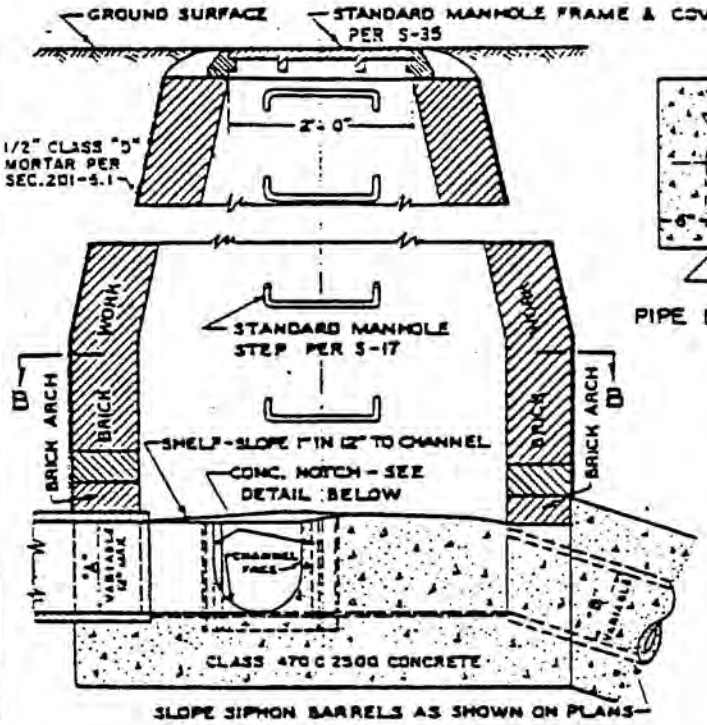
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COUNTY ENGINEER

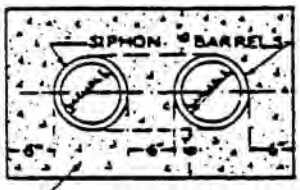
COUNTY ENGINEER STANDARD S-7

DATE: 3/80

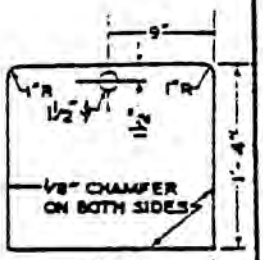
DESIGN RCE 10643



SECTION A-A



PIPE ENCASEMENT DETAIL

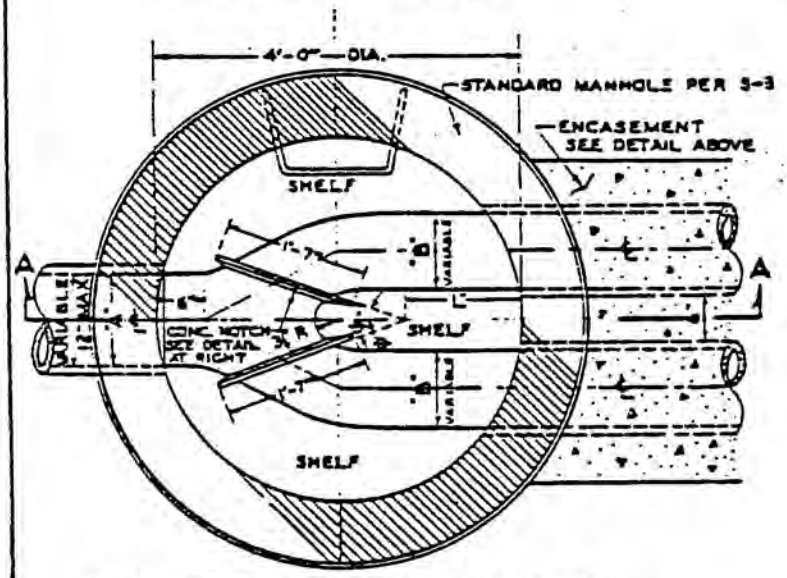


⅜" ALUMINUM PLATE ALLOY 6061-T6 OR APPROVED EQUAL

ALUMINUM GATE DETAIL

NOTES

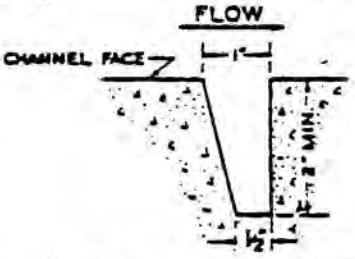
1. FOR OTHER MANHOLE DETAILS SEE PLAN NO. S-3, OR S-36.
2. USE FOR ANY COMBINATION OF SIZES TO A MAXIMUM OF TWO 12" PIPES.
3. FOR PIPE DIAMETERS GREATER THAN 12" CONTACT SANITATION DIVISION.
4. ENCASE SIPHON ONLY TO THE EXTENT SHOWN ON PLANS.
5. PROVIDE ONE ALUMINUM GATE WITH EACH SIPHON MANHOLE.
6. THE DOWNSTREAM LEGS OF SIPHON BARRELS SHALL NOT EXCEED A GRADE OF +30.00 %.



SECTIONAL PLAN B-B

TABLE OF DIMENSIONS

A	B	L	ϕ
8"	6"	1'-0½"	13°
8"	8"	1'-0½"	13°
10"	8"	1'-0½"	13°
10"	10"	1'-3⅛"	20°
12"	10"	1'-3⅛"	20°
12"	12"	1'-6⅛"	30°



CROSS SECTION OF NOTCH SIDES AND BOTTOM

SIPHON MANHOLE

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

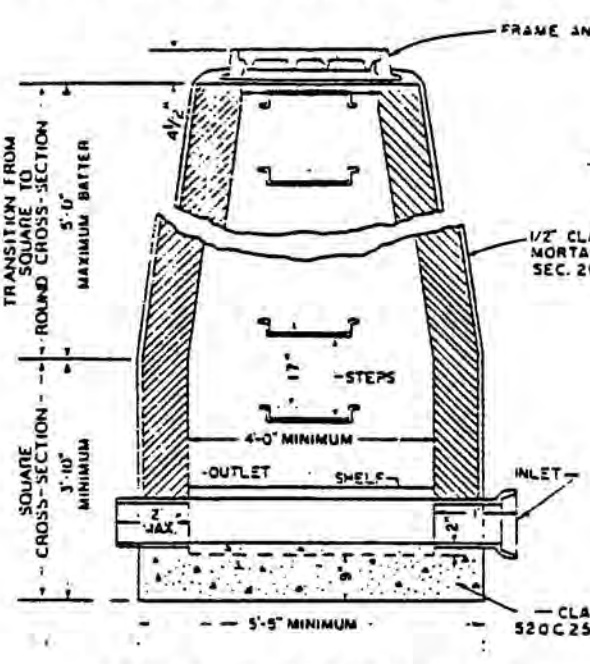
COUNTY ENGINEER

COUNTY ENGINEER STANDARD **S-8**

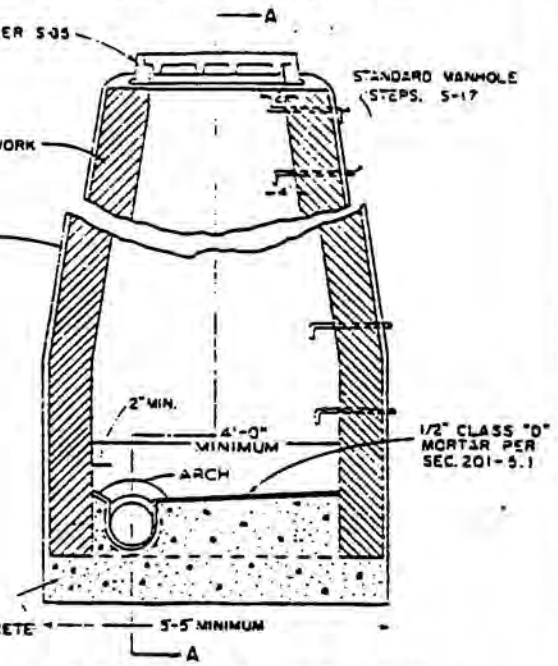
DATE: 3/80

DESIGN RCE 10643

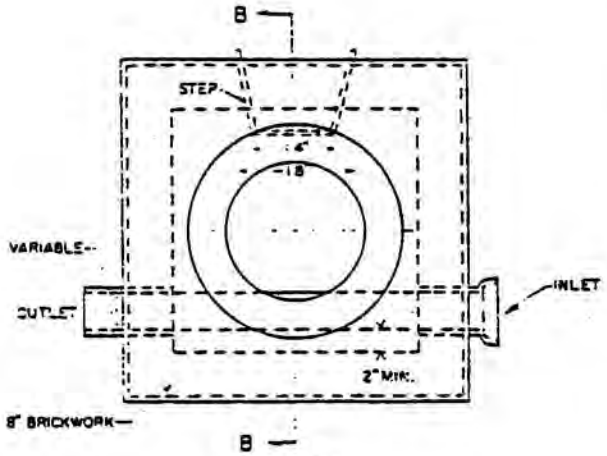
TO BE USED ONLY UPON APPROVAL OF COUNTY ENGINEER



SECTIONAL ELEVATION A-A



SECTIONAL ELEVATION B-B



PLAN

NOTES

1. ARCHES: LAY SPALLED BRICK ON EDGE TO FORM A TRUE RADIAL ARCH WITH FULL MORTAR JOINT AROUND ALL PIPE OPENINGS. TURN ARCH OF TWO SUCH COURSES OVER PIPES 15" OR MORE IN DIAMETER.
2. STEPS: SET LOWER STEP ON TOP OF THIRD SOLDIER COURSE AND NOTCH BRICK ABOVE. PLACE UPPER STEP IMMEDIATELY BELOW ROWLOCK COURSE WITH TREAD OF STEP PROJECTING UPWARD AND SET TWO INCHES OUT FROM WALL. OUTSIDE PROJECTION OF TOP STEP TO BE BENT DOWN.
3. CHANNEL BASE: THE DEPTH OF CHANNEL IN CHANNEL BASE SHALL EQUAL THE PIPE DIAMETER FOR ALL SIZES OF PIPE.
4. BRICKWORK: BRICKWORK TO BE CONSTRUCTED AS SHOWN ON STANDARD DRAWING S-3.
5. CONCRETE BASE: CONCRETE BASE TO BE CONSTRUCTED AS PER NOTES NO. 1 & 7 ON STANDARD DRAWING S-3.

SPECIAL SQUARE BASE MANHOLE

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

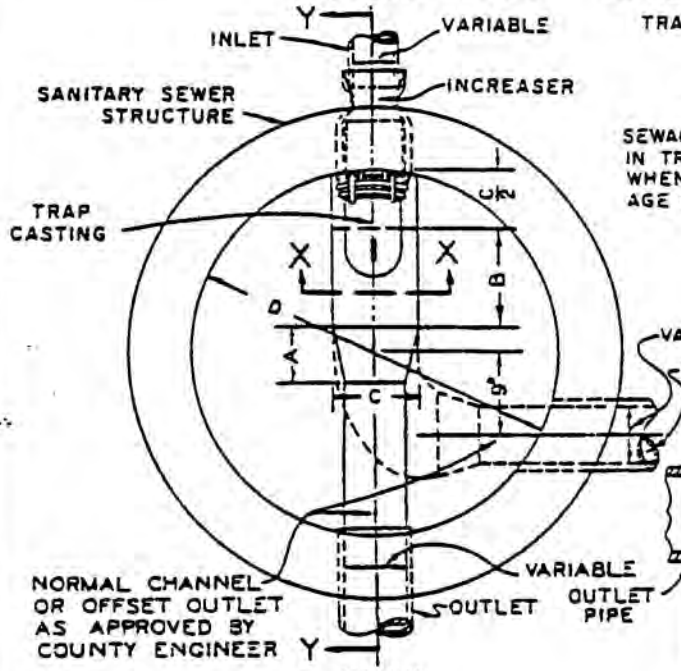
COUNTY ENGINEER

COUNTY ENGINEER STANDARD S-9

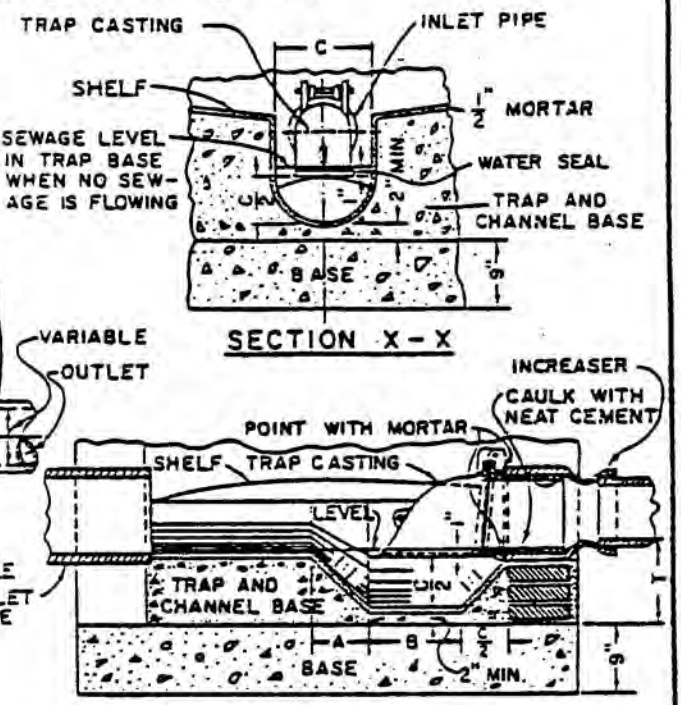
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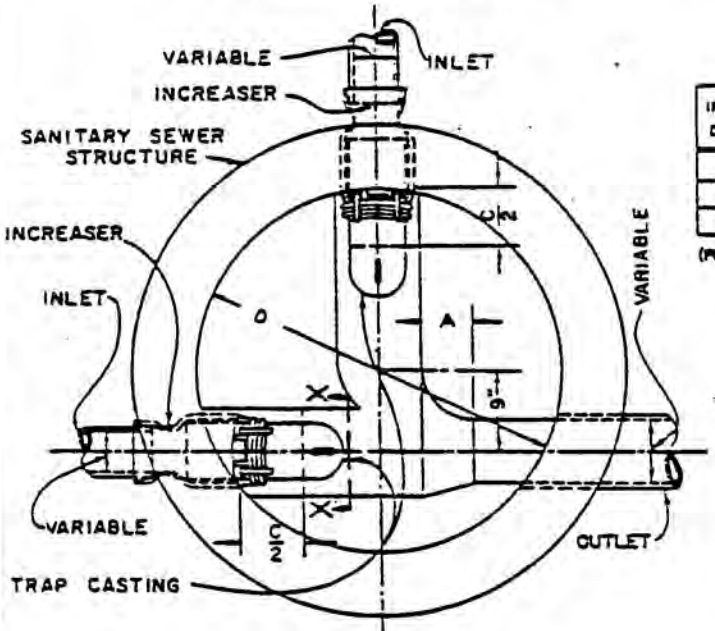
DESIGN RCE 10403

FOR TRAP CASTING S-18



PLAN
SINGLE TRAP BASE





PLAN
DOUBLE TRAP BASE

TRAP BASES

INLET DIAM.	INLET INCREASER	TRAP SIZE	TRAP PER	DIAM. OF MANHOLE BASE (D) OUTLET DIAMETER 8"	10"	12"
8"	8" X 10"	10"	S-18	4'	4'	4'
10"	10" X 12"	12"	S-18		4'	4'
12"	12" X 15"	15"	SEE S-11			

(FOR 15" INLETS AND LARGER SEE S-11; NO INCREASER REQUIRED)

BASE DIMENSIONS					
TRAP DIAM.	A	B	C	A+B+C/2	T MIN.
10"	7 1/2"	14 1/2"	13"	28 1/2"	9"
12"	8 1/2"	16 1/2"	15"	32 1/2"	10"
15"	SEE S-11				

NOTES

1. WHERE A TRAP IS NECESSARY IN AN EXISTING STRUCTURE, BREAK OUT CONCRETE AND CONSTRUCT NEW BASE.
2. FOR OTHER MANHOLE DETAILS, SEE PLAN NO. S-3 OR S-36.
3. ALL CEMENT MORTAR SHOWN HEREON SHALL BE CLASS "D" PER SECTION 201-5.1.
4. WATER SEAL SHALL BE 1" MINIMUM.

TRAP MANHOLE BASE

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

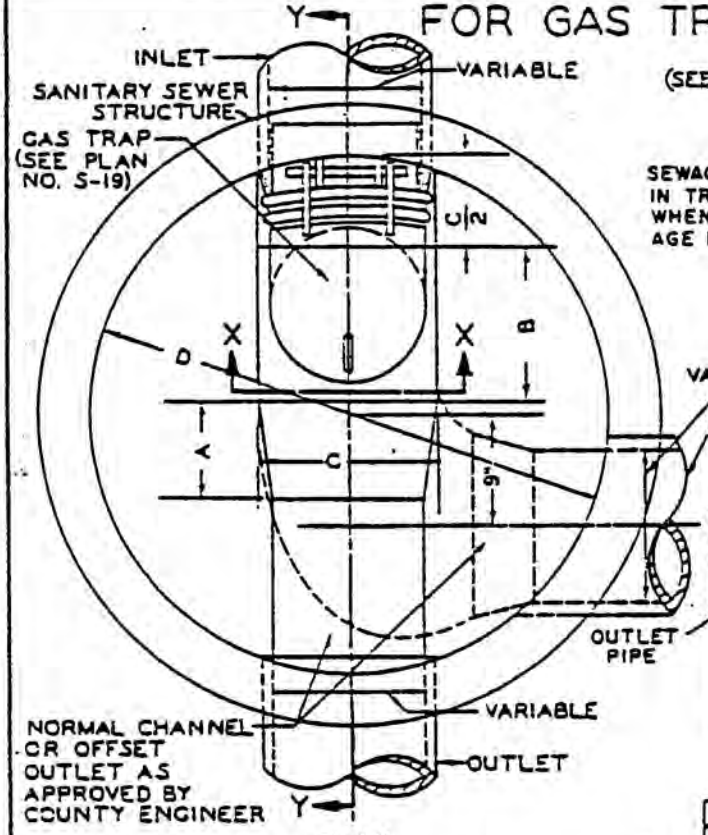
COUNTY ENGINEER STANDARD **S-10**

DATE: 3/80

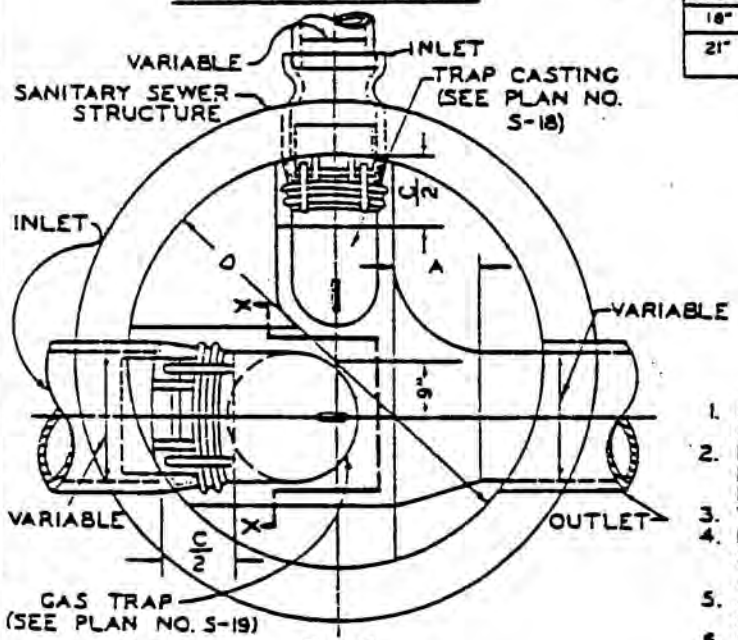
DESIGN

RCE 10683

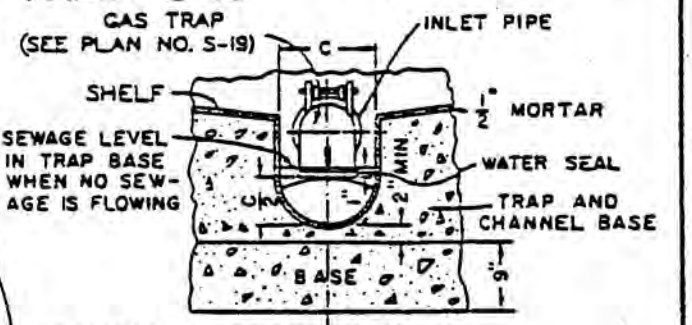
FOR GAS TRAP S-19



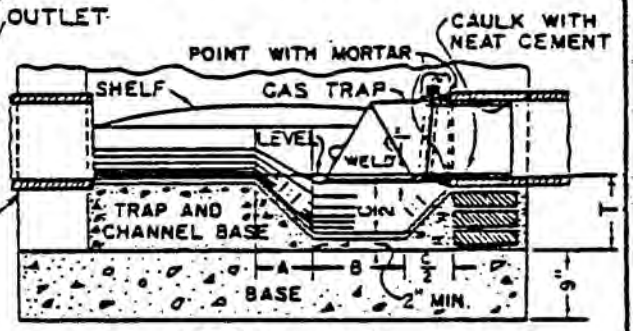
PLAN
SINGLE TRAP BASE



PLAN
DOUBLE TRAP BASE



SECTION X-X



SECTION Y-Y

BASE & COVER DIMENSIONS					
INLET DIAM.	A	B	C	T MIN.	FRAME & COVER
15"	10"	17 1/2"	18"	11"	PER S-35
18"	11 1/2"	19 1/2"	21"	13"	29" CLEAR OPENING MINIMUM OF A TYPE APPROVED BY THE COUNTY ENGINEER
21"	13"	21 1/2"	24"	14"	

TRAP BASES

INLET DIAM & TRAP SIZE	DIAM. OF MANHOLE BASE (2)			
	OUTLET DIAMETER			
	15"	18"	21"	24"
15"	4'	5'	5'	5'
18"	—	5'	5'	5'
21"	—	—	6'	6'

NOTES

1. FOR OTHER MANHOLE DETAILS, SEE PLAN NO. S-3 OR S-36.
2. FOR DETAILS OF GAS TRAP FABRICATION FOR 15" 18" AND 21" GAS TRAPS SEE PLAN NO. S-19.
3. WATER SEAL SHALL BE 1" MINIMUM.
4. FOR TRAP INLETS LARGER THAN 21" SHOW BASE DETAIL ON PROFILE AS APPROVED BY, THE COUNTY ENGINEER.
5. ALL CEMENT MORTAR SHOWN HEREON SHALL BE CLASS "D" PER SECTION 201-5.1
6. DOUBLE TRAP BASES ARE NOT ALLOWED IF ANY INLET IS 18" IN DIAMETER OR GREATER.

