Sewer System Management Plan 2022 UPDATE

CITY OF AUBURN SEWER SYSTEM MANAGEMENT PLAN - 2022 UPDATE

PREPARED FOR:
CITY OF AUBURN
1225 LINCOLN WAY
AUBURN, CA 95603

NOVEMBER 2022

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Report

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0 SSMP Overview

The City of Auburn is required to comply with the State Water Resources Control Board Order No. 2006-0003-DWQ adopted May 2, 2006, entitled Statewide General Waste Discharge Requirements (GWDR) for Sanitary Sewer Systems. This document is an update to the previous SSMP document that was certified in 2017.

The purpose of this order is to prevent Sanitary Sewer Overflows (SSO) or sewer spills by establishing a statewide Monitoring and Reporting Program (MRP) and requiring each local or regional sewer agency to create and implement their own Sewer System Management Plan (SSMP) based in the mandatory requirements of the Order. All public agencies that own or operate a sanitary sewer system that is comprised of more than one mile of pipes or sewer lines which conveys wastewater to a publicly owned treatment facility must apply for coverage under the Sanitary Sewer Systems General Order.

The City of Auburn (City) has completed all elements of the SSMP as listed in the original Order. The City has also taken steps to address the proposed statewide sanitary sewer systems General Order requirements. The City's SSMP includes eleven elements, each of these elements forms a corresponding chapter in the SSMP as follows:

1. Goals
2. Organization
3. Legal Authority
4. Operations and Maintenance Program
5. Design and Performance Provisions
6. Overflow Emergency Response Plan ("OERP")
7. Fats, Oils, and Grease (FOG) Control Program
8. System Evaluation and Capacity Assurance Plan ("SECAP")
9. Monitoring, Measurement and Program Modifications
10. SSMP Program Audits
11. Communications Program

1. Goals

D.13.(i) The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent SSOs, as well as mitigate any SSOs that do occur.

1.1 City of Auburn Goals

The City has established seven goals to reflect the City's commitment to the enhanced performance and protection of the environment from the effects of SSOs. These goals are designed to facilitate and target the management, operation, and maintenance of the sanitary sewer collection system in a manner that will sustain the infrastructure, protect public health and the environment, and achieve compliance with the State Water Resources Control Board's GWDR for Sanitary Sewer Systems. These goals include:

- Properly manage, operate, and maintain all portions of the City's wastewater collection system.
- Prevent or minimize the frequency of SSOs.
- Mitigate the impacts that are associated with all SSOs that may occur.
- Implement regular, proactive maintenance of the system to remove roots, debris, and FOG in areas prone to blockages that may cause sewer backups or SSOs.
- Measure progress through performance measures so the plan can be adjusted as needed.
- Comply with all applicable regulatory notification and reporting requirements.
- Analysis and evaluation of historical SSO's to provide recommendations to reduce future risk.

The City's SSMP goals and corresponding statuses are listed in Table 1-1 below. This table also serves as a summary of the most recent audit (2022). A blank Change Log is included in Appendix A to record any changes made to this document.

TABLE 1-1: SSMP GOALS AND STATUSES FOR EACH ELEMENT

SSMP Goals for Each Element	Notes and Items to be Completed	Status
1. Goals		
2. Update established SSMP goals	1. Completed with this table. *Updated as needed.*	***Complete***
2. Organization		
1. Establish a SSMP organizational chart with assigned roles and descriptions of responsibilities. 2. Identify chain of communication for reporting SSOs. 3. Include current contact information. 4. Include web site where SSMP is located (if applicable).	1-4. These tasks have been completed. *Updated on an as-needed basis.*	***Complete***
3. Legal Authority		
1. Define legal authority in sewer ordinances, service agreements, and other legally binding procedures.	1. Add legal authority to limit flows to the sewer system from connected sources (laterals and satellite systems). 2. Add legal authority to ban new connections. *Contained in Title XV: Land Usage*. 3. Add legal authority to limit discharge of roots, fats, oils, grease. 4. Specify who owns and maintains which parts of private service laterals.	***Complete*** ***Complete*** ***Complete*** ***Complete***
4. Operations and Maintenance Program		
1. Maintain an up-to-date map of the collection system.	1. An electronic map is kept up-to-date in the City's CMMS system (*see Appendix D*).	***Complete (Ongoing)***
2. Describe and maintain proactive preventative maintenance program (CMMS)	2. Maintenance is ongoing and tracked by work orders.	***Complete (Ongoing)***
3. Maintain list of contractors performing routine maintenance on sewer system and description of service provided.	3. Task completed. *Updated as needed*.	***Complete***
4. Identify and prioritize corrective and preventative maintenance activities (Rehabilitation and Replacement Plan)	4. Task completed. *Updated periodically in CMMS*.	***Complete (ongoing)***
5. Staff Assessment Program: Review and identify any deficiencies in staffing requirements (such as trainings, skill sets, etc.) required to comply with SSS WDRs.	5. Latest staff review (2022) has not identified any staffing deficiencies or further requirements.	***Complete (ongoing annually)***
6. Contingency Planning: Identify most critical collection system assets and operating procedures. Develop "hot spot" list.	6. Task completed. *Updated as needed.* 7. Task completed. *Updated on an ongoing basis.*	***Complete*** ***Complete (Ongoing)***