LARGE GAS TRAP MANHOLE BASE

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

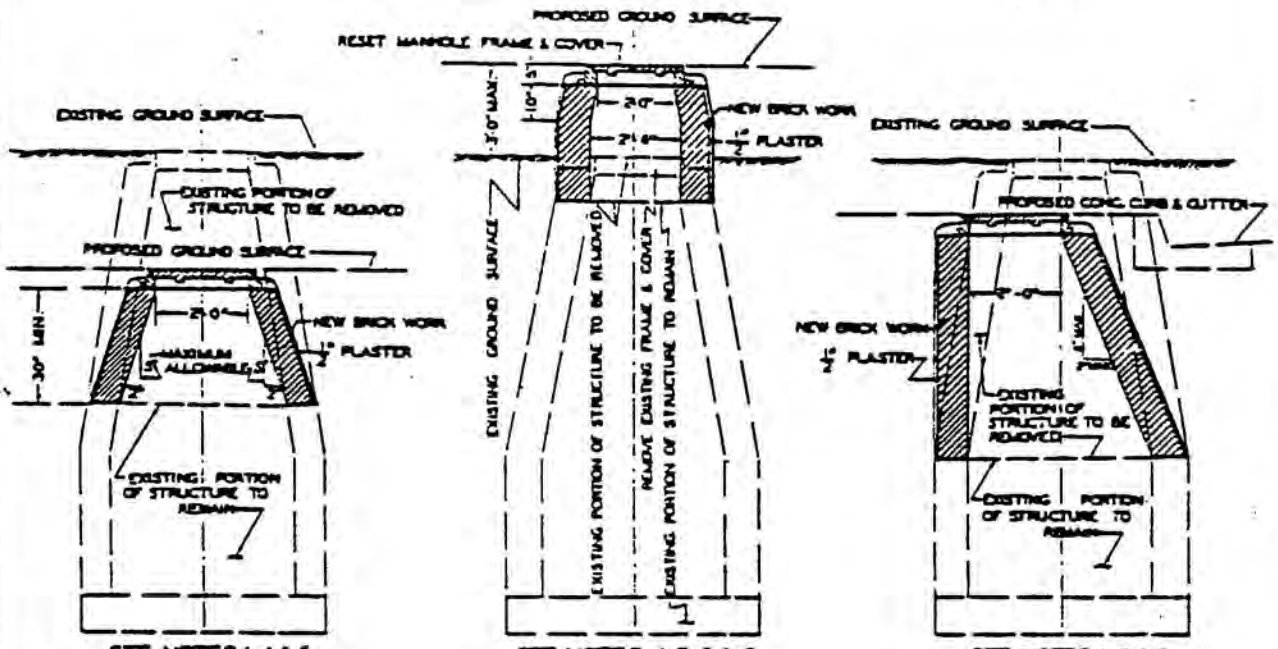
ASSISTANT DEPUTY

COUNTY ENGINEER

COUNTY ENGINEER STANDARD **S-11**

DATE: 3/80

DESIGN 2CE mad3



NOTES

1. PRIOR TO THE REMOVAL OF THE FRAME OF ANY SEWER MANHOLE, THE CHANNEL OF THE MANHOLE SHALL BE COMPLETELY COVERED WITH PLANKING OR OTHER SUITABLE MATERIAL SO AS TO PREVENT DEBRIS FROM ENTERING THE CHANNEL. AFTER THE MANHOLE RECONSTRUCTION HAS BEEN COMPLETED ALL DEBRIS SHALL BE REMOVED FROM WITHIN THE MANHOLE AND THE COVER OVER THE CHANNEL SHALL BE REMOVED.
2. WHEN IT BECOMES NECESSARY TO CONSTRUCT A STRAIGHT SIDED MANHOLE THE BRICK WORK SHALL BE BROKEN DOWN TO A POINT EQUAL TO OR BELOW THE HIGHEST POINT OF THE VERTICAL WALL. THE SLOPE OF THE CORBELED SIDE SHALL NOT EXCEED 12 INCHES IN 30 INCHES. THE MANHOLE STEPS SHALL BE PLACED ON THE VERTICAL SIDE.
3. WHEN THE TOP OF A SEWER MANHOLE IS TO BE RAISED 3 FT. OR LESS THE BRICK WORK SHALL BE BROKEN DOWN TO A POINT WHERE THE INSIDE DIAMETER IS A MINIMUM OF 30 INCHES. THE MANHOLE WALL SHALL THEN BE CONSTRUCTED VERTICALLY TO A POINT 15 INCHES BELOW THE TOP OF MANHOLE. SEE CASE II.
4. WHEN RECONSTRUCTION CAUSES THE DEPTH OF A MANHOLE TO BECOME LESS THAN 5 FT. FROM THE INVERT OF THE CHANNEL TO THE TOP OF THE MANHOLE THE BRICK WORK SHALL BE ENTIRELY BROKEN DOWN AND A SHALLOW RECTANGULAR MANHOLE CONSTRUCTED AS PER L.A. COUNTY ENGINEER STANDARDS S-7 & S-16.
5. MANHOLE STEPS, PER L.A. COUNTY ENGINEER STANDARD S-17, SHALL BE SO PLACED SO AS NOT TO BE MORE THAN 17 INCHES APART WITH THE TOP STEP BEING PLACED IMMEDIATELY UNDER THE TOP ROWLOCK COURSE OF BRICK.
6. WHERE THE TOP OF A MANHOLE IS TO BE RAISED IN EXCESS OF 3 FT., IT SHALL BE RECONSTRUCTED IN ACCORDANCE WITH S-3.

RECONSTRUCTION OF BRICK MANHOLE TOPS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

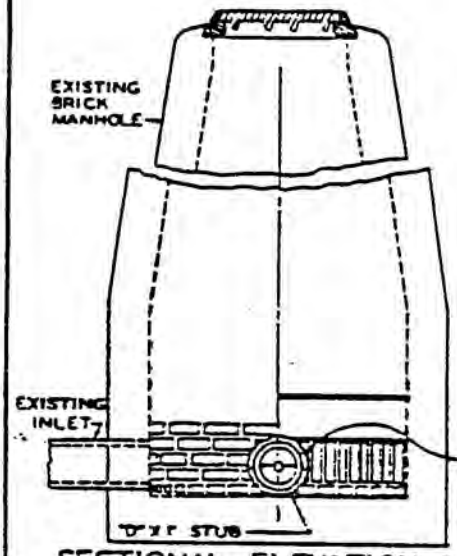
COUNTY ENGINEER STANDARD **S-12**

DATE: 3/80

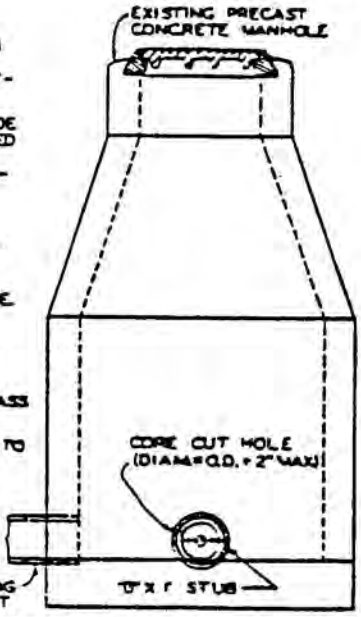
DESIGN RCE 10443

GENERAL NOTES

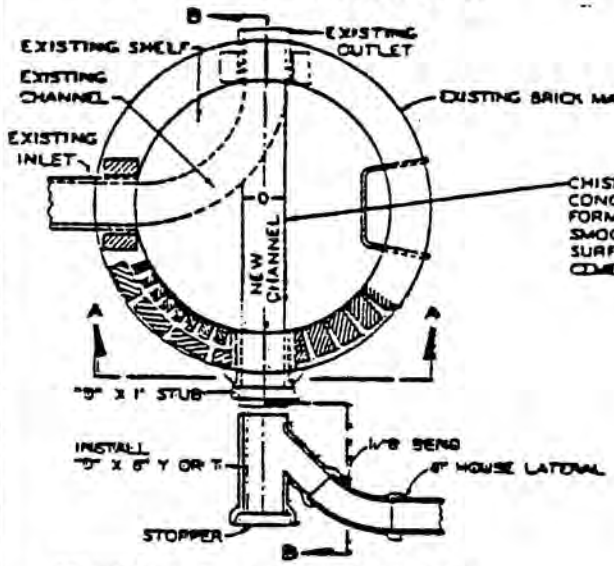
1. INVERT ELEVATION OF "D" x 1' STUB AT THE INSIDE FACE OF MANHOLE TO BE 0.10 FT. HIGHER THAN EXISTING OUTLET INVERT ELEVATION.
2. THE CORE CUT HOLE SHALL BE MADE WITH EQUIPMENT SPECIALLY DESIGNED TO CUT A SMOOTH HOLE WITHOUT SPALLING OR DAMAGE TO THE REINFORCING STEEL OR STRUCTURE.
3. "D" TO BE 9" MINIMUM.
4. COUNTY ENGINEER SHOULD BE NOTIFIED BY TELEPHONE 974-7253 FOR INSPECTION AT LEAST 24 HOURS BEFORE INSPECTION IS TO BE MADE.
5. ALL WORK SHOULD BE UNCOVERED AND CONVENIENT FOR THE COUNTY ENGINEER'S INSPECTION.
6. ALL CEMENT MORTAR SHALL BE CLASS "D" PER SECTION 201-5.1.
7. CONSULT COUNTY ENGINEER PRIOR TO BREAKING INTO SHALLOW MANHOLES.



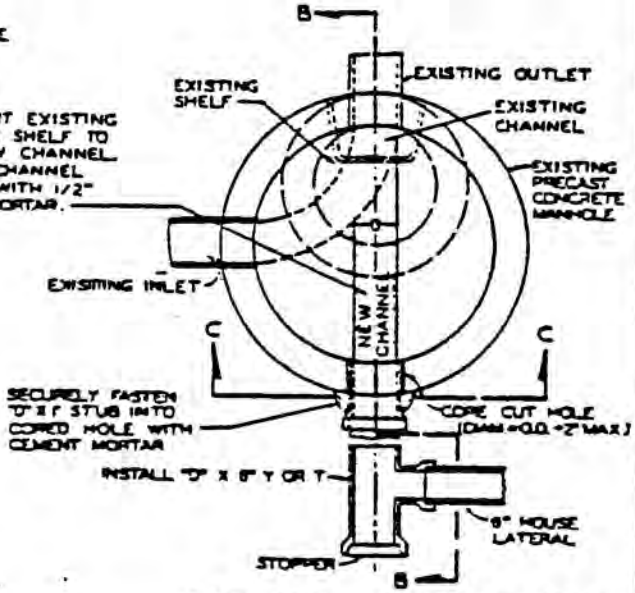
SECTIONAL ELEVATION A-A



SECTIONAL ELEVATION C-C



SECTIONAL PLAN OF BASE



SECTIONAL PLAN OF BASE



SECTIONAL ELEVATION B-B
CHANNEL BASE

HOUSE LATERAL NOTES

1. Y TO BE LAID WITH 1/8" RISE PER FOOT AND 6" SPUR AT 45° FROM HORIZONTAL.
2. "D" x 4" Y OR T AND 4" HOUSE LATERAL MAY SUBSTITUTED FOR "D" x 6" Y OR T AND 6" HOUSE LATERAL UPON APPROVAL OF COUNTY ENGINEER.
3. USE TYPE "D", "F" OR "G" JOINTS PER SEC. 206-2 OF STANDARD SPECIFICATIONS.

BREAKING INTO EXISTING BRICK OR PRECAST CONCRETE MANHOLE

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

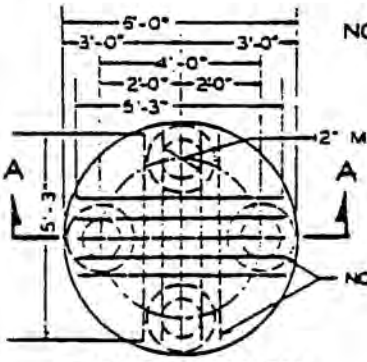
ASSISTANT DEPUTY

COUNTY ENGINEER

COUNTY ENGINEER STANDARD S-13

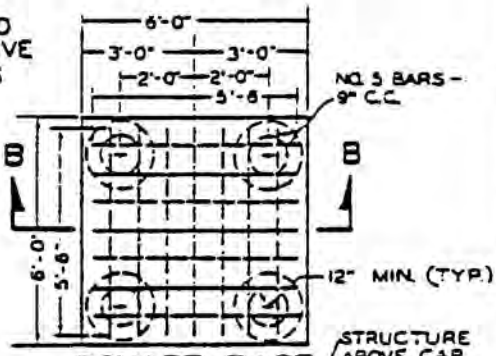
DATE: 3/80

DESIGN RCE 11403

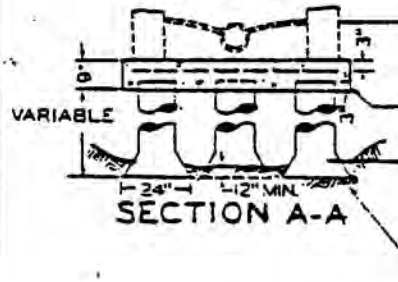


ROUND BASE

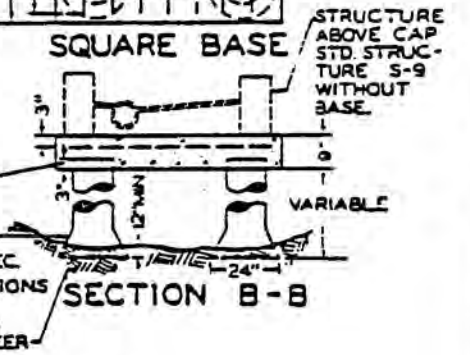
NOTE: TO BE USED IN FILLED AREA WHERE RELATIVE COMPACTION IS LESS THAN 90 PERCENT.



SQUARE BASE



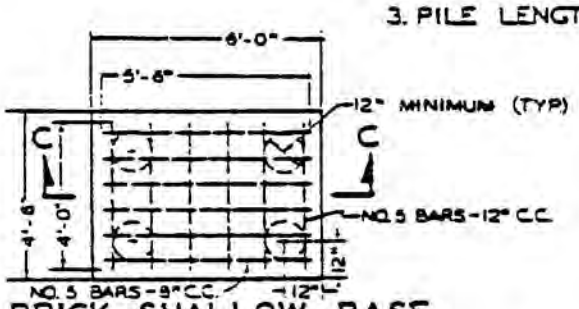
SECTION A-A



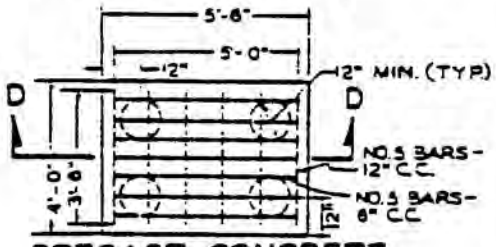
SECTION B-B

NOTE: SEPARATE DESIGN WILL BE REQUIRED IN EACH OF THE FOLLOWING CASES:

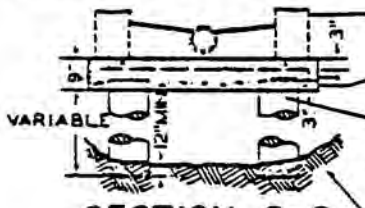
1. MANHOLE BASES LARGER THAN THOSE SHOWN.
2. MANHOLE DEPTH GREATER THAN TEN FEET.
3. PILE LENGTH GREATER THAN TWENTY FEET.



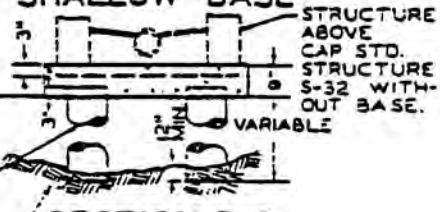
BRICK SHALLOW BASE



PRECAST CONCRETE SHALLOW BASE



SECTION C-C



SECTION D-D

SPECIAL MANHOLE BASES

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

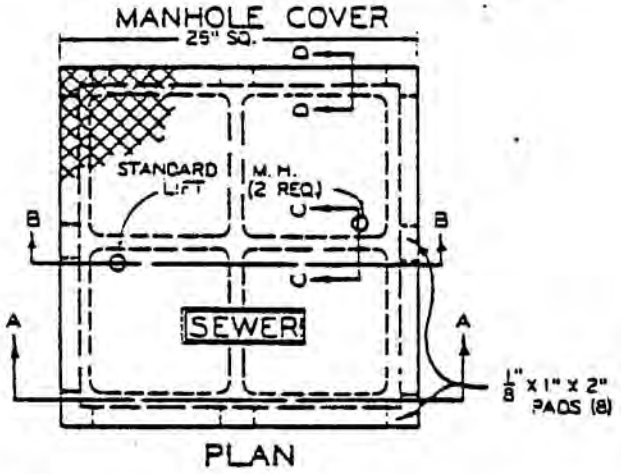
COUNTY ENGINEER STANDARD S-14

DATE: 3/80

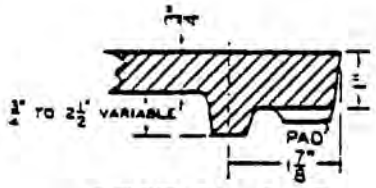
DESIGN RCE 10623

1

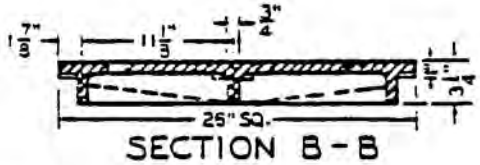
FOR USE WITH MANHOLES S-7 & S-32



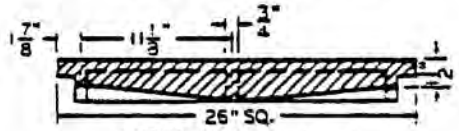
PLAN



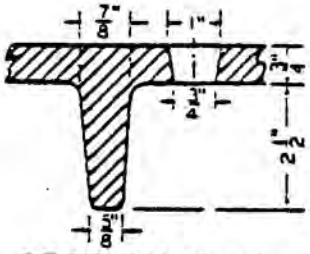
SECTION D-D



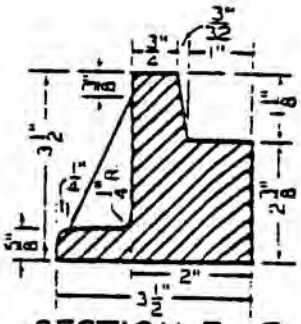
SECTION B-B



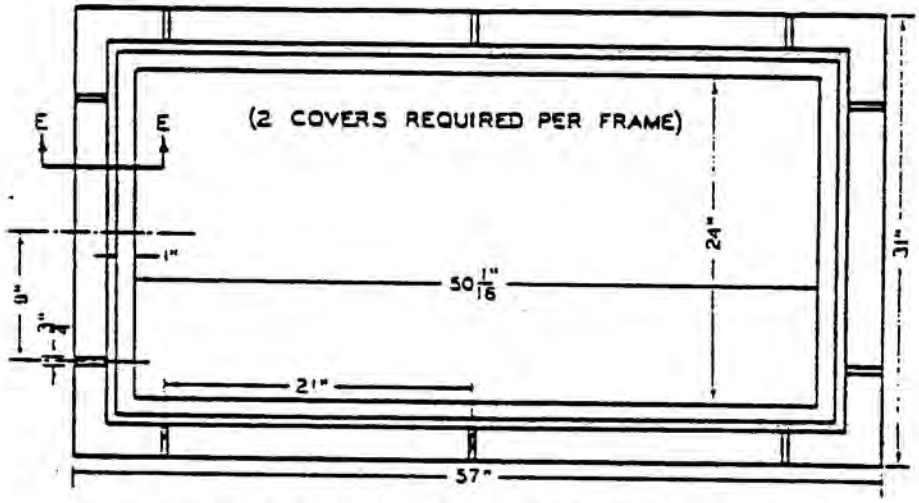
SECTION A-A



SECTION C-C



SECTION E-E



MANHOLE FRAME

NOTE: USE CAST IRON PER SEC. 206-3.3 OF THE STANDARD SPECIFICATIONS.
2 COVERS APPROX. WT. 195 LBS. EACH. 390 LBS.
FRAME 270 LBS.
TOTAL 660 LBS.

RECTANGULAR MANHOLE FRAME & COVERS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

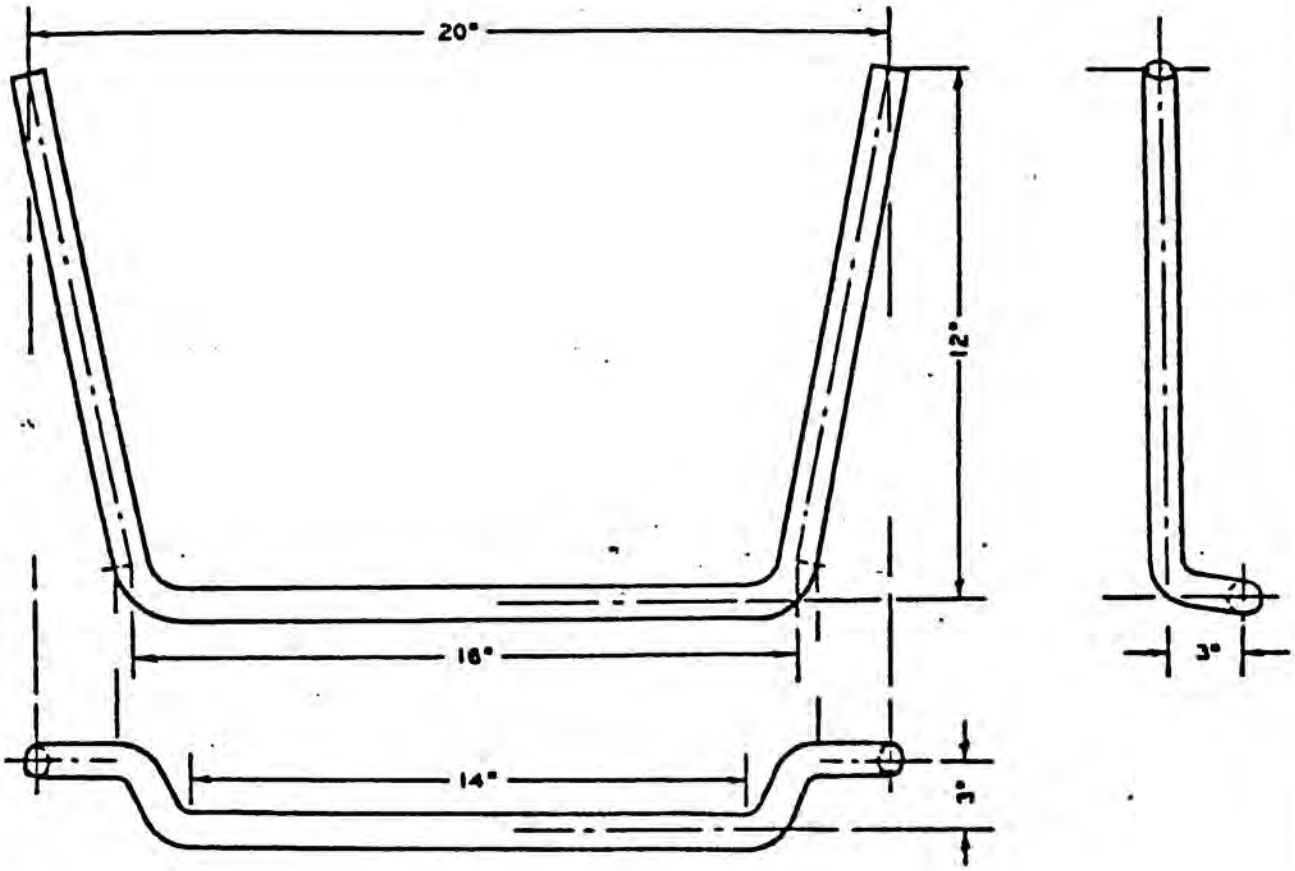
ASSISTANT DEPUTY

COUNTY ENGINEER

COUNTY ENGINEER STANDARD S-16

DATE: 3/80

DESIGN RCE 10443



NOTE:

MATERIAL FOR THE STANDARD MANHOLE STEP SHALL BE ONE OF THE FOLLOWING:

1. 3/4" ϕ STEEL CONFORMING TO ASTM A15 OR A107 GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123.
2. 3/4" ϕ ALUMINUM ALLOY 6061-T6 CONFORMING WITH ASTM B-211 OR B-221. THE PORTIONS OF THE ALUMINUM STEP TO BE EMBEDDED IN CONCRETE OR MORTAR SHALL BE GIVEN ONE COAT OF ZINC CHROMATE PRIMER. THE PRIMER SHALL BE ALLOWED TO DRY BEFORE THE STEP IS PLACED IN THE CONCRETE OR MORTAR.
3. 3/4" ϕ OR 3/4" SQUARE OR EQUIVALENT CROSS SECTIONAL AREA WROUGHT IRON CONFORMING TO ASTM A-207.

STANDARD MANHOLE STEP

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

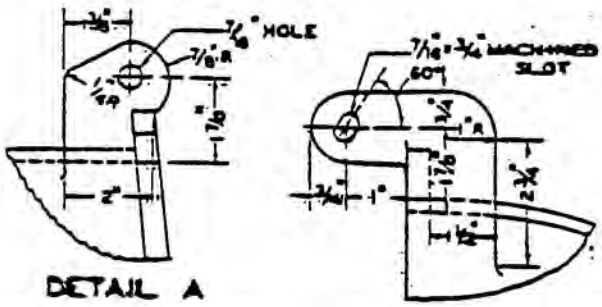
COUNTY ENGINEER STANDARD S-17

DATE: 3/80

DESIGN RCE 10713

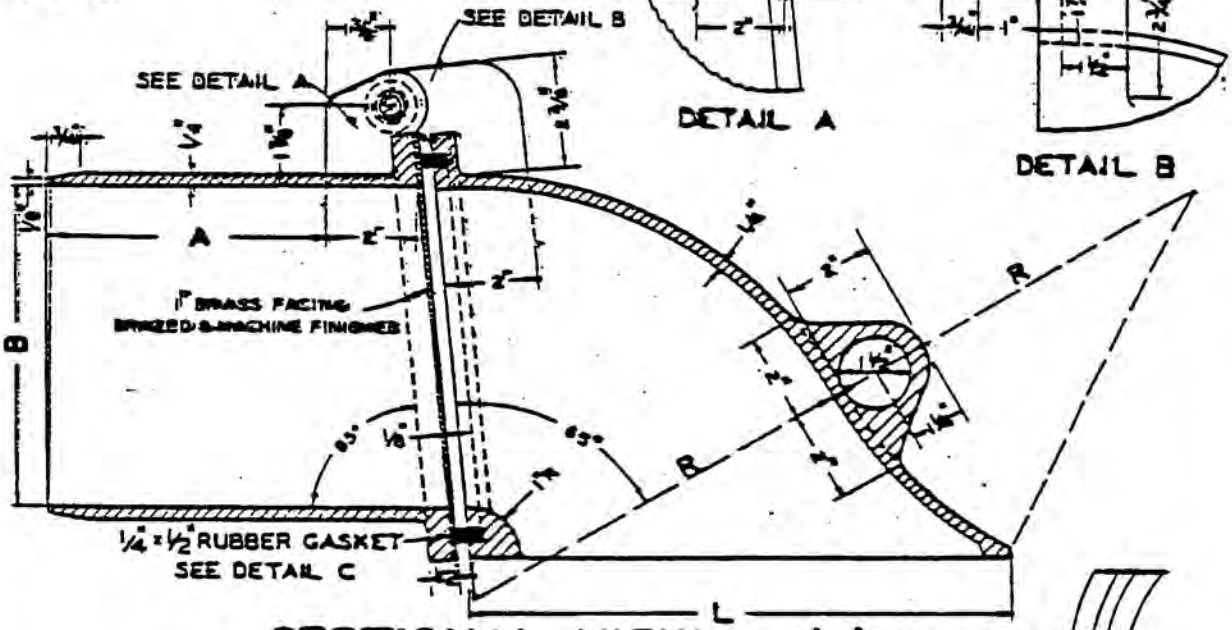
NOTES:

1. CAST IRON SHALL BE FURNISHED PER SEC. 206-3.1 AND A.S.T.M. SPECIFICATIONS A-48, CLASS 30.
2. FLANGES OF CASTINGS TO BE MACHINE FACED.
3. CASTINGS SHALL BE DIPPED TWICE IN QUALITY HOT ASPHALTUM PAINT.
4. RUBBER GASKET SHALL BE FURNISHED PER SEC. 208-2.2.

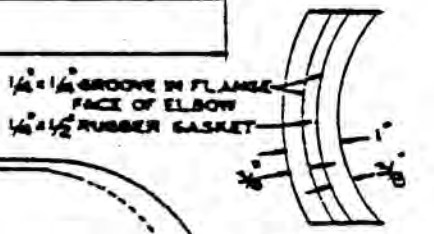


DETAIL A

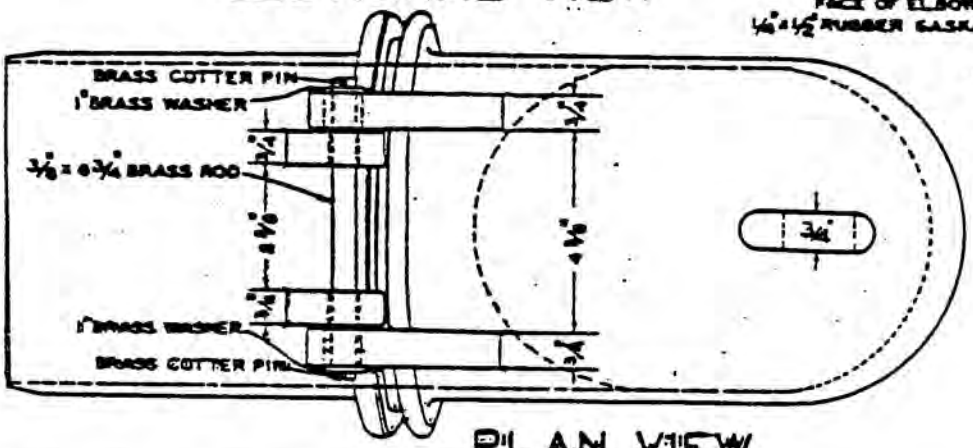
DETAIL B



SECTIONAL VIEW



DETAIL C



PLAN VIEW

DIMENSIONS OF CASTING.				
INLET DIAM.	A	B	R.	L
10"	6"	9"	11"	14 3/4"
* 12"	7"	11"	13"	17 3/4"

* FOR GAS TRAPS 15" AND LARGER SEE S-19.

TRAP MANHOLE CASTING

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

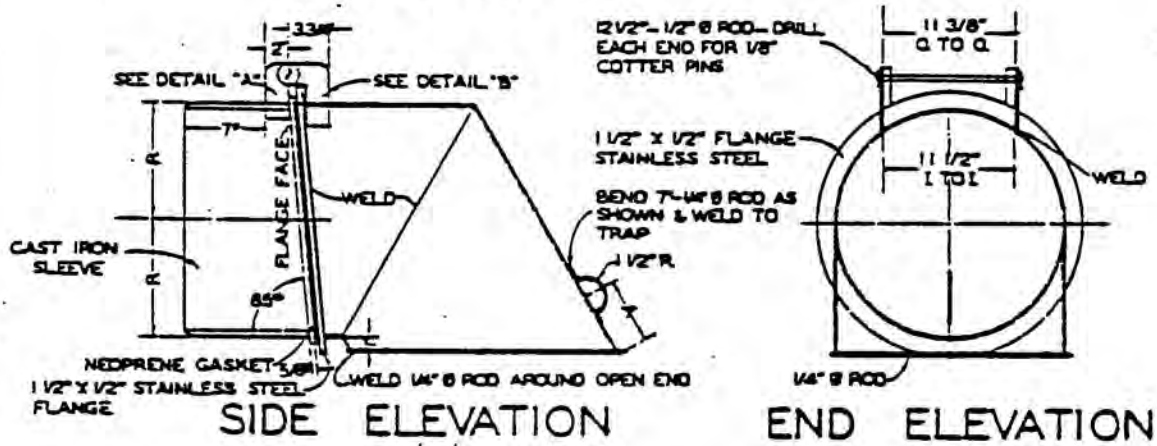
COUNTY ENGINEER

COUNTY ENGINEER STANDARD S-18

DATE: 3/80

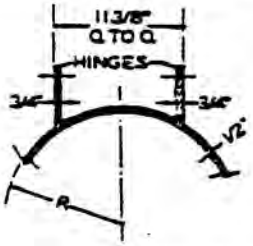
DESIGN RCE 17433

NOTE: STAINLESS STEEL SHALL BE A.I.S.I. TYPE 316 OR A.S.T.M. A 240-49 TYPE 316.

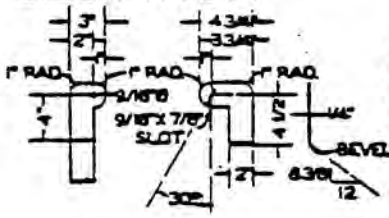


SIDE ELEVATION

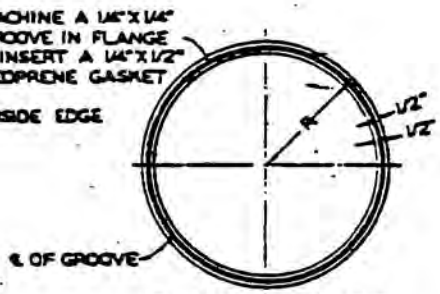
END ELEVATION



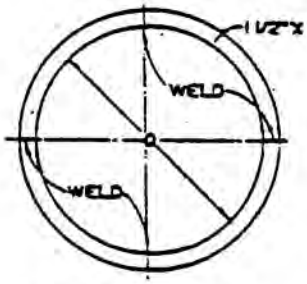
DETAIL "A"



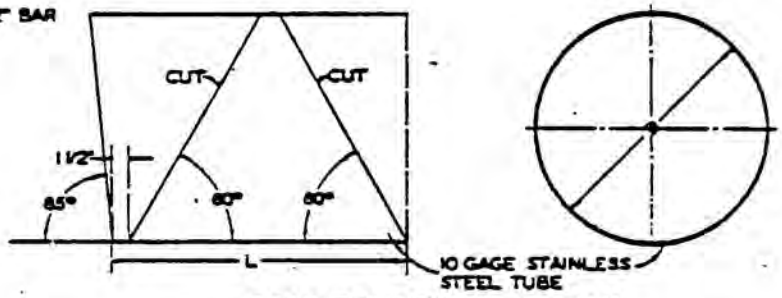
DETAIL "B"



FLANGE FACE (STUB CASTING)



STAINLESS STEEL FLANGE



CONSTRUCTION DETAIL

DIMENSIONS OF TRAP				
INLET DIAM.	A	D	R	L
15"	4"	14"	7 1/4"	19 1/16"
18"	5"	17"	8 3/4"	22 9/16"
21"	6"	20"	10 1/4"	26"

NOTE:— ALL MATERIAL TO BE STAINLESS STEEL EXCEPT AS NOTED.

LARGE GAS TRAP

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

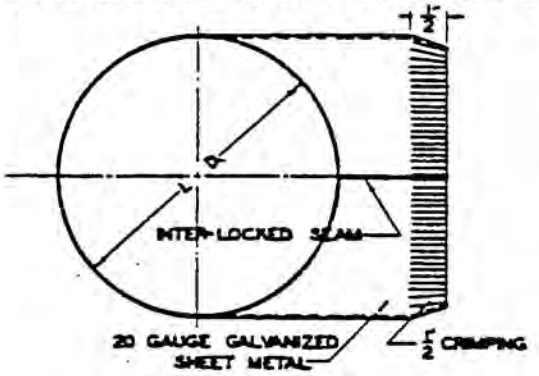
COUNTY ENGINEER

COUNTY ENGINEER STANDARD S-19

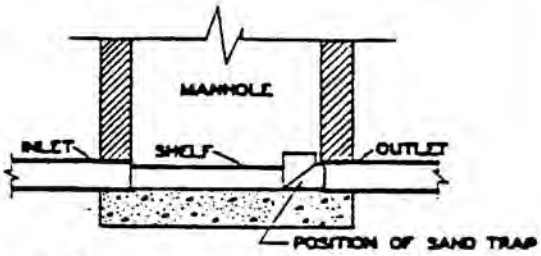
DATE : 3/80

DESIGN RCE 10643

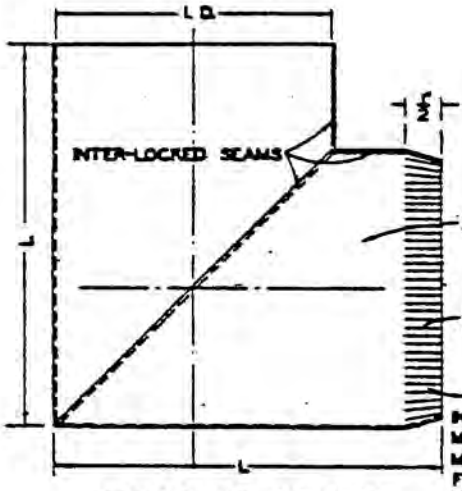
FOR USE IN NEW SUBDIVISIONS AND WHERE MANHOLE TOPS ARE LOWERED DUE TO STREET GRADE CHANGES OR PAVING OPERATIONS.



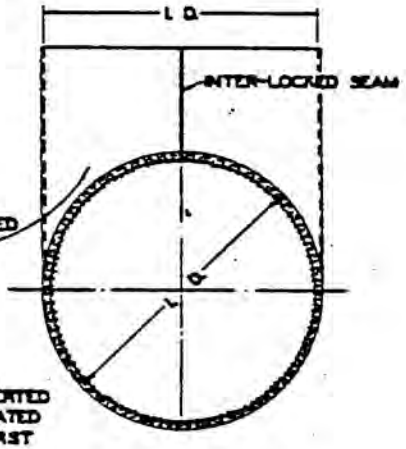
TOP VIEW



SECTIONAL VIEW SHOWING PLACEMENT OF SAND TRAP



FRONT VIEW



SIDE VIEW

NOTES:

1. SAND TRAP AS MANUFACTURED BY FLEXIBLE INC. OR APPROVED EQUAL MAY BE USED IN LIEU OF ABOVE.
2. GATES IN FLEXIBLE SAND TRAP SHALL BE SOLDERED OR WELDED IN CLOSED POSITION.

DIMENSIONS OF TRAP

L D.	L	FLEXIBLE EQUIVALENT (SEE NOTES ABOVE)
8"	10½"	ST-2
10"	12½"	ST-3
12"	15"	ST-4
15"	18"	ST-6
18"	19"	ST-6

TEMPORARY SAND TRAP

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

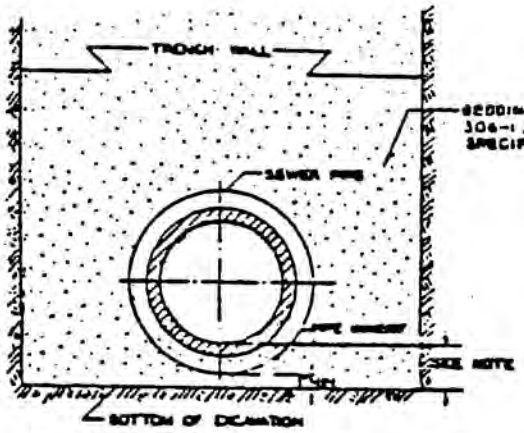
COUNTY ENGINEER

COUNTY ENGINEER STANDARD S-20

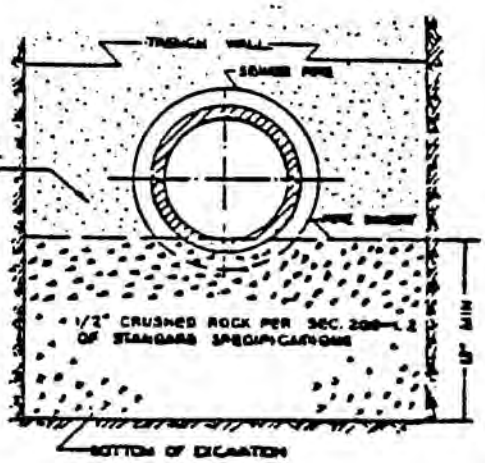
DATE : 3/80

DESIGN RCE 10443

("BEDDING" EXTENDS TO ONE FOOT OVER TOP OF PIPE PER SECTION 306-1.2.1 OF STANDARD SPECIFICATIONS)

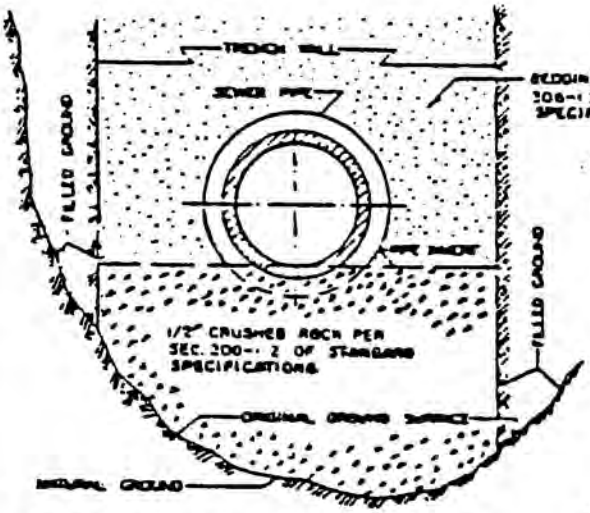


CASE I: NORMAL TRENCH



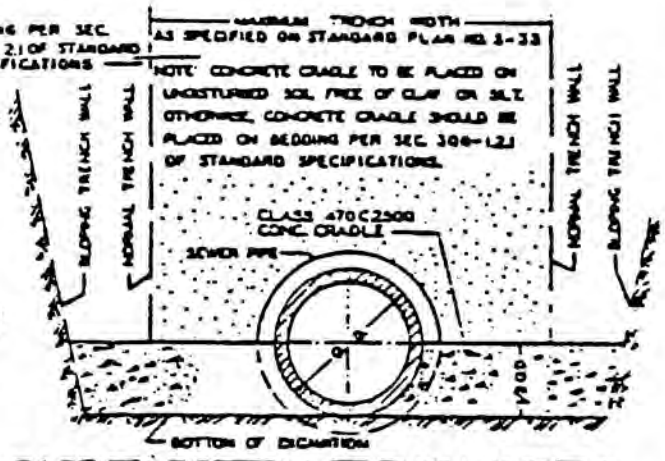
CASE II: WET, SPONGY GROUND

NOTE: BEDDING MATERIAL SUPPORTING THE PIPE OR CONDUIT SHALL BE GRANULAR CRUSHED AGGREGATE OR NATURAL GRANULAR MATERIAL AS APPROVED BY THE ENGINEER.



CASE III: FILLED GROUND
(LESS THAN 90% COMPACTION)

NOTE: WHERE NATURAL GROUND IS AT AN EXCESSIVE DEPTH BELOW THE INVERT OF THE PIPE, CONSTRUCTION SHALL COMPLY WITH THE SPECIAL NOTES ON THE PLANS.



CASE IV: BOTTOM TRENCH WIDTH EXCEEDS THE WIDTH SPECIFIED ON STANDARD PLAN NO. S-33

BEDDING FOR SEWER PIPE

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

COUNTY ENGINEER STANDARD S-21

DATE: 3/80

DESIGN RCE 10633

ABS COMPOSITE (TRUSS) PIPE
ABS SOLID WALL (SDR 23.5 ASTM D 2751) PIPE
PVC SOLID WALL (SDR 35 ASTM D 3034) PIPE

1. SHALLOW SEWERS, COVER OVER PIPE < 4 FEET:
   USE ENCASEMENT OR SPECIAL DESIGN APPROVED BY COUNTY ENGINEER.
2. ABS TRUSS OR SOLID WALL PIPE, DEPTH OF COVER 4-9 FEET:
   USE COUNTY ENGINEER STANDARD S-21.
3. ABS TRUSS OR SOLID WALL PIPE, DEPTH OF COVER 9-20 FEET:
   USE FIGURE 1 BELOW.
4. PVC PIPE, DEPTH OF COVER 4-17 FEET:
   USE FIGURE 1 BELOW.
5. ABS TRUSS OR SOLID WALL PIPE, 20 TO 30 FEET OR PVC PIPE, 17-30 FEET:
   USE ENCASEMENT PER STANDARD S-23, CASE II.
6. ABS OR PVC PIPE DEEPER THAN 30 FEET:
   SPECIAL DESIGN REQUIRED.

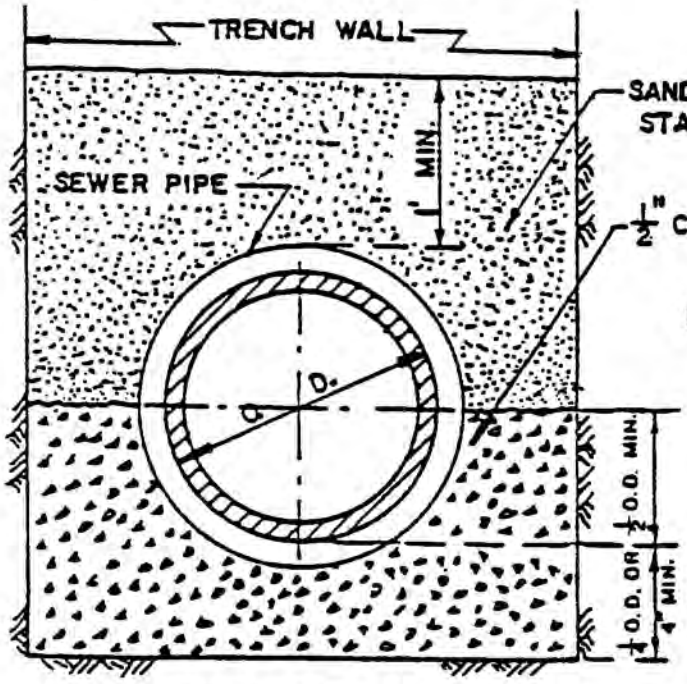


FIGURE 1

NOTE: ADDITIONAL CRUSHED ROCK BASE WILL BE NECESSARY IN WET, SPONGY GROUND OR FILLED AREAS. REFER TO S-21.

THIS STANDARD SHALL BE USED ONLY IN ACCORDANCE WITH SPECIAL PROVISIONS FOR THE CONSTRUCTION OF SANITARY SEWERS, PART IV, PLASTIC SEWER PIPE.

BEDDING FOR ABS & PVC SEWER PIPE

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

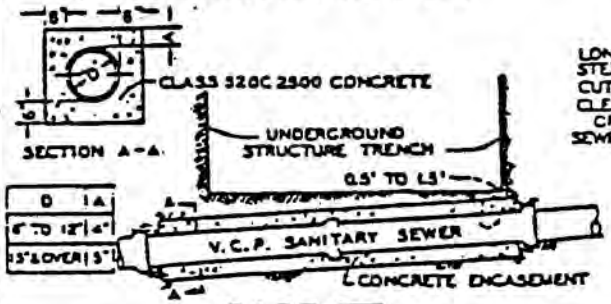
COUNTY ENGINEER

COUNTY ENGINEER STANDARD S-21A
DATE: 3/80
DESIGN RCE 10443

CASE I

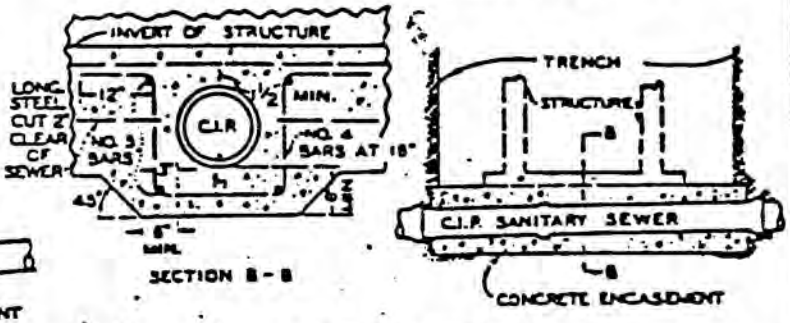
WHERE CLEARANCE BETWEEN BOTTOM OF UNDERGROUND STRUCTURE AND TOP OF SEWER IS 0.5 TO 1.5 FEET

(IF WIDTH OF UNDERGROUND STRUCTURE IS 5 FT. OR LESS, ENCASE PER S-23)



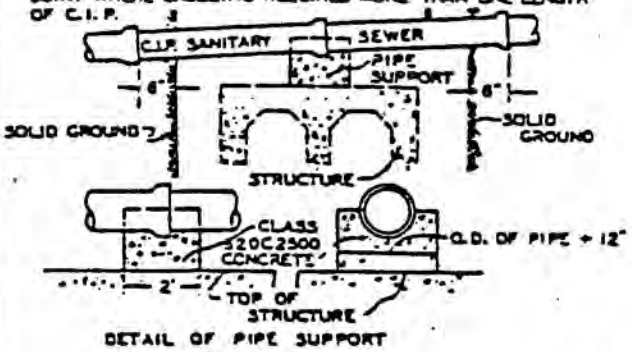
CASE II

WHERE CLEARANCE BETWEEN BOTTOM OF UNDERGROUND STRUCTURE AND TOP OF SEWER IS LESS THAN 0.5 FEET



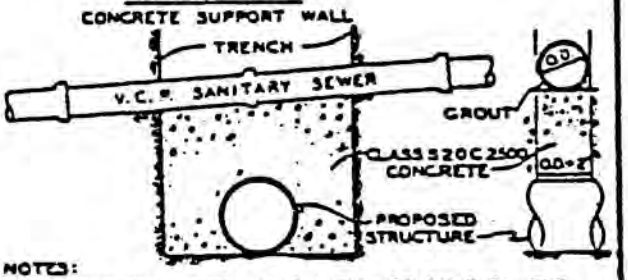
CASE III

WHERE UNDERGROUND STRUCTURE IS CONSTRUCTED UNDER SEWER - PIPE SUPPORT TO BE CONSTRUCTED UNDER PIPE JOINT WHERE CROSSING REQUIRES MORE THAN ONE LENGTH OF C.I.P.



DETAIL OF PIPE SUPPORT

CASE IV

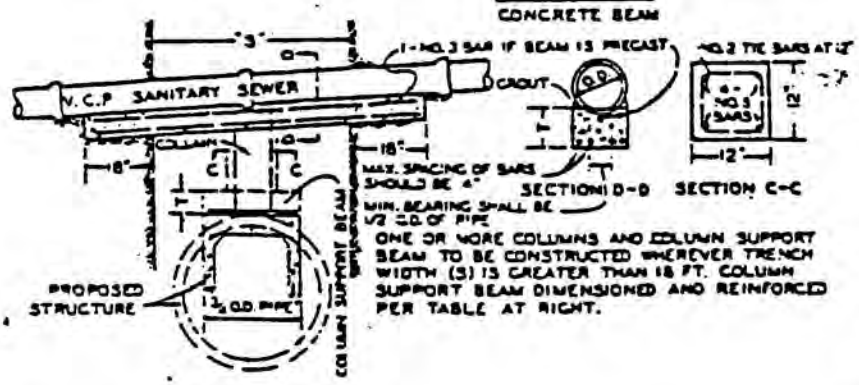


NOTES:

1. SUPPORT WALL SHALL HAVE A FIRM BEARING ON THE SUBGRADE AND AGAINST THE SIDES OF THE EXCAVATION.
2. WALL SHALL BE AT LEAST 2 INCHES FREE AND CLEAR OF ANY GAS OR WATER MAIN OR OTHER CONDUIT OR DUCT.
3. WHENEVER SO DIRECTED BY ENGINEER, THE CONTRACTOR SHALL PROVIDE SUITABLE OPENING IN THE WALL TO PREVENT UNEQUAL PRESSURE RESULTING FROM FLOODING THE BACK-FILL. THE VOLUME OF THE PIERCED OPENING SHALL NOT EXCEED 1/3 THE VOLUME OF THE SUPPORTING WALL.

CASE V

CONCRETE BEAM



ONE OR MORE COLUMNS AND COLUMN SUPPORT BEAM TO BE CONSTRUCTED WHEREVER TRENCH WIDTH (S) IS GREATER THAN 18 FT. COLUMN SUPPORT BEAM DIMENSIONED AND REINFORCED PER TABLE AT RIGHT.

DIMENSIONS OF REINFORCED CONCRETE BEAM AND COLUMN SUPPORT BEAM

"S" (FT.)	DEPTH OF COVER 0' TO 8'-0" "T"	BAR NO.	8'-0" TO 16'-0" "T"	BAR NO.	16'-0" TO 25'-0" "T"	BAR NO.
4	9"	4	8"	4	8½"	5
5	8"	4	9"	5	11"	5
6	8½"	5	10½"	5	12½"	6
7	9"	5	11½"	6	13½"	6
8	10"	5	12½"	6	15"	7
9	11"	6	13½"	6	16½"	7
10	12"	6	15"	7	18"	7
11	13"	6	16"	7	19½"	8
12	13½"	6	17"	7	21"	8
13	14½"	7	18½"	7		
14	15½"	7	20"	8		
15	16½"	7	21"	8		
16	17½"	7				
17	18½"	8				
18	19½"	8				

GENERAL NOTES

1. EXTEND BOTH ENDS OF ENCASEMENT TO A POINT ONE INCH SHORT OF FIRST PIPE JOINT BEYOND LOCATIONS SPECIFIED ON PLANS. (SEE S-23)
2. WHERE CLEARANCE BETWEEN BOTTOM OF STRUCTURE AND TOP OF SEWER IS LESS THAN 0.5 FEET, THE ENCASEMENT SHALL BE POURED MONOLITHIC WITH THE BASE OF THE UNDERGROUND STRUCTURE.
3. IF BEAMS OF CASE V ARE PRECAST, 18 INCHES AT ENDS OF BEAMS SHALL BE BEDDED IN CLASS 520C 2500 CONCRETE.
4. GROUT SHALL BE PLACED BETWEEN TOP OF BEAMS AND BOTTOM OF PIPE TO GIVE BEARING AS PER SECTION D-D ABOVE. BEAM WIDTH TO BE O.D. + 2".
5. ALL REINFORCING STEEL SHALL BE MINIMUM 2" CLEAR FROM SIDES, EDGES, AND BOTTOMS OF BEAMS AND COLUMNS.

SPECIAL SUPPORT AND PROTECTION

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

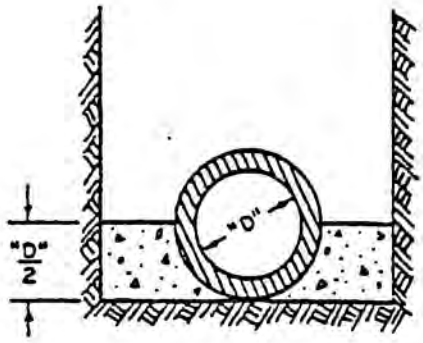
ASSISTANT DEPUTY

COUNTY ENGINEER

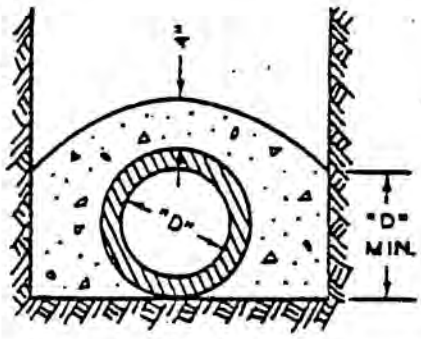
COUNTY ENGINEER STANDARD S-22

DATE: 3/80

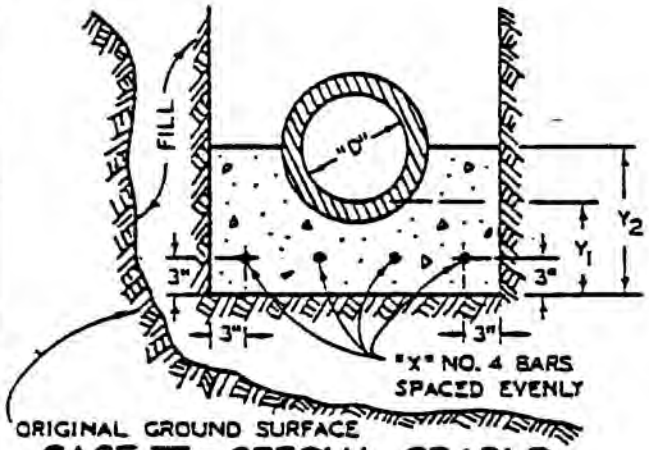
DESIGN RCE



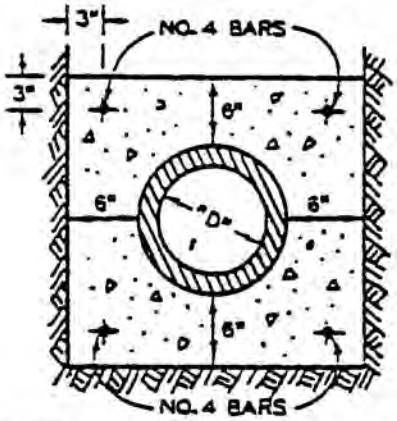
CASE I - CONCRETE CRADLE



CASE II - CONCRETE ENCASEMENT



CASE III - SPECIAL CRADLE



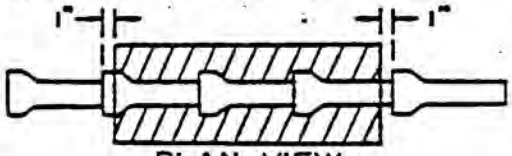
CASE IV - SPECIAL ENCASEMENT

SCHEDULE OF DIMENSIONS AND REINFORCING BARS FOR SPECIAL CRADLE CASE III

"D" (DIAMETER)	"X" NO. OF NO. 4 BARS	THICKNESS	
		Y_1	Y_2
6"	2	4"	8"
8"	4	5"	10"
10"	4	6"	12"
12"	4	7"	15"
15"	5	9"	19"
18"	5	10"	22"
21"	6	12"	26"
24"	6	13"	28"

GENERAL NOTES:

1. EXTEND BOTH ENDS OF CRADLE OR ENCASEMENT TO A POINT ONE INCH SHORT OF FIRST PIPE JOINT BEYOND LOCATIONS SPECIFIED ON PLAN.



PLAN VIEW

2. APPLY FORM OIL, THIN PLASTIC SHEET, OR OTHER ACCEPTABLE MATERIAL TO PIPE, TO PREVENT BOND BETWEEN PIPE AND CONCRETE.
3. USE CLASS 470C2500 CONCRETE FOR ALL CASES.

CRADLING AND ENCASEMENT

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

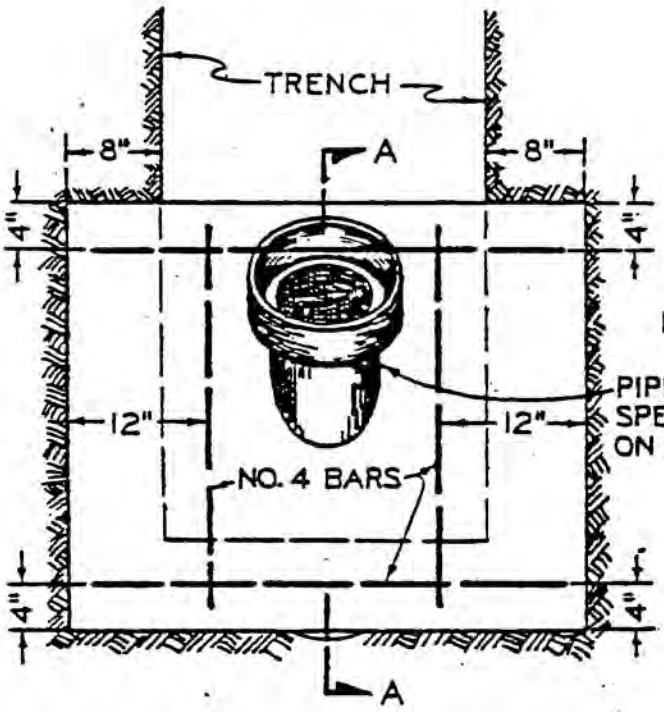
COUNTY ENGINEER STANDARD S-23

DATE : 3/80

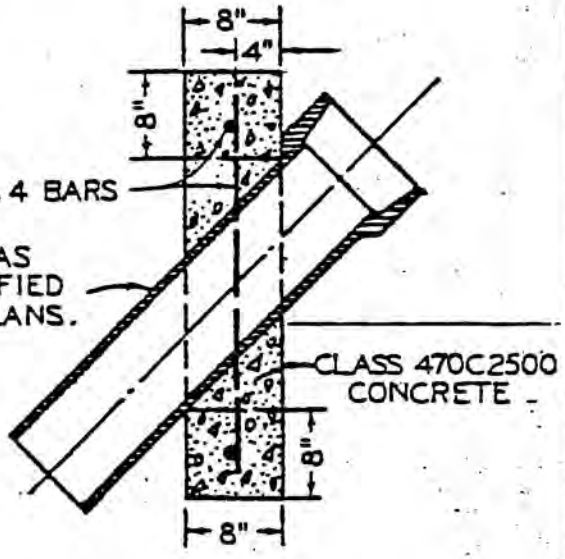
DESIGN RCE 10643

TO BE USED WHEN SEWER GRADE IS GREATER THAN 30%, OR WHEN DESIGNATED ON THE PLAN.

THIS STANDARD APPLIES TO 8 INCH THROUGH 12 INCH PIPE SIZES. LARGER SIZE PIPES WILL REQUIRE A SPECIAL DESIGN.



ELEVATION



SECTION A-A

ANCHOR BLOCK

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

COUNTY ENGINEER STANDARD S-24

DATE: 3/80

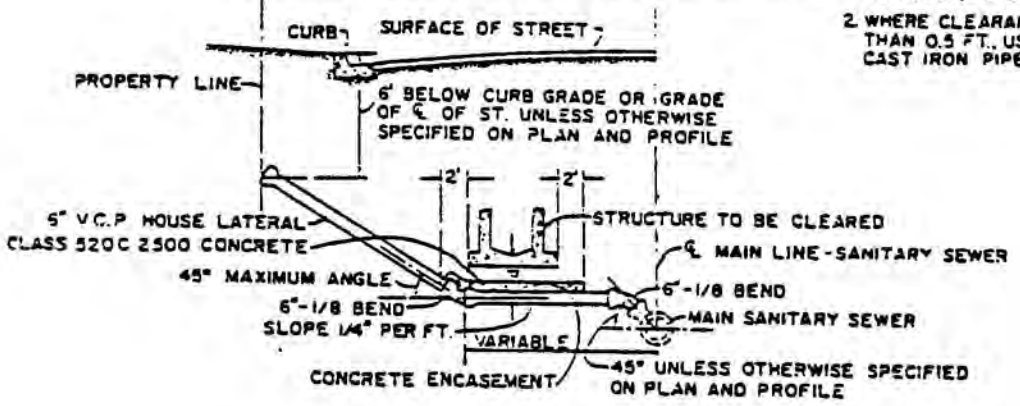
DESIGN RCE 10443

CASE I

SPECIAL HOUSE LATERAL UNDER STRUCTURE

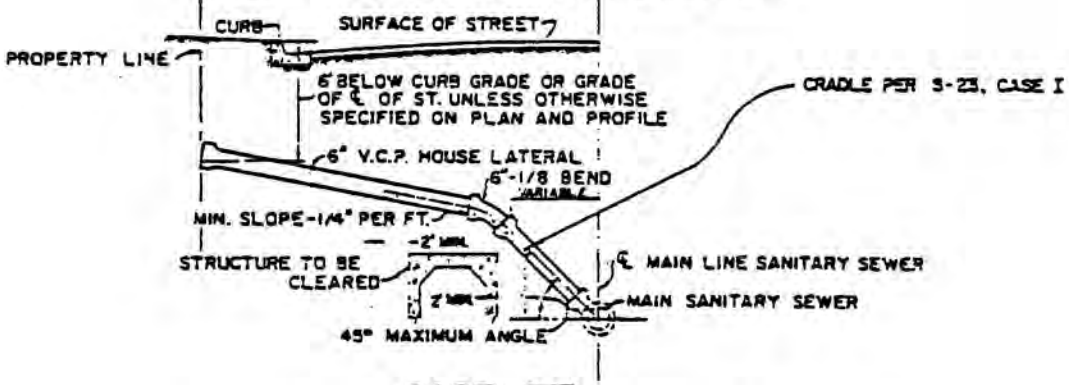
NOTES:

1. WHERE CLEARANCE "d" IS 0.5 TO 1.5 FT., USE V.C.P. AND ENCASE PER S-23, CASE II.
2. WHERE CLEARANCE "d" IS LESS THAN 0.5 FT., USE CLASS 150 CAST IRON PIPE.



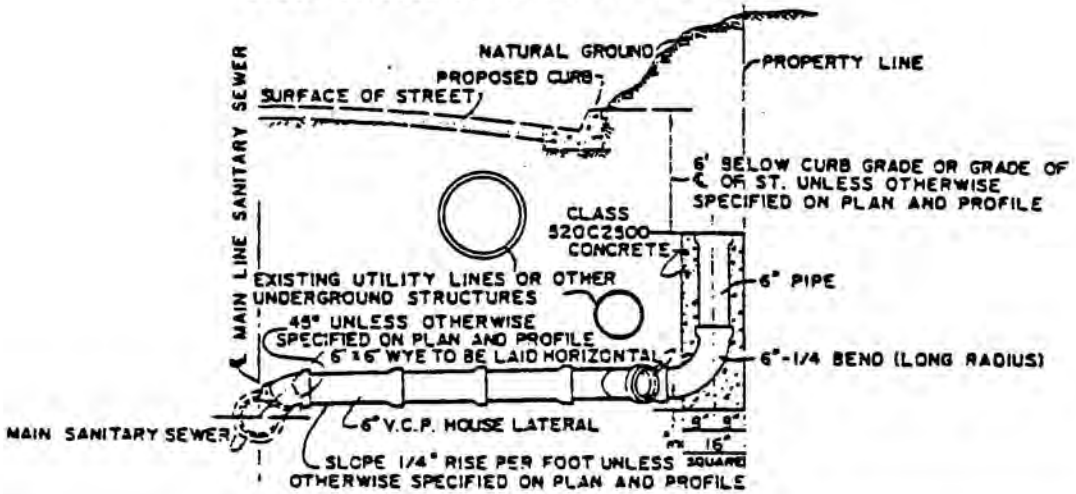
CASE II

SPECIAL HOUSE LATERAL OVER STRUCTURE



CASE III

SPECIAL HOUSE LATERAL WITH CHIMNEY



SPECIAL HOUSE LATERALS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

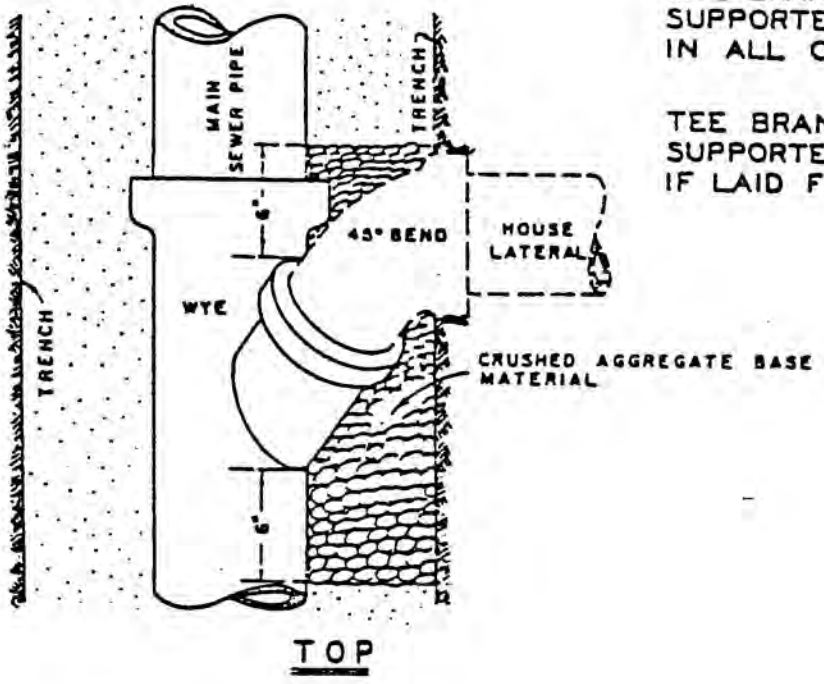
COUNTY ENGINEER

COUNTY ENGINEER
STANDARD S-25
DATE: 3/80

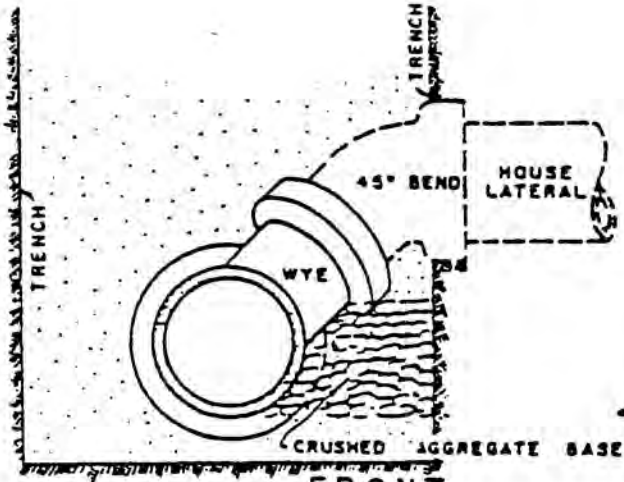
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WYE BRANCHES TO BE SUPPORTED AS SHOWN IN ALL CASES

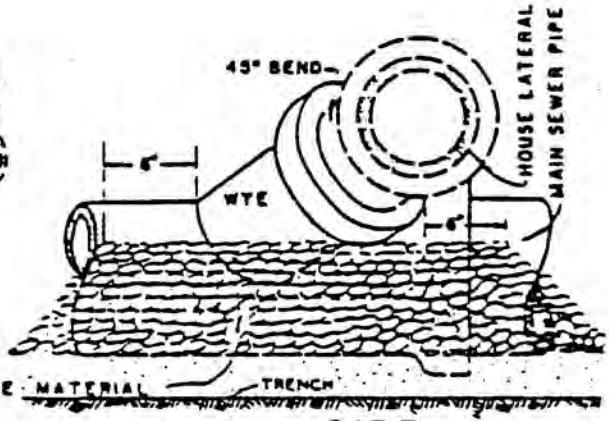
TEE BRANCHES TO BE SUPPORTED AS SHOWN IF LAID FLAT



TOP



FRONT



SIDE

AGGREGATE BASE MATERIAL TO BE "1/2" CRUSHED" ROCK PER SEC. 200-1.2 OF THE STANDARD SPECIFICATIONS

WYE OR TEE SUPPORT

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

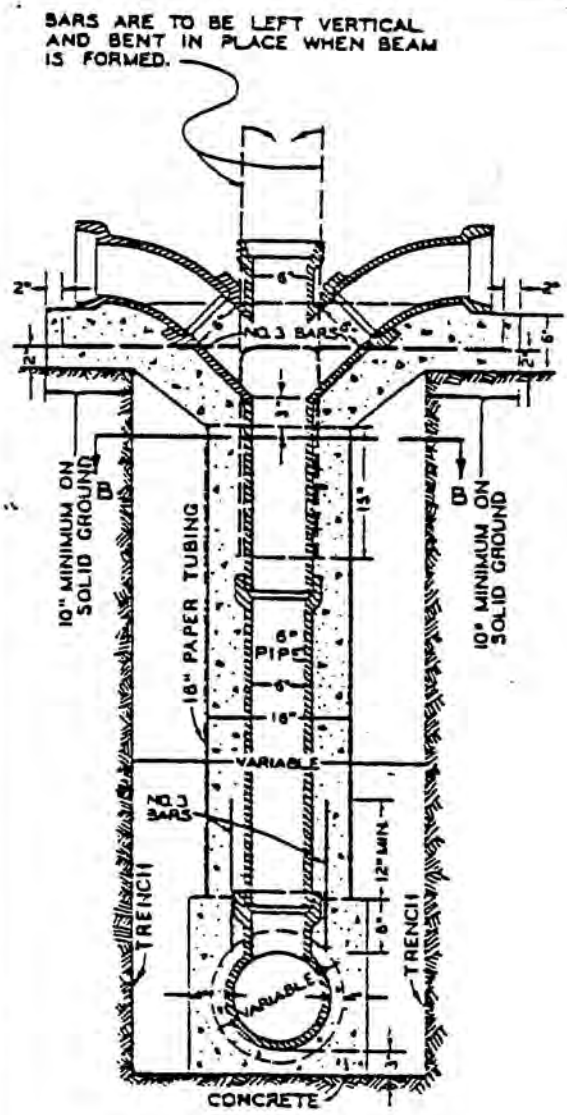
ASSISTANT DEPUTY

COUNTY ENGINEER

COUNTY ENGINEER STANDARD S-26

DATE: 3/80

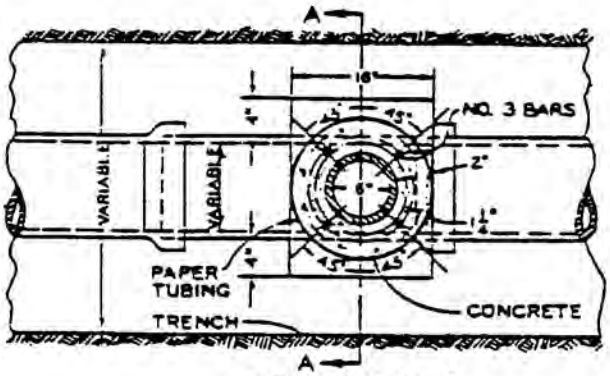
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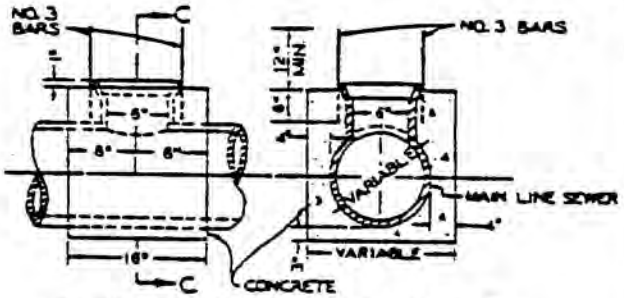
SECTION A-A

NOTES

1. THE UPPER END OF THE CHIMNEY PIPE SHALL BE AT LEAST 8 FEET BELOW THE GRADE OF THE LOWER CURB.
2. THE CHIMNEY PIPE SHALL BE VITRIFIED CLAY PIPE WITH MECHANICAL COMPRESSION JOINTS.
3. NO CONNECTION SHALL BE MADE DIRECTLY TO TOP OF CHIMNEY PIPE.
4. WHERE ONE HOUSE LATERAL IS TO BE JOINED TO THE CHIMNEY PIPE, USE A SINGLE "Y" AND FACE "Y" TOWARDS PROPERTY TO BE SERVED.
5. WHERE TWO OR MORE HOUSE LATERALS ARE TO BE JOINED TO THE CHIMNEY PIPE, INSTALL "Y" BRANCHES AS FOLLOWS:
   a. FOR TWO HOUSE LATERALS, ONE SERVING EACH SIDE OF STREET, USE A DOUBLE "Y" BRANCH.
   b. FOR TWO HOUSE LATERALS SERVING THE SAME SIDE OF THE STREET, USE TWO SINGLE "Y"S STACKED WITH BRANCHES FACING THE PROPERTIES SERVED.
   c. FOR THREE OR FOUR HOUSE LATERALS, USE TWO DOUBLE "Y" BRANCHES OR ONE DOUBLE AND ONE SINGLE "Y" BRANCH STACKED.
6. EACH DOUBLE OR SINGLE "Y" BRANCH AND EIGHTH BEND SHALL BE SUPPORTED BY A CONCRETE BEAM AS SHOWN.
7. FOR CHIMNEY BASE, 6" TEE BRANCH OR SADDLE SHALL BE INSTALLED VERTICALLY ON TOP OF THE MAIN LINE SEWER AS SHOWN HEREON OR IN ACCORDANCE WITH GENERAL NOTES PER S-28. THE CHIMNEY BASE MUST BE POURED AND SET WITH DOWELS AS SHOWN HEREON 24 HOURS BEFORE THE CHIMNEY CONCRETE IS POURED.
8. ALL CONCRETE SHOWN HEREON SHALL BE CLASS 470 C2500.



SECTION B-B



ELEVATION SECTION C-C

CHIMNEY BASE

CHIMNEY PIPE AND BASE

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

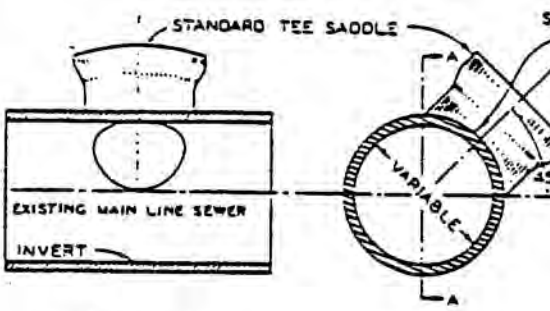
COUNTY ENGINEER

COUNTY ENGINEER STANDARD S-27

DATE: 3/80

DESIGN RCE 10223

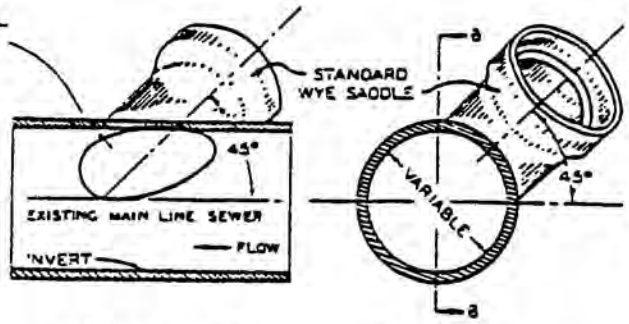
TEE SADDLE INSTALLATION



SECTION A-A

END VIEW

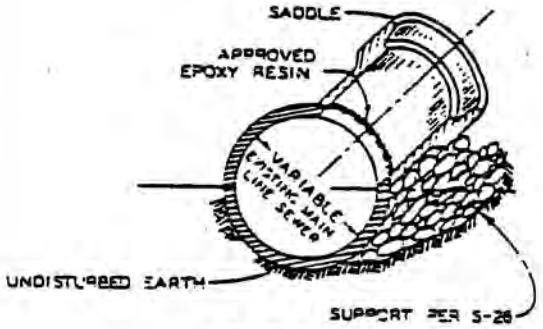
WYE SADDLE INSTALLATION



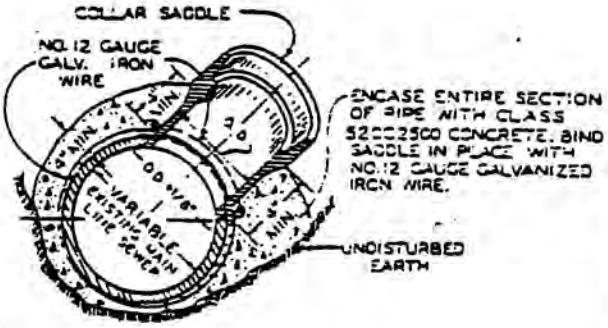
SECTION B-B

END VIEW

TEE OR WYE SADDLE JOINTS AND SUPPORT



EPOXY RESIN JOINT



CEMENT COLLAR JOINT

GENERAL NOTES

1. A WYE OR TEE SADDLE SHALL BE INSTALLED BY CUTTING A NEAT HOLE CONFORMING TO THE INSIDE DIAMETER OF THE SADDLE WHEN USING A SADDLE WITHOUT COLLAR AS SHOWN IN EPOXY RESIN JOINT DETAIL. WHEN USING A SADDLE WITH COLLAR THE DIAMETER OF THE HOLE SHALL BE OUTSIDE DIAMETER PLUS 1/8" AS SHOWN IN CEMENT COLLAR JOINT DETAIL.
2. BROKEN PIECES FROM CUTTING OF THE MAIN LINE SEWER MUST BE EXTRACTED CAREFULLY PRIOR TO PLACEMENT OF THE SADDLE.
3. THE SADDLE SHALL BE CEMENTED INTO PLACE USING CLASS "D" CEMENT MORTAR PER SECTION 201-5.1 OR OTHER CEMENTING AGENT APPROVED BY THE COUNTY ENGINEER. THE SADDLE SHALL BE HELD SECURELY IN PLACE WHILE THE CEMENT OR OTHER APPROVED CEMENTING AGENT SETS. THE INSIDE OF THE JOINT BETWEEN PIPE AND SADDLE SHALL BE FILLED WITH CEMENTING MATERIAL AND NEATLY ROUNDED.
4. FOR INSTALLATION OF TEE SADDLE FOR CHIMNEY BASE REFER TO GENERAL NOTES ABOVE AND S-27, NOTE 7.

SADDLES FOR HOUSE LATERALS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

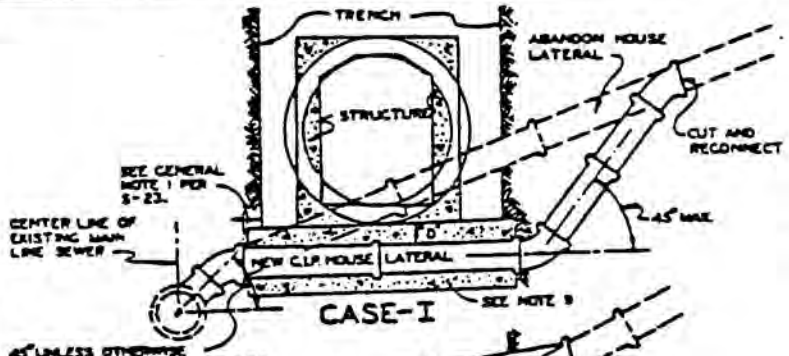
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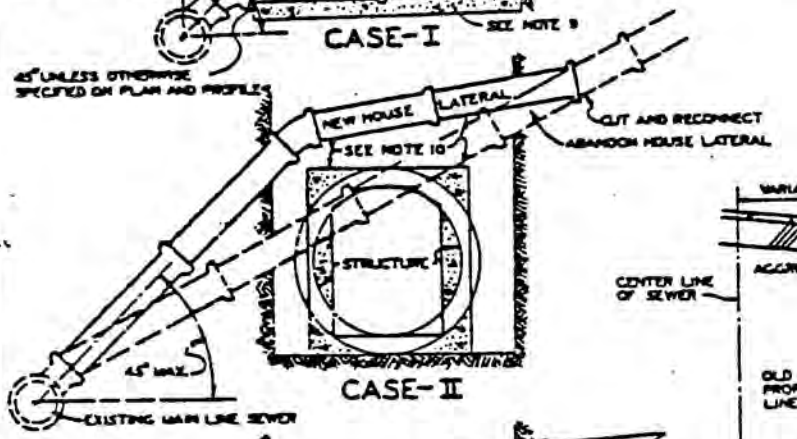
COUNTY ENGINEER STANDARD

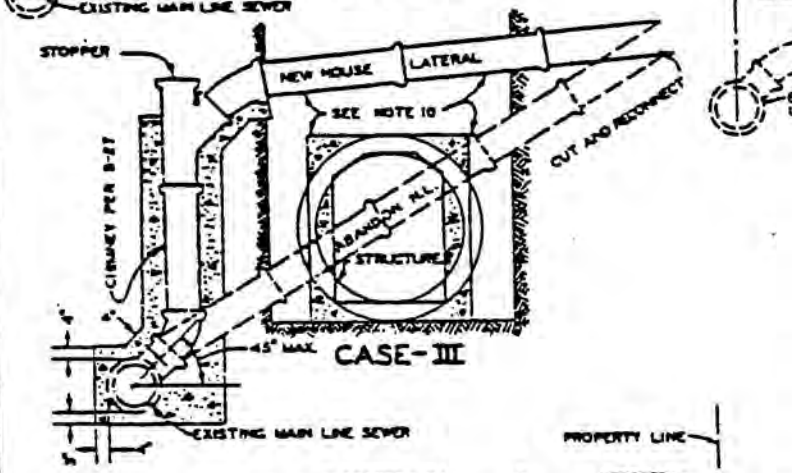
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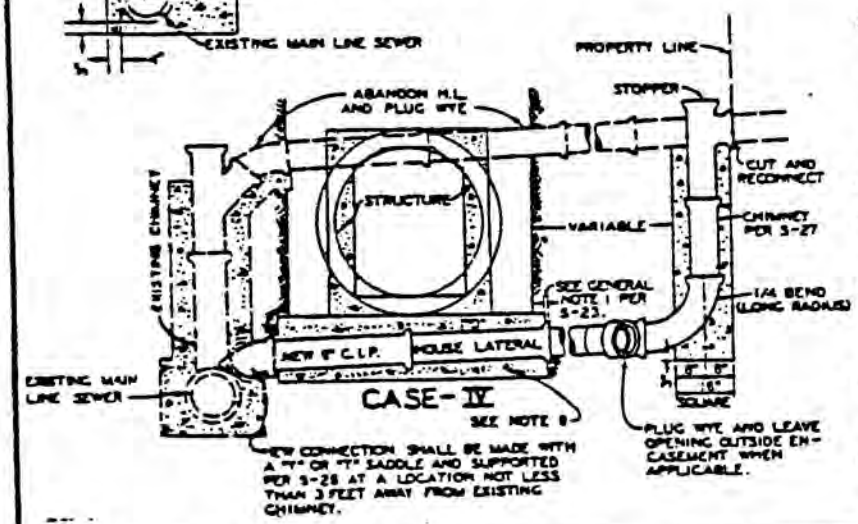
S-28

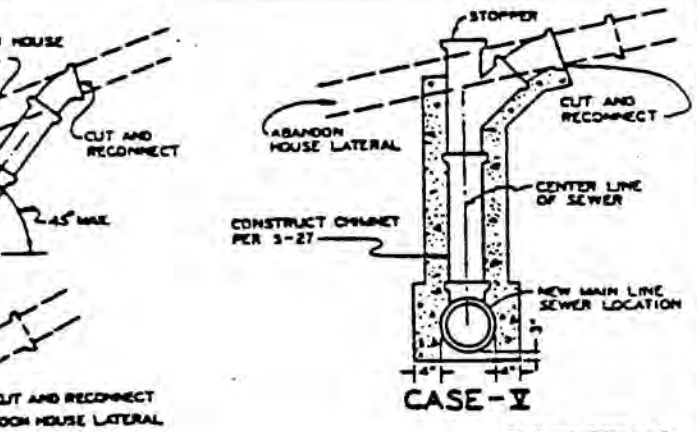
DESIGN RCE 10443

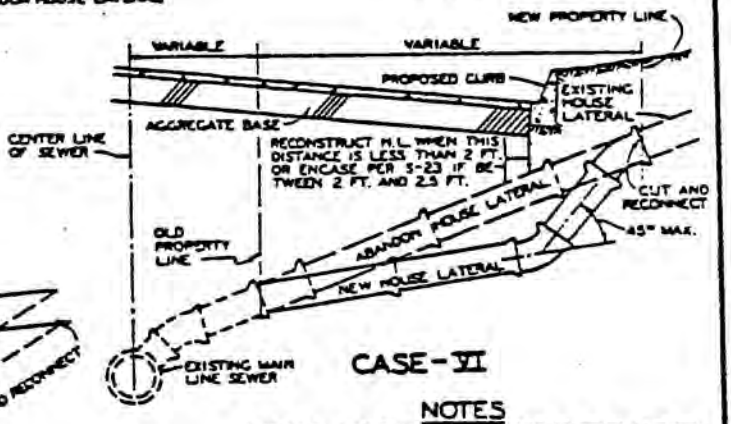












NOTES

1. HOUSE LATERALS FOR CASES II, III, V, AND VI SHALL BE RECONSTRUCTED OF VITRIFIED CLAY PIPE WITH MECHANICAL COMPRESSION JOINTS UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2. HOUSE LATERALS FOR CASES I AND IV SHALL BE CAST IRON PIPE WITH RUBBER GASKET SLIP-ON JOINTS UNLESS OTHERWISE SPECIFIED ON THE PLANS.
3. THE MINIMUM SLOPE FOR HOUSE LATERALS SHALL BE 1/4 INCH PER FOOT.
4. "Y"S OR "T"S MAY BE LAID "FLAT" UPON APPROVAL OF THE COUNTY ENGINEER.
5. WHERE ENCASEMENT IS SPECIFIED FOR AN EXISTING HOUSE LATERAL BUT FIELD INSPECTION DURING CONSTRUCTION REVEALS THAT THERE IS ACTUALLY LESS THAN TWO FEET OF CLEARANCE BETWEEN THE PROPOSED AGGREGATE BASE OF THE STREET AND THE TOP OF THE EXISTING HOUSE LATERAL, SUCH HOUSE LATERAL SHALL BE RECONSTRUCTED PER CASE - VI.
6. SADDLES MAY BE USED WHERE NECESSARY AND SHALL BE INSTALLED PER S-28.
7. ALL CEMENT CONCRETE USED FOR ENCASEMENT AND CHIMNEY CONSTRUCTION SHALL BE OF CLASS 470-C-2500.
8. WHEN V.C.P. HOUSE LATERALS ARE TO BE SUPPORTED PER S-22, AND IT IS DETERMINED THAT THERE IS INSUFFICIENT COVER OVER THE PIPE, ENCASE PER S-23, CASE II AND INCREASE THE SIZE OF THE SUPPORT.
9. WHERE CLEARANCE "D" IS MORE THAN 0.5 FT. ENCASEMENT IS NOT REQUIRED. WHERE CLEARANCE "D" IS LESS THAN 0.5 FT., ENCASE PER S-22, CASE II.
10. SEE S-22, CASES III, III OR V FOR SPECIAL SUPPORT AND PROTECTION.

RECONSTRUCTION OF SANITARY SEWER HOUSE LATERALS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

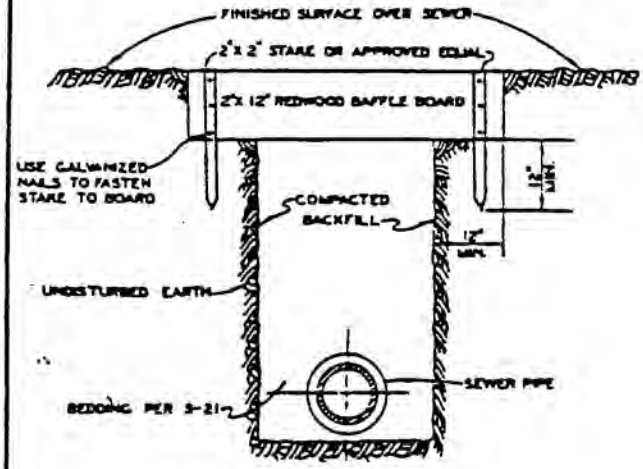
COUNTY ENGINEER STANDARD **S-29**

DATE: 3/80

DESIGN

RCE 10443

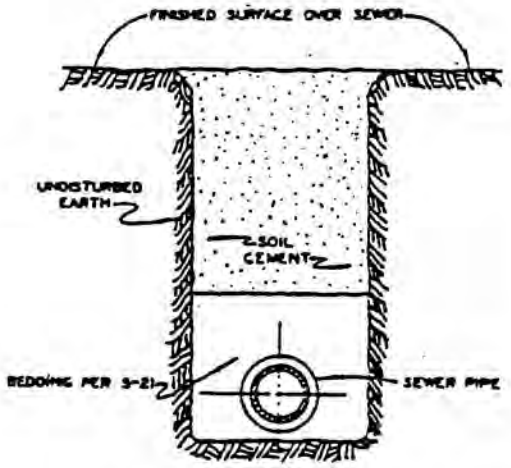
TO BE USED IN EASEMENTS WHERE THE SURFACE GRADE IS GREATER THAN 30% OR WHEN DESIGNATED ON THE PLAN



CASE I

BAFFLE BOARD

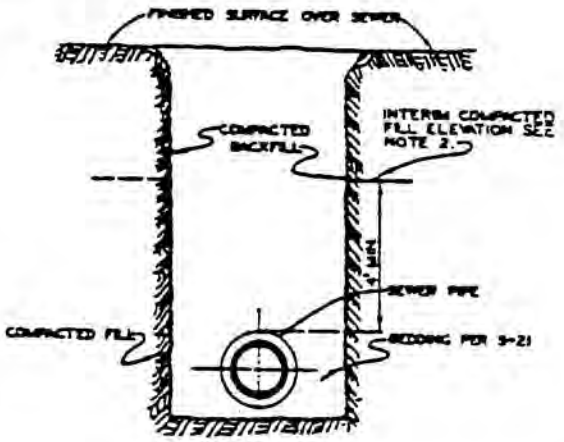
1. TO BE USED WHEN TRENCH IS EXCAVATED IN UNDISTURBED NATURAL SOIL, UNLESS CASE II APPLIES.
2. THE BAFFLE BOARDS SHALL BE SPACED SO THAT THE TOP OF THE LOWER BOARD IS LEVEL WITH THE BOTTOM OF THE NEXT HIGHER BOARD.
3. THE UPPER ONE FOOT LAYER OF THE BACKFILL IS TO BE TOP SOIL TAMPED IN PLACE, PLANTED WITH MUSTARD AND RYE GRASS AND ADEQUATELY WATERED UNTIL GROWTH IS RESTORED.



CASE II

SOIL CEMENT BACKFILL

1. TO BE USED IN SOFT SANDSTONE, SHALE, OR ROCK WHEN REQUIRED BY THE COUNTY ENGINEER; OR MAY BE USED IN LIEU OF CASE I, WITH THE APPROVAL OF THE COUNTY ENGINEER.
2. THE ENTIRE TRENCH SHALL BE BACKFILLED WITH SOIL-CEMENT ABOVE THE BEDDING SHOWN TO THE FINISHED SURFACE UNLESS OTHERWISE NOTED ON THE PLANS.
3. THE SOIL-CEMENT SHALL CONSIST OF ONE SACK OF PORTLAND CEMENT PER CUBIC YARD OF BACKFILL MATERIAL WITH SUFFICIENT FINES TO FILL ALL VOIDS. THE SOIL AND CEMENT SHALL BE THOROUGHLY DRY MIXED. AFTER MIXING, WATER SHALL BE ADDED IN A QUANTITY SUFFICIENT ONLY TO SLIGHTLY MOISTEN THE MIXTURE SO THAT IT CAN BE PACKED BY HAND INTO A BALL AND RETAIN ITS SHAPE BUT NOT WET THE HANDS. THE SOIL-CEMENT SHALL THEN BE MECHANICALLY RAMMED INTO PLACE IN THE TRENCH IMMEDIATELY AFTER THE WATER IS ADDED.



CASE III

CERTIFIED COMPACTION

1. TO BE USED WHEN SEWER IS LOCATED IN A COMPACTED FILL AREA BEING PLACED ACCORDING TO AN APPROVED GRADING PLAN.
2. THE SEWER PIPE MUST BE LAID IN A TRENCH EXCAVATED IN THE COMPACTED FILL SLOPE AND DEEP ENOUGH TO PROVIDE AT LEAST 4 FEET OF COVER OVER THE PIPE.
3. CERTIFICATION IS REQUIRED BY A SOIL TESTING LABORATORY AND SOILS ENGINEER THAT THE COMPACTION FOR THE BACKFILL MEETS THE GRADING PLAN REQUIREMENTS.

GENERAL NOTES

1. IN ALL CASES ANCHOR BLOCKS WILL BE REQUIRED IN ACCORDANCE WITH STANDARD PLAN S-24 UNLESS OTHERWISE NOTED ON THE PLANS.
2. ANY ALTERNATE MATERIALS, PLANTS OR METHODS MUST BE SPECIFICALLY APPROVED BY THE COUNTY ENGINEER.

EROSION PROTECTION IN STEEP SLOPES

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

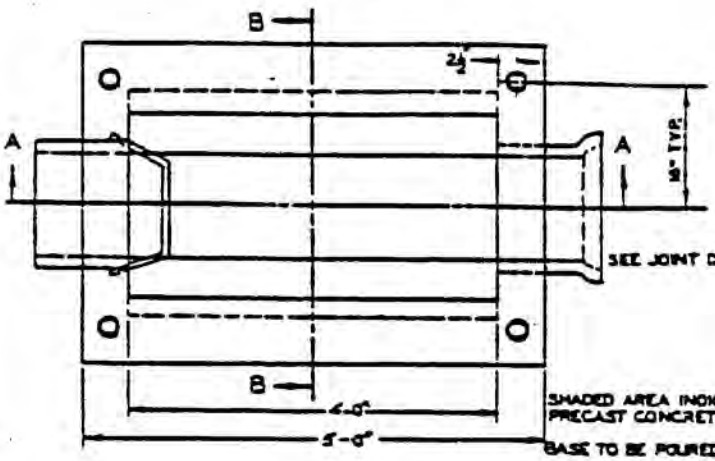
COUNTY ENGINEER

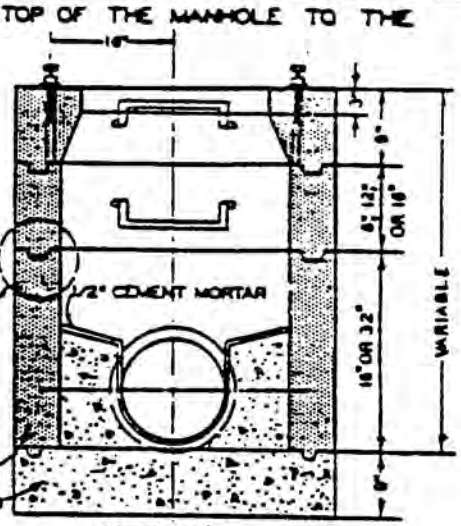
COUNTY ENGINEER STANDARD S-31

DATE: 3/80

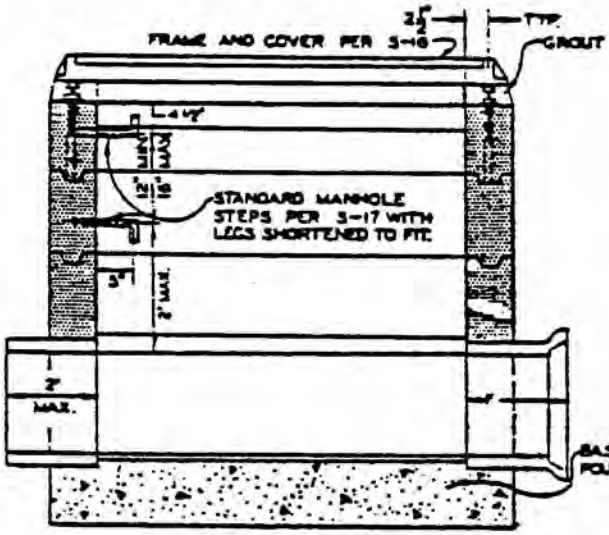
DESIGN RCE 10443

NOTE: TO BE USED FOR DEPTHS LESS THAN 5 FEET FROM THE TOP OF THE MANHOLE TO THE TOP OF THE SEWER PIPE

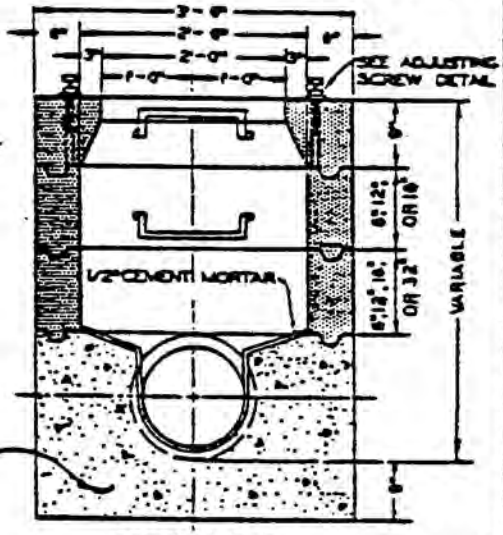




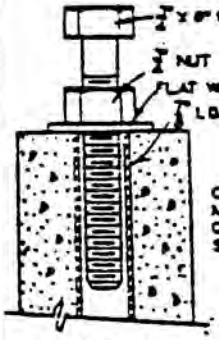
SECTION B-B
TYPE A
PRECAST BASE SECTION WITH OPENINGS PROVIDED



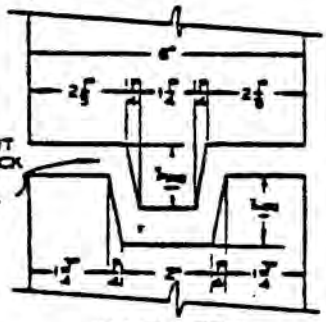
SECTION A-A



SECTION B-B
TYPE B
BASE AND CHANNELS POURED MONOLITHICALLY



ADJUSTING SCREW DETAIL



JOINT DETAIL

NOTES

1. CONCRETE FOR ALL PRECAST UNITS SHALL BE COMPACTLY VIBRATED IN THE FORMS. IT SHALL BE CURED ACCORDING TO APPROVED PRACTICE EITHER BY STEAM, SPRINKLING, MEMBRANE SOLUTION, OR A COMBINATION OF THESE. IT SHALL DEVELOP 3500 PSI OR GREATER STRENGTH IN 28 DAYS.
2. THE DEPTH OF CHANNELS SHALL EQUAL THE PIPE DIAMETER FOR ALL SIZES OF PIPE.
3. CHANNEL LOCATIONS AND OFFSETS TO BE PLACED AS SHOWN ON S-7.
4. ALL FIELD POURED CONCRETE TO BE CLASS 520C2500 AND ALLOWED TO SET 24 HOURS BEFORE PLACING PRECAST UNITS.
5. ALL PRECAST UNITS SHALL BE REINFORCED FOR H-20 BRIDGE LOADING.
6. ALL CEMENT MORTAR SHOWN HEREON SHALL BE CLASS "D" PER SECTION 201-5 OF STANDARD SPECIFICATIONS.

PRECAST CONCRETE SHALLOW MANHOLE

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

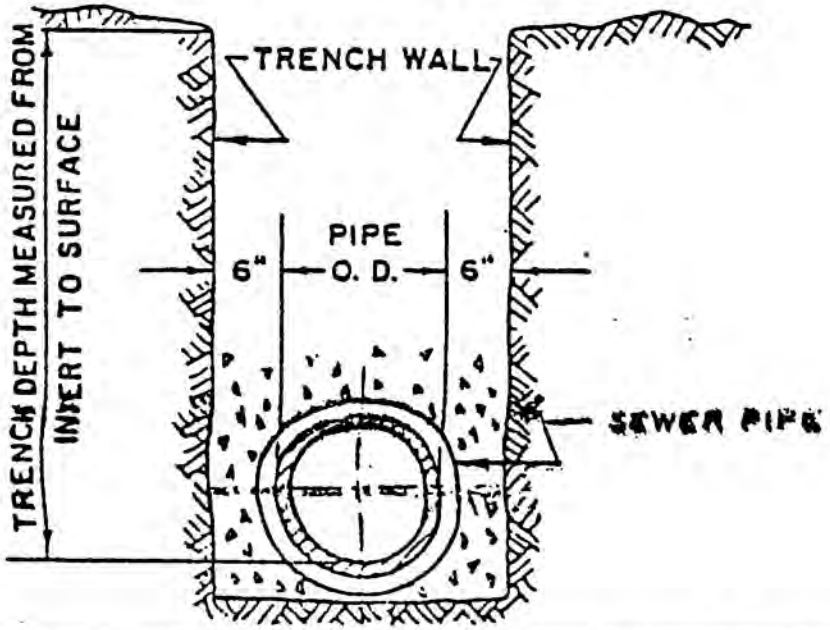
ASSISTANT DEPUTY

COUNTY ENGINEER

COUNTY ENGINEER
STANDARD
DATE: 3/80 S-32

DESIGN RCE 10663

I. MINIMUM TRENCH WIDTH



II. MAXIMUM TRENCH WIDTH

MEASURED AT TOP OF PIPE

PIPE SIZE	DEPTH OF TRENCH 18'–20'	16'–18'	14'–16'	12'–14'	10'–12'	LESS THAN 10'
4" & 6"	2'–2"	2'–2"	2'–2"	2'–2"	2'–2"	NONE
8"	2'–3"	2'–3"	2'–4"	2'–4"	2'–6"	"
10"	2'–5"	2'–6"	2'–7"	2'–8"	2'–9"	"
12"	2'–8"	2'–9"	2'–9"	2'–11"	3'–1"	"
15"	2'–11"	3'–0"	3'–2"	3'–3"	3'–6"	"
18"	3'–3"	3'–4"	3'–6"	3'–8"	4'–0"	"
21"	3'–7"	3'–8"	3'–10"	4'–1"	4'–6"	"
24"	3'–9"	3'–11"	4'–2"	4'–5"	4'–10"	"
27"	4'–1"	4'–3"	4'–6"	4'–10"	5'–4"	"
30"	4'–4"	4'–7"	4'–10"	5'–3"	5'–10"	"
33"	4'–8"	4'–11"	5'–2"	5'–8"	6'–5"	"
36"	4'–11"	5'–2"	5'–6"	6'–1"	6'–11"	"

IF MAXIMUM ALLOWABLE WIDTH SPECIFIED IS EXCEEDED, SPECIAL BEDDING & CRADLING MUST BE PROVIDED PER S-21, AT CONTRACTOR'S EXPENSE.

ALLOWABLE TRENCH WIDTHS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

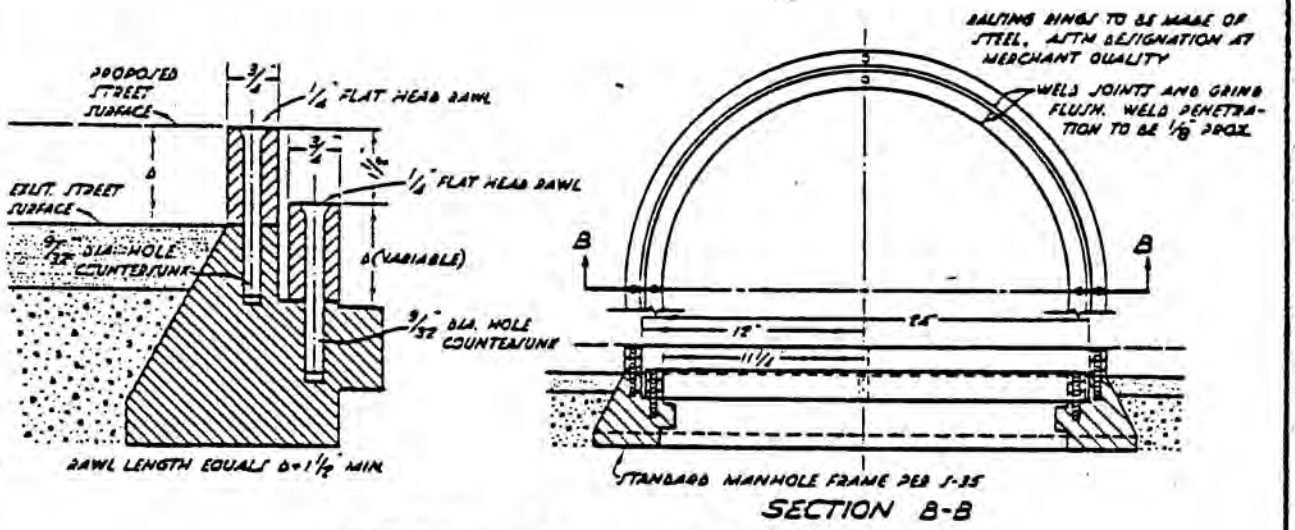
ASSISTANT DEPUTY

COUNTY ENGINEER

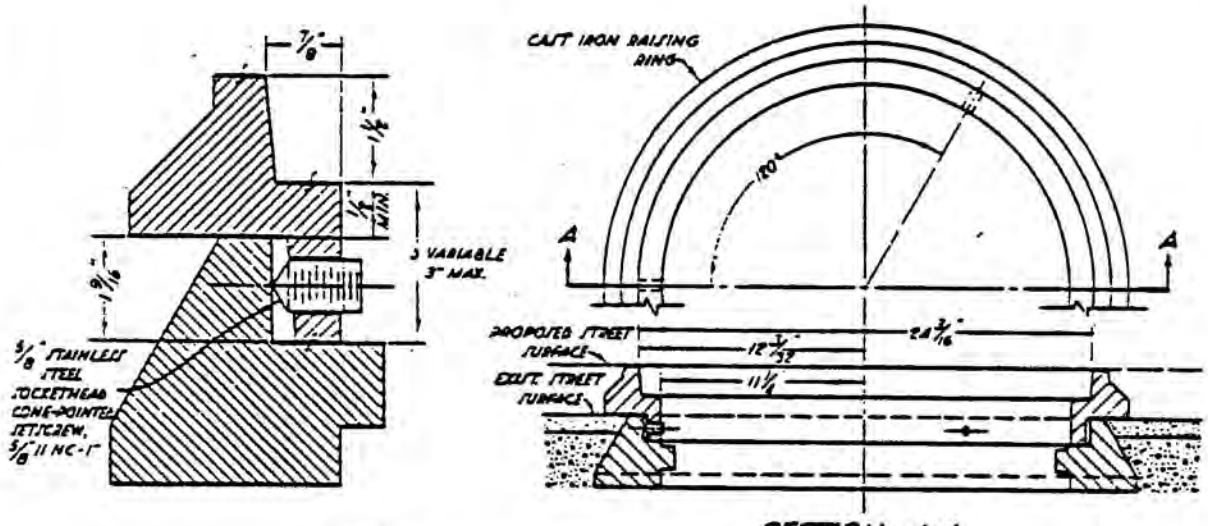
COUNTY ENGINEER STANDARD S-33

DATE: 3/80

DESIGN RCE 10223



STEEL RAISING RINGS



NOTES:
1. MACHINE SEATS, OF CAST IRON RINGS.
2. THE CAST IRON USED SHALL HAVE A TENSILE STRENGTH OF 30,000 LBS. PER SQUARE INCH.

CAST IRON RAISING RINGS

NOTES:

THE METAL RAISING RINGS MAY BE USED IN LIEU OF THE REGULAR METHOD OF ADJUSTMENT UTILIZING MORTAR OR BRICK AND MORTAR UNDER THE FOLLOWING CONDITIONS.

1. RAISING RINGS MAY ONLY BE USED UPON WRITTEN APPROVAL OF THE COUNTY ENGINEER.
2. ONLY ONE ADJUSTMENT WITH RAISING RINGS WILL BE ALLOWED ON ANY MANHOLE.
3. MAXIMUM "D" SHALL BE 3 INCHES.

MANHOLE RAISING RINGS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

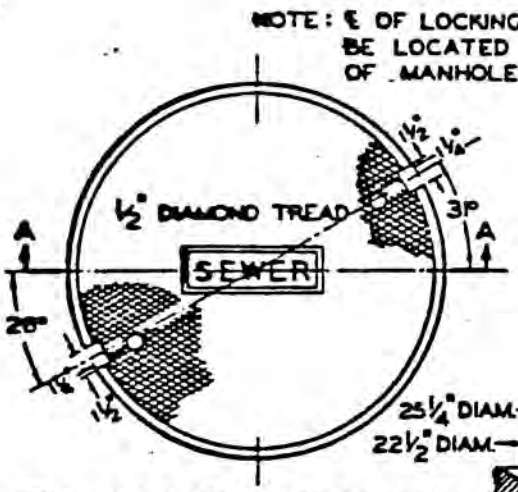
ASSISTANT DEPUTY

COUNTY ENGINEER

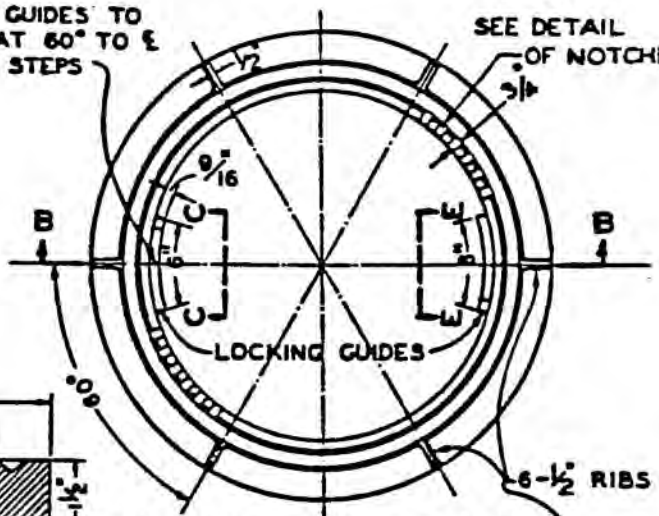
COUNTY ENGINEER STANDARD S-34

DATE: 3/80

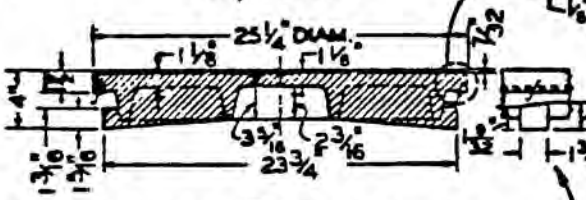
DESIGN RCE 10423
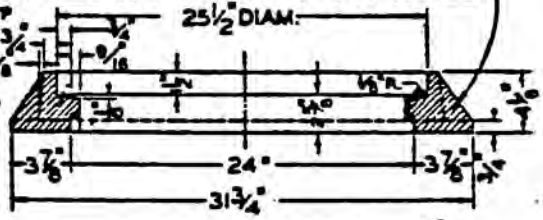


PLAN OF COVER
TOP VIEW



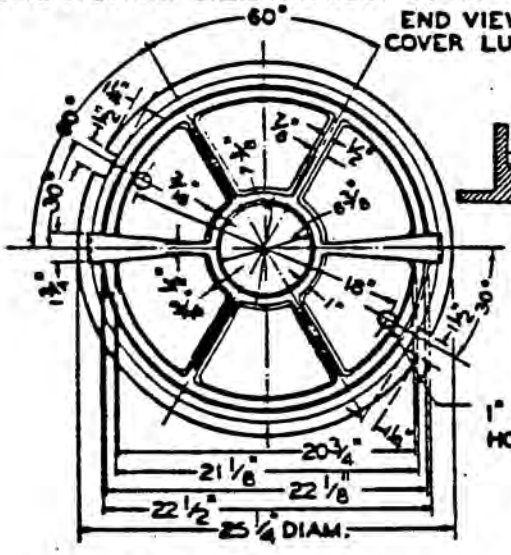
PLAN OF FRAME



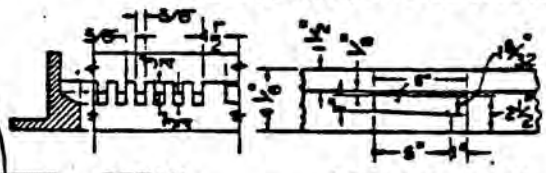
SECTIONAL ELEVATION A-A



SECTIONAL ELEVATION B-B



PLAN OF COVER
BOTTOM VIEW



DETAIL OF NOTCHES

LOCKING GUIDE SIDE VIEW C-C AND E-E

NOTES

1. MACHINE SEATS AND GRIND LUGS SMOOTH. PERIMETER OF COVER SHALL BE GROUND SMOOTH, DIAMETER TOLERANCE ± 1/16".
2. WEIGHT OF MANHOLE FRAME-155 LBS. WEIGHT OF MANHOLE COVER-200 LBS. THE CAST IRON USED SHALL CONFORM TO SEC. 206-3.3 OF THE STANDARD SPECIFICATIONS.

LOCKING MANHOLE FRAME & COVER

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

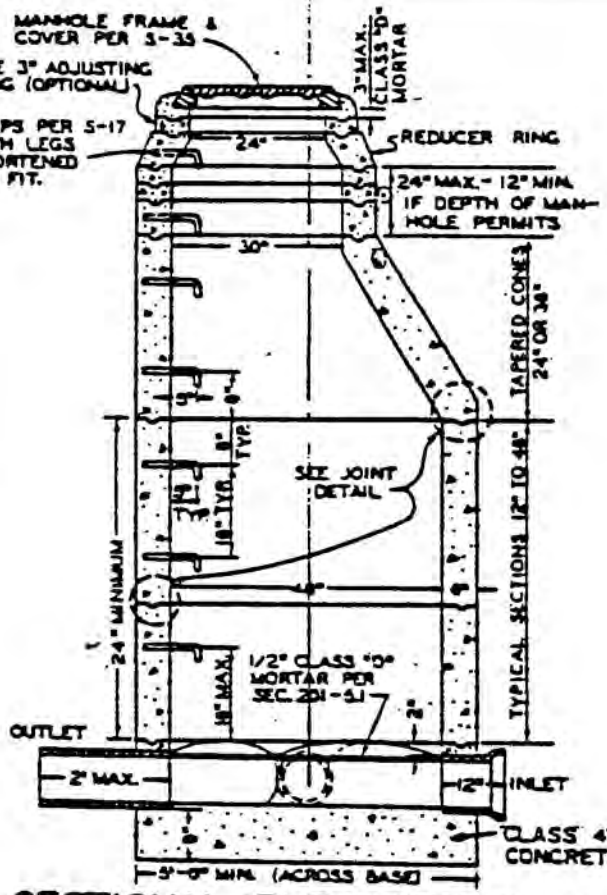
ASSISTANT DEPUTY

COUNTY ENGINEER

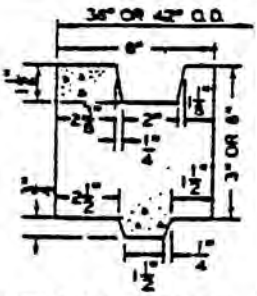
COUNTY ENGINEER STANDARD S-35

DATE: 3/80

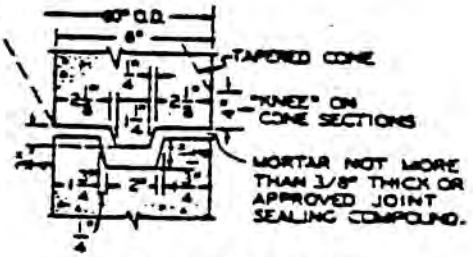
DESIGN RCE 10443



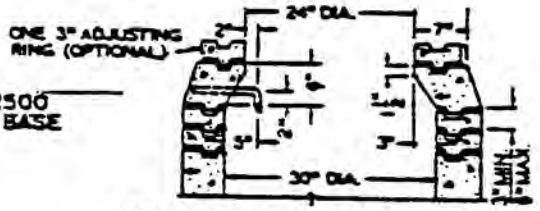
SECTIONAL ELEVATION A-A



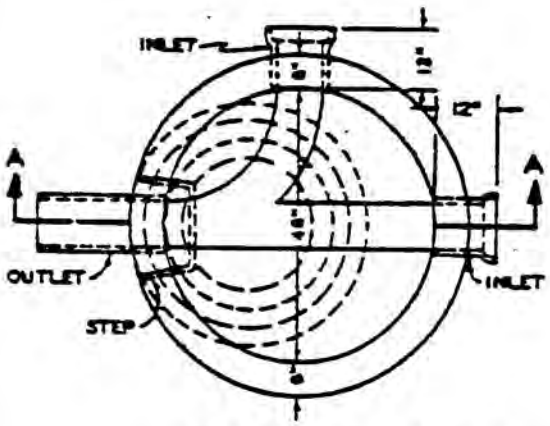
ADJUSTING RING DETAIL



JOINT DETAIL



REDUCER RING AND ADJUSTING RINGS



PLAN OF BASE

NOTES

1. CONCRETE BASE AND STUB WALLS SHALL BE POURED IN ONE OPERATION TO A POINT 2 IN. ABOVE THE INLET AND OUTLET PIPES. ALL PIPES SHALL BE RIGIDLY SUPPORTED BY TEMPORARY PIERS DURING THIS OPERATION. CONCRETE SHALL SET FOR 24 HOURS BEFORE PLACING PRECAST UNITS.
2. CONCRETE FOR ALL PRECAST UNITS SHALL BE COMPACTLY VIBRATED IN THE FORMS. IT SHALL BE CURED ACCORDING TO APPROVED PRACTICE EITHER BY STEAM, SPRINKLING, MEMBRANE SOLUTION, OR A COMBINATION OF THESE. IT SHALL DEVELOP 3500 PSI OR GREATER STRENGTH IN 28 DAYS.
3. STEPS SHALL BE CAST IN PLACE AT TIME OF FABRICATION OR PLACED BETWEEN RINGS WITH 16 IN. MAXIMUM SPACING BETWEEN STEPS.
4. THE DEPTH OF CHANNEL SHALL EQUAL THE PIPE DIAMETER FOR ALL SIZES OF PIPE. FOR SPECIAL CHANNELS IN TRAP OR GAUGING MANHOLES, SEE SPECIAL PLANS.
5. THE TOP OF MANHOLE AND THE STEPS SHALL BE PLACED DIRECTLY OVER THE OUTLET OF THE STRUCTURE EXCEPT AS OTHERWISE NOTED ON PLANS.

NON-REINFORCED PRECAST CONCRETE MANHOLE

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

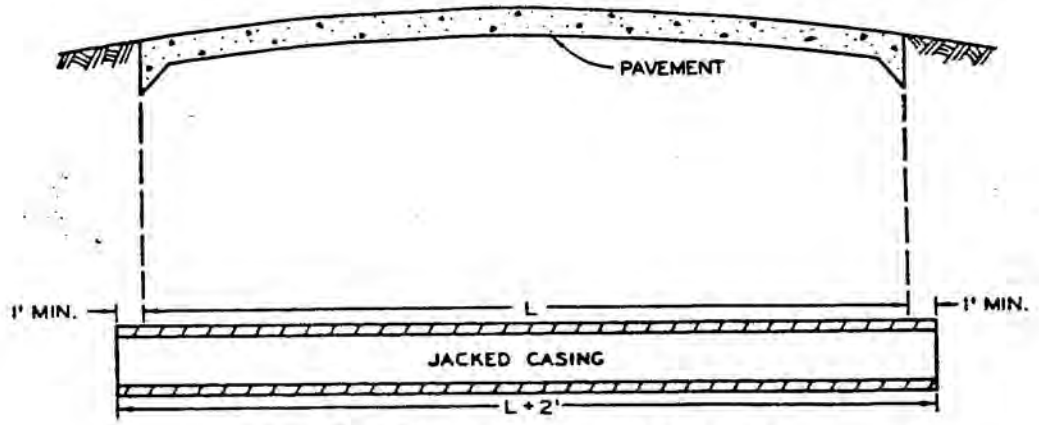
ASSISTANT DEPUTY

COUNTY ENGINEER

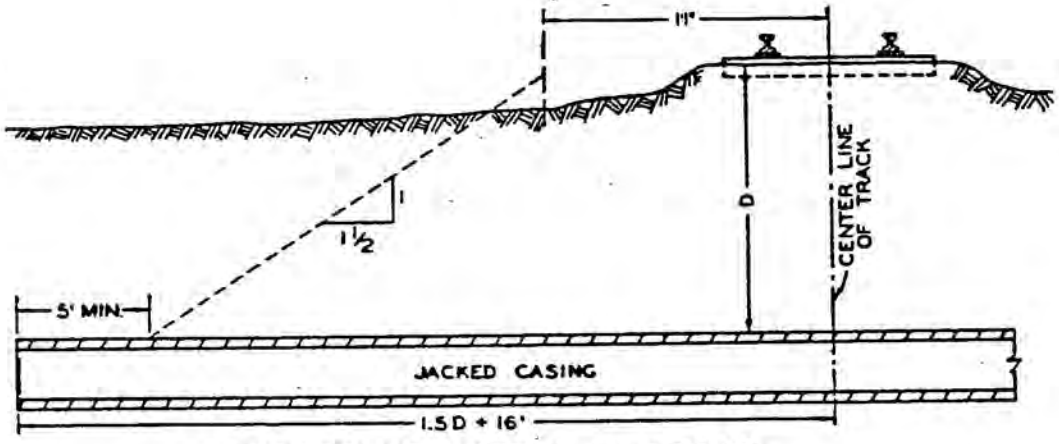
COUNTY ENGINEER STANDARD **S-36**

DATE: 3/80

DESIGN 2CE 10CC3



CROSSING UNDER ROADWAY



CROSSING UNDER RAILROAD

NOTES

1. JACKED STEEL CASING SHALL BE INSTALLED PER SECTION 306-2.3 OF THE STANDARD SPECIFICATIONS.
2. USE TYPE "D", OR "G" JOINTS PER SECTION 208-2 OF THE STANDARD SPECIFICATIONS FOR V.C.P. PIPE INSTALLED IN CASING.
3. THE CASING THICKNESS SHALL BE NOT LESS THAN 3/8".
4. FOR PIPE SIZES 18" AND UP, CHECK WITH COUNTY ENGINEER FOR DIAMETER AND THICKNESS OF CASING.
5. THE LENGTH OF CASING SHALL BE AS SHOWN ABOVE EXCEPT AS OTHERWISE INDICATED ON PLANS.
6. ANY ALTERNATE MATERIALS, SIZES, OR CONSTRUCTION METHODS MUST BE SPECIFICALLY APPROVED BY THE COUNTY ENGINEER.

DIAMETER OF STEEL CASING	
PIPE SIZE	CASING DIAMETER
6"	30"
8"	30" - 36"
10"	33" - 36"
12"	36" - 42"
15"	42" - 48"

JACKING PIPE

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

COUNTY ENGINEER STANDARD S-37

DATE: 5/81

DESIGN RCE 10443

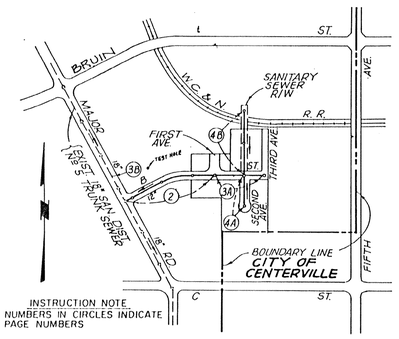
B.M. M.E. 5 S **ELEV.** 110.803

NORTHWEST CORNER 'C' STREET AND MAJOR ROAD L & T. 5 FT. W. OF W. END OF CURB RETURN

MALIBU **QUAD. 19** 78

INSTRUCTION NOTE

AN ACCEPTABLE BENCH MARK IS TO BE SHOWN ON ALL PLANS
NO EQUATIONS BETWEEN BENCH MARK AND PLAN DATUM AUTHORIZED



INSTRUCTION NOTE
NUMBERS IN CIRCLES INDICATE PAGE NUMBERS

INDEX MAP
P.C. 13000 TR. NO. 50000
SCALE: 1"=600'
THOMAS GUIDE PG. ____

* GENERAL INSTRUCTION NOTES

IF IN A CONTRACT CITY CHANGE THE WORD "COUNTY TO CITY."
SUB-MINIMUM GRADES TO BE USED ONLY WITH PERMISSION OF THE DEPARTMENT OF PUBLIC WORKS
DOUBLE SCALE IN THE PROFILE MUST BE APPROVED BY THE DIRECTOR OF PUBLIC WORKS. (ALL PAGES MUST USE SAME SCALE)
PLACE MANHOLES ON EVEN STATIONS OR 25 FT. STATIONS WHERE PRACTICABLE.
MAXIMUM MANHOLE DISTANCE TO BE 350 FEET

INSTRUCTION NOTE

IF IT IS NECESSARY TO JOIN TWO PAGES OF TRACING CLOTH TO MAKE A STANDARD SIZE SHEET, IT IS REQUIRED THAT THE JOINT BE MADE BY LAPPING THE EDGES 1/2 INCH AND SEWING SECURELY. PLANS SHALL CONSIST OF STANDARD SIZE SHEETS ONLY.

DOUBLE SCALE
(WHEN APPLICABLE)
* SEE GENERAL NOTE BELOW

STANDARD PLANS

JACKING PIPE	S-37
RECTANGULAR SHALLOW M.H.	S-7
RECTANGULAR M.H. FRAME & COVERS	S-16
PRECAST CONCRETE SHALLOW M.H.	S-32

IN ADDITION THE FOLLOWING COUNTY SANITATION DISTRICT STANDARDS SHALL APPLY TO THE CONSTRUCTION OF THIS PROJECT

STD. MANHOLE TYPE "D"	S-a-204
STD. 24" M.H. FRAME & COVERS	S-a-207

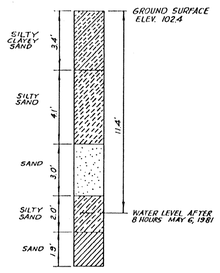
INSTRUCTION NOTE

SEWER GRADES

PIPE SIZE	MINIMUM	SUB-MINIMUM
4" & 6"	2.00%	NOT ALLOWED
8"	0.40%	0.24%
10"	0.32%	0.20%
12"	0.24%	0.16%
15"	0.16%	0.12%
18"	0.14%	0.08%
21"	0.12%	0.08%
24"	0.10%	0.08%

INSTRUCTION NOTE

A.B.S., A.B.S. COMPOSITE, OR P.V.C. PIPE MAY BE USED IN LIEU OF V.C.P. IF IT CONFORMS TO THE CONDITIONS OF USAGE CONTAINED IN "PART IV, PLASTIC SEWER PIPE" OF THE "SPECIAL PROVISIONS FOR THE CONSTRUCTION OF SANITARY SEWERS." SPECIAL APPROVAL MUST BE OBTAINED FROM THE SANITARY ENGINEERING SECTION BEFORE USING ANY MATERIALS OTHER THAN V.C.P. EITHER PLANS MUST BE APPROVED SHOWING THE ALTERNATE PIPE MATERIAL OR A LETTER MUST BE SUBMITTED BY THE DESIGN ENGINEER REQUESTING THE USE OF THE ALTERNATE MATERIAL.



TEST HOLE DATA
NE. COR. 'B' ST. & MAJOR RD.

INSTRUCTION NOTE

TEST BORING REQUIRED ON REQUEST OF THE DEPT OF PUBLIC WORKS

PLAN REVISION NOTE
(WHEN APPLICABLE)

REVISION No_____ DATE_____

(DESCRIPTION OF REVISION IN FULL INCLUDING PAGE NUMBER(S) AND STATION INVOLVED.)

APPROVED _____
DEPT. OF PUBLIC WORKS

GENERAL NOTES:

1. ELEVATIONS ARE IN FEET ABOVE U.S.C. & G.S. SEA LEVEL DATUM OF 1929.
2. NO REVISIONS SHALL BE MADE IN THESE PLANS WITHOUT THE APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.
3. NO REPRESENTATIVE OF THE DEPARTMENT OF PUBLIC WORKS WILL SURVEY OR LAY OUT ANY PORTION OF THE WORK.
4. GRADES TO WHICH THIS IMPROVEMENT IS TO BE CONSTRUCTED ARE SHOWN ON PLANS AND PROFILES. GRADE POINTS FOR TOP OF CURB, CENTER LINE OF STREETS, OR CENTER LINE OF ALLEYS ARE SHOWN BY CIRCLES ON PROFILES. AT ALL POINTS BETWEEN DESIGNATED POINTS THE GRADE SHALL BE ESTABLISHED SO AS TO CONFORM TO A STRAIGHT LINE DRAWN BETWEEN SAID DESIGNATED POINTS.
5. THE PRIVATE ENGINEER SHALL FURNISH THE DEPARTMENT OF PUBLIC WORKS WITH GRADE SHEETS AND STATIONING FOR ALL HOUSE LATERALS AND "T" OR "Y" BRANCHES AND SHALL PROVIDE STAKES FOR THEM AT THEIR PROPER LOCATIONS WITH STATIONING PLAINLY MARKED. ALL HOUSE LATERALS SHALL BE CONSTRUCTED IN A STRAIGHT ALIGNMENT AT RIGHT ANGLES FROM THE MAIN LINE SEWER EXCEPT AS SHOWN ON THE PLANS. HOUSE LATERALS FROM CHIMNEYS SHALL NOT HAVE AN ANGLE OF LESS THAN 45° WITH THE MAIN LINE SEWER. ANY CHANGE IN ALIGNMENT SHALL BE REQUESTED IN WRITING BY THE PRIVATE ENGINEER.
6. THE PRIVATE ENGINEER SHALL FURNISH THE HOUSE LATERAL DEPTH AT THE PROPERTY LINE BELOW THE TOP OF CURB ELEVATION FOR EACH HOUSE LATERAL ON THE GRADE SHEET.
7. BEFORE WORK CAN BE STARTED, THE CONTRACTOR MUST OBTAIN A PERMIT TO EXCAVATE IN COUNTY STREETS FROM THE ROAD ELEMENT OF THE LOS ANGELES DEPARTMENT OF PUBLIC WORKS, ~~DISTRICT~~ OFFICE NO. 02 AND PAY A FEE TO THE DIRECTOR OF PUBLIC WORKS, ~~900 S. FREMONT AVE., LOS ANGELES, CALIFORNIA 90051~~, TO COVER THE COST OF CONSTRUCTION INSPECTION AND RECORD PLANS. 900 S. FREMONT AVE., ALHAMBRA, CALIF. 91803 - 8TH FLOOR
8. IF WORK IS TO DONE IN A STATE HIGHWAY, A PERMIT MUST BE OBTAINED FROM THE STATE OF CALIFORNIA, DIVISION OF HIGHWAYS, 120 SOUTH SPRING STREET, LOS ANGELES, CALIFORNIA.
9. APPROVAL OF THIS PLAN BY THE COUNTY OF LOS ANGELES DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY OF THE LOCATION OF OR THE EXISTENCE OR NON-EXISTENCE OF ANY UNDERGROUND UTILITY PIPE, OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THIS NOTE APPLIES TO ALL PAGES.
10. REFER TO SECTION 7.10.4.1 OF THE STANDARD SPECIFICATIONS, REGARDING SAFETY ORDERS.
11. PRIOR TO THE ISSUANCE OF THE REQUIRED SEWER CONSTRUCTION PERMIT, THE CONTRACTOR SHALL OBTAIN AND FILE WITH THE DEPARTMENT OF PUBLIC WORKS COPIES OF A PERMIT TO EXCAVATE IN COUNTY STREETS FROM THE ROAD ELEMENT AT THE DEPARTMENT OF PUBLIC WORKS, A PERMIT FOR EXCAVATIONS AND TRENCHES FROM THE STATE OF CALIFORNIA, A DIVISION OF INDUSTRIAL SAFETY AND A CERTIFICATE OF WORKER'S COMPENSATION INSURANCE WITH THE DEPARTMENT OF PUBLIC WORKS, ~~900 S. VERMONT AVE., LOS ANGELES, CALIFORNIA 90005~~ FROM THE NAMED AS THE CERTIFICATE HOLDER TO BE NOTIFIED 30 DAYS PRIOR TO CANCELLATION OF POLICY. 900 S. FREMONT AVE. ALHAMBRA, CALIF. 91803 8TH FLOOR

CONSTRUCTION NOTES:

1. WORK SHALL BE CONSTRUCTED ACCORDING TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (1982 EDITION) ~~SUPPLEMENTS~~ AND COUNTY ENGINEER SPECIAL PROVISIONS FOR THE CONSTRUCTION OF SANITARY SEWERS DATED JULY 31, 1989 AND SHALL BE PROSECUTED ONLY IN THE PRESENCE OF THE COUNTY ENGINEER. DEPT. OF PUBLIC WORKS
2. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION DIVISION BY TELEPHONE ~~208-8281~~ (818) 458-3129 AT LEAST TWENTY-FOUR HOURS BEFORE STARTING ANY WORK UNDER THIS CONTRACT.
3. HOUSE LATERALS TO BE CONSTRUCTED WITH INVERTS AT PROPERTY LINE 6 FEET BELOW CURB GRADE EXCEPT AS NOTED.
4. WYE OR TEE BRANCHES MAY BE USED FOR CONNECTIONS TO MAIN LINE SEWERS EXCEPT AS NOTED.
5. ALL STRUCTURES SHALL BE EITHER BRICK SEWER MANHOLES PER S-3 OR PRECAST CONCRETE SEWER MANHOLES PER S-36, EXCEPT AS NOTED.
6. PROVIDE STAKES ON THE PROPERTY LINE OR PROPERTY LINES PRODUCED AT RIGHT ANGLES TO THE SEWER LINE AT THE CENTER LINE OF EACH MANHOLE.
7. MANHOLE TOPS IN UNIMPROVED RIGHTS OF WAY TO BE SIX INCHES ABOVE FINISHED GRADE.
8. VITRIFIED CLAY PIPE JOINTS SHALL BE TYPE "O" OR "G" PER STANDARD SPECIFICATIONS SECTION 208-2.
9. IF A POWER POLE IS WITHIN THREE FEET OF THE SEWER, THE SEWER SHALL BE ENCASED, PER S-23, CASE II TWO FEET ON EACH SIDE FROM THE POINT OF INTERFERENCE.
10. IF DURING THE COURSE OF CONSTRUCTION IT IS DETERMINED THAT THERE IS LESS THAN FOUR FEET OF COVER OVER THE TOP OF A MAIN LINE OR HOUSE LATERAL V.C.P. SEWER WHICH IS NOT INDICATED ON THE PLANS, THE PIPE SHALL BE ENCASED PER S-23, CASE II UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
11. ALL JOINTS BETWEEN CAST IRON PIPE AND VITRIFIED CLAY PIPE SHALL BE MADE WITH A RUBBER SLEEVE JOINT, TYPE "C" OR "D", (WITH BUSHING IF NECESSARY) PER STANDARD SPECIFICATIONS, SECTION 208-2.
12. SEWERS TO BE TESTED FOR LEAKAGE PER SECTION 306-1.4 OF THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
13. RESURFACE ALL TRENCHES WITHIN PAVED AREAS TO MEET LOS ANGELES COUNTY PUBLIC WORKS OR CALIFORNIA STATE HIGHWAY REQUIREMENTS IN ACCORDANCE WITH PERMITS. & STD. SPECIFICATIONS
14. FULL COMPLIANCE WITH SECTION 306-1.3.5 OF THE SPECIAL PROVISIONS WILL BE REQUIRED FOR BACKFILL IN STREETS. CERTIFICATION OF BACKFILL COMPACTION AND SAND EQUIVALENTS BY A QUALIFIED, REGISTERED TESTING LABORATORY SHALL BE PROVIDED BY THE PERMITTEE PRIOR TO THE ISSUANCE OF A CERTIFICATE OF PARTIAL ACCEPTANCE. LAND DEVELOPMENT.
(WHEN APPLICABLE) 15. SPECIAL BACKFILL IN EASEMENT CONSTRUCTION (A) BACKFILL TRENCH AND REPLACE OTHER EARTH SO AS TO ACHIEVE THE NATURAL OR FINISHED GRADES AND SLOPES SHOWN ON THE GRADING PLAN APPROVED FOR THIS DEVELOPMENT BY THE ~~BUILDING AND SAFETY~~ DIVISION (B) ALL BACKFILL AND EARTH REPLACED SHALL BE COMPACTED TO A MINIMUM OF 90% OF MAXIMUM DENSITY PER A.S.T.M. STD. METHOD OF TEST D698-57-T AS MODIFIED. ACCEPTABLE CERTIFICATION OF SUCH COMPACTION SHALL BE SUBMITTED TO THE CONSTRUCTION DIVISION, PUBLIC WORKS DEPT.

PROFILE, ALIGNMENT AND GRADE OF

SANITARY SEWERS

TO BE CONSTRUCTED IN

TRACT NO. 50000

PRIVATE CONTRACT NO. 13000

(INDEX)

2 SHEETS; 4 PAGES

REGISTERED ENGINEER — SEAL — EXP. — STATE OF CALIFORNIA

SCALE: VERT. 1"=4' HORIZ 1"=40' , 198

PREPARED IN THE OFFICES OF
COMPANY'S NAME
ANDRESS

BY: Robert H. Shaw
REG. C.E. No. 001871 EXP. DATE ____

INSTRUCTION NOTE
PLANS MUST BE SIGNED BEFORE BEING SUBMITTED

THE FOLLOWING LATEST REVISED STANDARD PLANS ON FILE IN THE OFFICE OF THE DEPARTMENT OF PUBLIC WORKS SHALL APPLY IN THE CONSTRUCTION OF THIS PROJECT:

	COUNTY
LEGEND	S-1
MINIMUM PUBLIC SAFETY REQUIREMENTS	S-2
BRICK SEWER MANHOLE	S-3
STANDARD MANHOLE STEP	S-17
BEDDING FOR SEWER PIPE	S-21
CRADLING AND ENCASEMENT	S-23
WYE OR TEE SUPPORT	S-26
ALLOWABLE TRENCH WIDTHS	S-33
LOCKING MANHOLE FRAME AND COVER	S-35
NON-REINFORCED PRECAST CONCRETE SEWER MANHOLE	S-36
CHIMNEY	S-27

ADDITIONAL STANDARD PLANS - SHOWN AT LEFT

COUNTY OF LOS ANGELES, CALIFORNIA

HARRY W. STONE
DIRECTOR OF PUBLIC WORKS

CHARLES W. CARRY
CHIEF ENGINEER

CO SAN DIST. NO. ____

APPROVED _____ (DATE)

APPROVED _____ OFFICE ENGINEER

CHECKED _____ (DATE)

REG. C.E. NO. ____

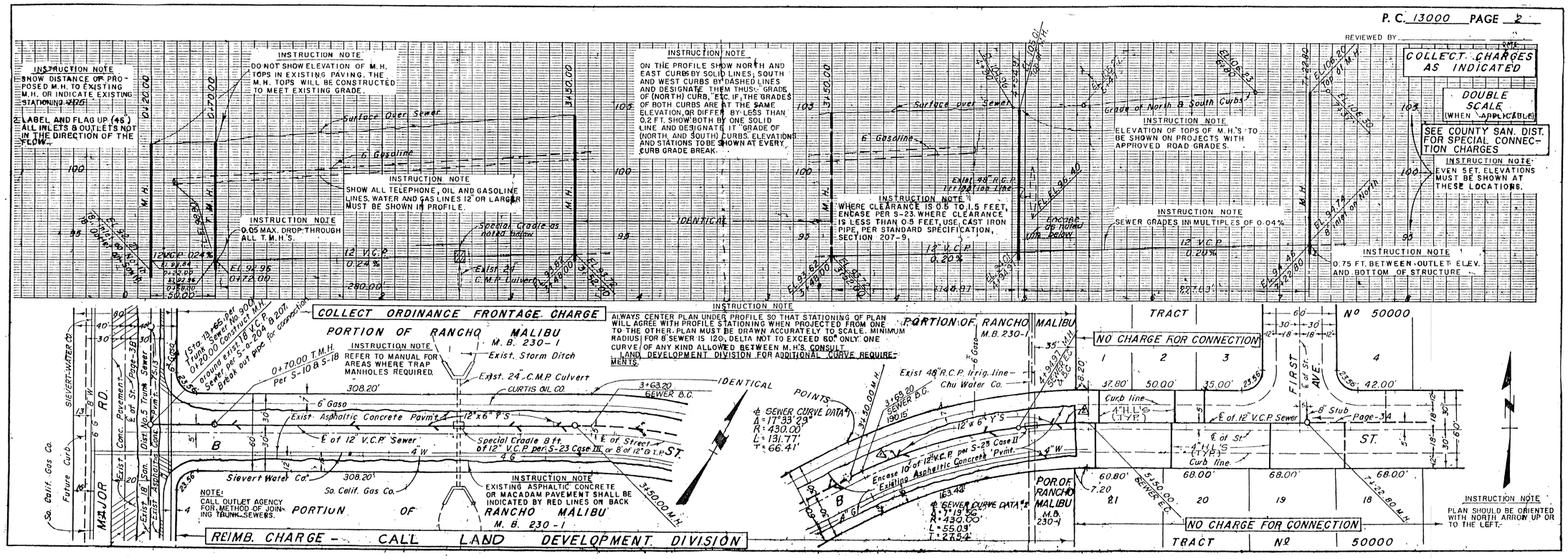
BLDG. DIST. ____

SHOW ON BACK SIDE (1)

T.R. NO. 50000 P.C. 13000

P. C. 13000 PAGE 2

REVIEWED BY _____ DATE _____



NOTE: THIS SAMPLE DRAWING IS FOR DESIGN STANDARDS ONLY.
A NEW FORMAT IS AVAILABLE ON DISKETTE ANY QUESTIONS CALL (626) 458-4921

L.A. COUNTY SEWER SHEET NO. 3 SOUTHERN CALIFORNIA BLUEPRINT CO. WWW.

REVIEWED BY _____ DATE _____ P.C. 13000 PAGE 3

P.C. 13000

COLLECT CHARGES AS INDICATED

SEE COUNTY SAN. DISTRICTS FOR SPECIAL CONNECTION CHARGES

INSTRUCTION NOTE
WHERE EXISTING STREET HAS AN EXISTING CURB, SHOW BOTH SURFACE OVER SEWER & CURB GRADE

INSTRUCTION NOTE
USE LETTERED SECTION DESIGNATIONS ONLY WHEN TWO OR MORE SECTIONS APPEAR ON ONE PAGE

INSTRUCTION NOTE
WHERE EXISTING SEWERS ARE SHOWN AS IN THIS VIEW, USE EXISTING SEWER STATIONING.

INSTRUCTION NOTE
LOWER MANHOLE ON EACH VIEW TO BE SHOWN DASHED IF SHOWN SOLID ON ANY OTHER VIEW.

INSTRUCTION NOTE
WHEN SEWER IS DESIGNED AT LESS THAN MINIMUM GRADE, FLAG TO ℄ OF MANHOLE AND DO NOT TAKE A DROP THROUGH MANHOLE.

INSTRUCTION NOTE
MINIMUM LENGTH OF VERTICAL CURVE SHALL BE 40 FEET. ELEVATIONS AND STATIONS TO BE SHOWN EVERY 10 FEET.

INSTALL BAFFLE BOARDS PER S-31

INSTRUCTION NOTE
INVERTS TO BE SHOWN IN THIS MANNER FOR MANHOLES WITH STUB. WHEN LESS THAN MINIMUM GRADE IS USED, DRAW FLAG TO ℄ OF MANHOLE AND DIMENSION AS SHOWN.

DOUBLE SCALE (WHEN APPLICABLE)

INSTRUCTION NOTE
CHIMNEYS ARE REQUIRED WHERE DEPTH OF MAIN LINE SEWER IS 15 FEET OR MORE.
CRADLING IS REQUIRED WHERE DEPTH OF MAIN LINE SEWER IS 20 FEET OR MORE.

PORTION OF RANCHO MALIBU M.B. 230-1

SAN. DIST. PERMIT AND CONNECTION CHARGE REQ'D

RUNNING TRAPS REQUIRED

INSTRUCTION NOTE
SHOW ALL EXISTING CULTURE WITHIN LIMITS OF SIDELINES OF STREETS; (CURBS, GUTTERS, SIDEWALKS, TREES, DRIVEWAYS, UTILITY POLES, ETC.)

ISSUE NO PERMITS-STREET MUST BE DOUBLE LINED

INSTRUCTION NOTE
ALL CONCRETE STRUCTURES AND PAVEMENTS ARE TO BE INDICATED BY CROSS HATCHING ON BACK OF SHEET.

TRACT NO 50000

TRACT NO 50001

NO CHARGE FOR CONNECTION

TRACT NO 8500 M.B. 100-10

NO CHARGE FOR CONNECTION

ISSUE NO PERMITS AS MAIN LINE MUST BE EXTENDED & MANHOLE CONSTRUCTED

FIRST AVE. · SECOND AVE. · THIRD AVE. · B ST. · MAJOR ROAD

REVIEWED BY _____ DATE _____ P.C. 13000 PAGE 4

HOUSE LATERALS TO BE CONSTRUCTED WITH 1/4 RISE PER FOOT TO THE EDGE OF THE R/W LINE — SEE SPECIAL BACKFILL NOTE ON PAGE ONE CONCERNING COMPACTION.

HOUSE LATERALS TO BE CONSTRUCTED WITH 1/4 RISE FOOT TO R. ℄ TO BE LAID HORIZONTAL

INSTRUCTION NOTE
MANHOLE TOP TO BE 6 IN. ABOVE SURFACE IN UNIMPROVED RIGHTS OF WAYS

INSTRUCTION NOTE
CURB GRADES OF ADJACENT STREETS TO BE SHOWN WHEN NEAR OR BELOW GRADE OF ℄ OF ALLEY.

INSTRUCTION NOTE
SHOW BREAKS IN PROFILE AT 100 FT. STATIONS.

INSTRUCTION NOTE
FOR DROPS THRU COMMON MANHOLES USE AVERAGE GRADE WHEN TOTAL OF BOTH GRADES EXCEED 5.00 % FOR SAME PIPE SIZE ONLY

INSTRUCTION NOTE
COMMON LOWER M.H. MUST BE SHOWN AT STA. 0+00.

INSTRUCTION NOTE
USE THIS NOTE WHEN MAIN LINE SEWER IS TOO SHALLOW TO PROVIDE 6 FOOT HOUSE LATERALS.

INSTRUCTION NOTE
ANY MAIN LINE SEWER WITH LESS THAN SEVEN FEET OF COVER MUST BE APPROVED BY THE COUNTY ENGINEER IN THE DESIGN STAGE.

NO L.A. CO. CHARGE FOR CONNECTIONS

INSTRUCTION NOTE
SHALLOW MANHOLES TO BE USED ONLY UPON APPROVAL OF THE DEPT. OF PUBLIC WORKS.

DOUBLE SCALE (WHEN APPLICABLE)

SEE COUNTY SAN. DISTRICTS FOR SPECIAL CONNECTION CHARGES

T.1S., R.17W., S.B.B.&M. SEC. 11

ISSUE NO PERMITS CALL LAND DEV. DIV.

PORTION OF RANCHO MALIBU M.B. 230-1

INSTRUCTION NOTE
FOUR INCH HOUSE LATERALS MAY BE USED IN RESIDENTIAL SINGLE FAMILY SUBDIVISIONS.

INSTRUCTION NOTE
IF MAIN LINE SEWER IS FURTHER THAN 5 FT. FROM EDGE OF R/W LINE H.L.'S MUST BE EXTENDED TO THE EDGE OF THE R/W.

TRACT NO. 50001

10' SANITARY SEWER R/W

Jack 56 ft. 30" steel casing. 3/8 thick under track per S-37.

Design engineer must consult with Railroad Company for design requirements & permit.

ISSUE NO PERMITS. CALL LAND DEV. DIV.

T.1S., R.17W., S.B.B.&M. SEC. 14

PORTION OF RANCHO MALIBU M.B. 230-1

INSTRUCTION NOTE
IF BUILDING FOOTING IS WITHIN 45° DEGREE ANGLE OF MAIN LINE SEWER THE PRESSURE ON MAIN LINE SEWER MUST BE INVESTIGATED & ADEQUATE PROTECTION BE PROVIDED, IF NECESSARY. REFER TO S-23 CASE I

INSTRUCTION NOTE
DASH FACILITIES WHEN BUILT ELSEWHERE ON PLANS. THIS SHOWS HOW LOT IS SERVED.

INSTRUCTION NOTE
MAIN LINE OR HOUSE LATERALS MUST BE ENCASED WHEREVER LESS THAN FOUR FEET OF COVER TO SUB-BASE IN STREET IS AVAILABLE - SHOW ON BACKSIDE OF TRACING.

INSTRUCTION NOTE
ALL HOUSE LATERALS SHALL BE CONSTRUCTED TO THE PROPERTY LINE.

INSTRUCTION NOTE
STATION AT LEAST ONE LOT LINE PER BLOCK ON EACH SIDE OF THE STREET.

TRACT NO. 50000

CONSTRUCT 4 H.L.'S PER S-25 CASE II & ENCASE 4 H.L.'S PER S-23 CASE II

INSTRUCTION NOTE
CITY BOUNDARY LINE TO BE SHOWN AS DASH-DOUBLE DOT LINES.

INSTRUCTION NOTE
MINIMUM DISTANCE BETWEEN CENTER OF MANHOLE AND CURB LINE IS 6 FT.

INSTRUCTION NOTE
IN LOCAL STREETS, MAIN LINE SEWERS SHOULD BE LOCATED 5 FEET NORTHERLY OR EASTERLY OF THE STREET CENTERLINE.

BOUNDARY CITY OF CENTERVILLE

SECOND AVE. · B ST. · W.C.&M. R.R.

Appendix D

CIP Cost Estimate Sheets

Appendix D

City of San Marino Wastewater Collection System Condition Assessment
Project R1 - Pipeline Repair/Replacement
Project Cost Estimate

Item No.	Item Description	Unit	Estimated Quantity	Unit Price	Item Total
1	Excavation Point Repair	EA	19	$8,000	$ 152,000
2	Replace Pipe in Place from Existing Manhole to Existing Manhole	LF	717	$200	$ 143,400
3	Reconnect Lateral after Pipe Replacement	EA	14	$1,000	$ 14,000
4	Remote Site Set-up	EA	4	$5,000	$ 20,000
				Subtotal	$ 329,400
				General Requirements (10%)	$ 32,940
				Contingency (20%)	$ 65,880
				Construction Total	**$ 428,220**
				Soft Costs (Small Project):	
				Engineering (15%)	$ 64,233
				Construction Mgmt & Engineering Services During Construction (20%)	$ 85,644
				Administration (5%)	$ 21,411
				Project Total	**$ 600,000**

Appendix D

City of San Marino Wastewater Collection System Condition Assessment
Project R2 - Manhole Repair and Flush Tank Modification
Project Cost Estimate

Item No.	Item Description	Unit	Estimated Quantity	Unit Price	Item Total
1	Modify Flush Tank	EA	80	$5,000.00	$ 400,000
2	Rehabilitate Manhole Wall with Cured in Place Liner (Only 2018 Condition Assessment)	EA	3	$5,000.00	$ 15,000
3	Rehabilitate Manhole Trough with Cementious Repair Product (Only 2018 Condition Assessment)	EA	63	$1,000.00	$ 63,000
				Subtotal	$ 478,000
				General Requirements (10%)	$ 47,800
				Contingency (20%)	$ 95,600
				Construction Total	**$ 621,400**
				Soft Costs (Medium Project):	
				Engineering (10%)	$ 62,140
				Construction Mgmt & Engineering Services During Construction (18%)	$ 111,852
				Administration (3%)	$ 18,642
				Project Total	**$ 815,000**

Appendix D

City of San Marino Wastewater Collection System Condition Assessment
Project R3 - Sewer Lining - Area 1A
Project Cost Estimate

Item No.	Item Description	Unit	Estimated Quantity	Unit Price	Item Total
1	Clean 6-inch or 8-inch Diameter Pipes to be CIPP Lined	LF	7,655	$1.50	$ 11,483
2	Post-cleaning and Post-Lining CCTV Inspection	LF	7,655	$1.50	$ 11,483
3	Install UV Cured CIPP Liner in 6-inch or 8-inch Nominal Diameter Pipe (Manhole to Manhole)	LF	7,655	$55	$ 421,025
4	Reinstate Active Lateral or Drop Connection after CIPP Lining	EA	210	$150	$ 31,500
5	Trim Intruding Lateral/Object	EA	3	$300	$ 900
6	Remote Site Set-up	EA	0	$5,000	$ -
				Subtotal	$ 476,390
				General Requirements (10%)	$ 47,639
				Contingency (20%)	$ 95,278
				Construction Total	**$ 619,307**
				Soft Costs (Medium Project):	
				Engineering (10%)	$ 61,931
				Construction Mgmt & Engineering Services During Construction (18%)	$ 111,475
				Administration (3%)	$ 18,579
				Project Total	**$ 812,000**

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City of San Marino Wastewater Collection System Condition Assessment
Project R4 - Sewer Lining - Area 1B
Project Cost Estimate

Item No.	Item Description	Unit	Estimated Quantity	Unit Price	Item Total
1	Clean 6-inch or 8-inch Diameter Pipes to be CIPP Lined	LF	10,915	$1.50	$ 16,373
2	Post-cleaning and Post-Lining CCTV Inspection	LF	10,915	$1.50	$ 16,373
3	Install UV Cured CIPP Liner in 6-inch or 8-inch Nominal Diameter Pipe (Manhole to Manhole)	LF	10,915	$55	$ 600,325
4	Reinstate Active Lateral or Drop Connection after CIPP Lining	EA	255	$150	$ 38,250
5	Trim Intruding Lateral/Object	EA	4	$300	$ 1,200
6	Remote Site Set-up	EA	1	$5,000	$ 5,000
				Subtotal	$ 677,520
				General Requirements (10%)	$ 67,752
				Contingency (20%)	$ 135,504
				Construction Total	**$ 880,776**
				Soft Costs (Medium Project):	
				Engineering (10%)	$ 88,078
				Construction Mgmt & Engineering Services During Construction (18%)	$ 158,540
				Administration (3%)	$ 26,423
				Project Total	**$ 1,154,000**

Appendix D

City of San Marino Wastewater Collection System Condition Assessment
Project R5 - Sewer Lining - Area 1C
Project Cost Estimate

Item No.	Item Description	Unit	Estimated Quantity	Unit Price	Item Total
1	Clean 6-inch or 8-inch Diameter Pipes to be CIPP Lined	LF	10,525	$1.50	$ 15,788
2	Post-cleaning and Post-Lining CCTV Inspection	LF	10,525	$1.50	$ 15,788
3	Install UV Cured CIPP Liner in 6-inch or 8-inch Nominal Diameter Pipe (Manhole to Manhole)	LF	10,525	$55	$ 578,875
4	Reinstate Active Lateral or Drop Connection after CIPP Lining	EA	192	$150	$ 28,800
5	Trim Intruding Lateral/Object	EA	0	$300	$ -
6	Remote Site Set-up	EA	0	$5,000	$ -
				Subtotal	$ 639,250
				General Requirements (10%)	$ 63,925
				Contingency (20%)	$ 127,850
				Construction Total	**$ 831,025**
				Soft Costs (Medium Project):	
				Engineering (10%)	$ 83,103
				Construction Mgmt & Engineering Services During Construction (18%)	$ 149,585
				Administration (3%)	$ 24,931
				Project Total	**$ 1,089,000**

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City of San Marino Wastewater Collection System Condition Assessment
Project R6 - Sewer Lining - Area 1D
Project Cost Estimate

Item No.	Item Description	Unit	Estimated Quantity	Unit Price	Item Total
1	Clean 6-inch or 8-inch Diameter Pipes to be CIPP Lined	LF	8,441	$1.50	$ 12,662
2	Post-cleaning and Post-Lining CCTV Inspection	LF	8,441	$1.50	$ 12,662
3	Install UV Cured CIPP Liner in 6-inch or 8-inch Nominal Diameter Pipe (Manhole to Manhole)	LF	8,441	$55	$ 464,255
4	Reinstate Active Lateral or Drop Connection after CIPP Lining	EA	167	$150	$ 25,050
5	Trim Intruding Lateral/Object	EA	9	$300	$ 2,700
6	Remote Site Set-up	EA	5	$5,000	$ 25,000
				Subtotal	$ 542,328
				General Requirements (10%)	$ 54,233
				Contingency (20%)	$ 108,466
				Construction Total	**$ 705,026**
				Soft Costs (Medium Project):	
				Engineering (10%)	$ 70,503
				Construction Mgmt & Engineering Services During Construction (18%)	$ 126,905
				Administration (3%)	$ 21,151
				Project Total	**$ 924,000**

Appendix D

City of San Marino Wastewater Collection System Condition Assessment
Project R7 - Pipeline Repair and Lining Project
Project Cost Estimate

Item No.	Item Description	Unit	Estimated Quantity	Unit Price	Item Total
1	Clean 6-inch or 8-inch Diameter Pipes to be CIPP Lined	LF	4,395	$1.50	$ 6,593
2	Post-cleaning and Post-Lining CCTV Inspection	LF	4,395	$1.50	$ 6,593
3	Install UV Cured CIPP Liner in 6-inch or 8-inch Nominal Diameter Pipe (Manhole to Manhole)	LF	4,395	$55	$ 241,725
4	Install 4-foot Long CIPP Sectional Liner in 6-inch or 8-inch Nominal Diameter Pipe	EA	30	$3,000	$ 90,000
5	Reinstate Active Lateral or Drop Connection after CIPP Lining	EA	84	$150	$ 12,600
6	Trim Intruding Lateral/Object	EA	1	$300	$ 300
7	Remote Site Set-up	EA	2	$5,000	$ 10,000
				Subtotal	$ 367,810
				General Requirements (10%)	$ 36,781
				Contingency (20%)	$ 73,562
				Construction Total	**$ 478,153**
				Soft Costs (Medium Project):	
				Engineering (10%)	$ 47,815
				Construction Mgmt & Engineering Services During Construction (18%)	$ 86,068
				Administration (3%)	$ 14,345
				Project Total	**$ 627,000**

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City of San Marino Wastewater Collection System Condition Assessment
Project R8 - Sewer Lining - Area 2A
Project Cost Estimate

Item No.	Item Description	Unit	Estimated Quantity	Unit Price	Item Total
1	Clean 6-inch or 8-inch Diameter Pipes to be CIPP Lined	LF	5,026	$1.50	$ 7,539
2	Post-cleaning and Post-Lining CCTV Inspection	LF	5,026	$1.50	$ 7,539
3	Install UV Cured CIPP Liner in 6-inch or 8-inch Nominal Diameter Pipe (Manhole to Manhole)	LF	5,026	$55	$ 276,430
4	Reinstate Active Lateral or Drop Connection after CIPP Lining	EA	112	$150	$ 16,800
5	Trim Intruding Lateral/Object	EA	7	$300	$ 2,100
6	Remote Site Set-up	EA	1	$5,000	$ 5,000
				Subtotal	$ 315,408
				General Requirements (10%)	$ 31,541
				Contingency (20%)	$ 63,082
				Construction Total	**$ 410,030**
				Soft Costs (Medium Project):	
				Engineering (10%)	$ 41,003
				Construction Mgmt & Engineering Services During Construction (18%)	$ 73,805
				Administration (3%)	$ 12,301
				Project Total	**$ 538,000**

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City of San Marino Wastewater Collection System Condition Assessment
Project R9 - Sewer Lining - Area 2B
Project Cost Estimate

Item No.	Item Description	Unit	Estimated Quantity	Unit Price	Item Total
1	Clean 6-inch or 8-inch Diameter Pipes to be CIPP Lined	LF	10,998	$1.50	$ 16,497
2	Post-cleaning and Post-Lining CCTV Inspection	LF	10,998	$1.50	$ 16,497
3	Install UV Cured CIPP Liner in 6-inch or 8-inch Nominal Diameter Pipe (Manhole to Manhole)	LF	10,998	$55	$ 604,890
4	Reinstate Active Lateral or Drop Connection after CIPP Lining	EA	262	$150	$ 39,300
5	Trim Intruding Lateral/Object	EA	7	$300	$ 2,100
6	Remote Site Set-up	EA	2	$5,000	$ 10,000
				Subtotal	$ 689,284
				General Requirements (10%)	$ 68,928
				Contingency (20%)	$ 137,857
				Construction Total	**$ 896,069**
				Soft Costs (Medium Project):	
				Engineering (10%)	$ 89,607
				Construction Mgmt & Engineering Services During Construction (18%)	$ 161,292
				Administration (3%)	$ 26,882
				Project Total	**$ 1,174,000**

Appendix D

City of San Marino Wastewater Collection System Condition Assessment
Project R10 - Sewer Lining - Area 2C
Project Cost Estimate

Item No.	Item Description	Unit	Estimated Quantity	Unit Price	Item Total
1	Clean 6-inch or 8-inch Diameter Pipes to be CIPP Lined	LF	12,343	$1.50	$ 18,515
2	Post-cleaning and Post-Lining CCTV Inspection	LF	12,343	$1.50	$ 18,515
3	Install UV Cured CIPP Liner in 6-inch or 8-inch Nominal Diameter Pipe (Manhole to Manhole)	LF	12,343	$55	$ 678,865
4	Reinstate Active Lateral or Drop Connection after CIPP Lining	EA	186	$150	$ 27,900
5	Trim Intruding Lateral/Object	EA	6	$300	$ 1,800
6	Remote Site Set-up	EA	1	$5,000	$ 5,000
				Subtotal	$ 750,594
				General Requirements (10%)	$ 75,059
				Contingency (20%)	$ 150,119
				Construction Total	**$ 975,772**
				Soft Costs (Medium Project):	
				Engineering (10%)	$ 97,577
				Construction Mgmt & Engineering Services During Construction (18%)	$ 175,639
				Administration (3%)	$ 29,273
				Project Total	**$ 1,279,000**

Appendix D

City of San Marino Wastewater Collection System Condition Assessment
Project PS1 - Avondale Pump Station Improvements
Project Cost Estimate

Item		Total
General		
General requirements, mobilization, and demobilization	$	6,000
Startup, testing, and commissioning	$	6,000
Bypass pumping during construction	$	20,000
Mechanical		
Replace sump pump	$	5,000
Paint pipes	$	2,000
Construct 4" bypass pump conn. (below grade riser)	$	50,000
Replace ventilation fan	$	5,000
Structural		
Rehabilitate wet well	$	10,000
Electrical		
Gasket for control panel enclosure	$	2,000
Subtotal	**$**	**106,000**
Contingency on Subtotal (20%)	$	21,200
Bonds & Insurance (2.5%)	$	2,650
Bid Inflation Projection to Midpoint (3%)	$	3,180
Total Construction Cost	**$**	**133,000**

Appendix D

City of San Marino Wastewater Collection System Condition Assessment
Project PS2 - Orlando Pump Station Improvements
Project Cost Estimate

Item		Total
General		
General requirements, mobilization, and demobilization	$	10,000
Startup, testing, and commissioning	$	10,000
Bypass pumping during construction	$	30,000
Mechanical		
5 HP pump and piping	$	50,000
Repaint pipes	$	2,000
Construct 4" bypass pump conn. (below grade riser)	$	50,000
Structural		
Construct new valve vault to accommodate second pump	$	30,000
Core drill existing wet well for pipe penetration	$	5,000
Electrical		
New control panel	$	40,000
Subtotal	**$**	**227,000**
Contingency on Subtotal (20%)	$	45,400
Bonds & Insurance (2.5%)	$	5,675
Bid Inflation Projection to Midpoint (3%)	$	6,810
Total Construction Cost	**$**	**285,000**

Appendix D

City of San Marino Wastewater Collection System Condition Assessment
Project PS3 - Monterey Pump Station Improvements
Project Cost Estimate

Item		Total
General		
General requirements, mobilization, and demobilization	$	10,000
Startup, testing, and commissioning	$	10,000
Bypass pumping during construction	$	30,000
Mechanical		
3 HP pump and piping	$	50,000
Construct 4" bypass pump conn. (below grade riser)	$	50,000
Structural		
Minor concrete repair	$	5,000
Construct new valve vault to accommodate second pump	$	50,000
Core drill existing wet well for pipe penetration	$	5,000
Electrical		
New control panel	$	40,000
Subtotal	**$**	**250,000**
Contingency on Subtotal (20%)	$	50,000
Bonds & Insurance (2.5%)	$	6,250
Bid Inflation Projection to Midpoint (3%)	$	7,500
Total Construction Cost	**$**	**314,000**