SSMP Goals for Each Element	Notes and Items to be Completed	Status
7. O&M and Sewer System Replacement Funding: Include budgets for routine sewer O&M, including CIP and revenue sources.		
5. Design and Performance Provisions		
1. Develop design and construction standards and specs for the installation of new sewers and for rehabilitation and repair of existing sewers.	1. Task completed.	***Complete***
2. Develop standards and procedures for inspection and testing for new, repaired and rehabilitated sewers, pumps and other appurtenances.	2. Task completed. See Appendix E.	***Complete***
6. Overflow Emergency Response Plan		
1. Develop and implement a plan to respond to SSOs.	1. Task complete.	***Complete***
2. Establish and maintain internal and external SSO notification procedures that include regulators and the general public.	2. Task complete.	***Complete***
3. Provide written SSO response procedure to investigate and assess, contain, correct cause, estimate volume, cleanup, sample receiving waters if necessary, incident documentation and notification and reporting requirements.	3. Task complete.	***Complete***
4. Procedures to address emergency operations, such as traffic and crowd control, etc.	4. Task complete.	***Complete***
5. Train employees on SSO response procedures and SSO monitoring and reporting program.	5. *See Appendix F.*	***Complete (ongoing as needed)***
6. Perform risk and threat analysis to identify highest risks and threats posed by sewer system failures. Include expected consequences of each identified failure. Include procedures, strategies, etc. to minimize risks.	6. Task complete. *Updated as needed.*	***Complete***
7. Fats, Oils, and Grease (FOG) Control Program		
The City has provided justification for why a FOG program requiring all of the following elements is not needed. However, the majority of these elements are already in place.		
1. Public outreach	1. Task complete. *Updated on an ongoing basis.*	***Complete***
2. Plan and schedule for disposal of FOG generated within the sewer service area.	2. Task complete. Disposal information is listed on the Live Sewer Smart web site, which is linked to the City's web site.	***Complete***

SSMP Goals for Each Element	Notes and Items to be Completed	Status
3. Legal authority to prohibit discharges into the collection system that coul contribute to SSOs and blockages.	3. Task complete.	***Complete***
4. Establish requirements to install grease removal devices, design standards for the removal devices, maintenance requirements, BMP requirements, record keeping and reporting requirements.	4. The City coordinates these requirements with the Placer County Environmental Health Department.	***N/A***
5. Establish authority to inspect grease producing facilities, enforcement authority. Include required staffing levels.	*5.* The City coordinates these requirements with the Placer County Environmental Health Department.	***N/A***
6. Identify sections of the sewer system subject to grease blockages and establish a cleaning maintenance schedule for each section.	6. The City coordinates these requirements with the Placer County Environmental Health Department.	***Complete (ongoing)***
7. Develop and implement source control measures for all known sources of grease and fats that may be discharged to the sewer system.	7. The City coordinates these requirements with the Placer County Environmental Health Department.	***N/A***

Once adopted by the City Council, this document will be posted on the City's web site and the link will added here: _____

2. Organization

D.13. (ii) The SSMP must identify the Legally Responsible Official or authorized representative as described in the Order. It must list and identify the organization positions responsible for operating and maintaining the sanitary sewer collection system including names and telephone numbers for management, administrative and maintenance positions, and the chain of communication for reporting SSOs.

2.1 Legally Responsible Official (LRO)

The City has identified the Public Works Manager as the LRO and the Collections Supervisor/Operator as Data Submitter. Organizational roles and responsibilities of the designated LRO and Data submitter can be referenced in Table 2-1.

2.2 Organizational Structure

The following organizational chart shows the key personnel for sewer collection system management, operations, and maintenance as of November 2022.

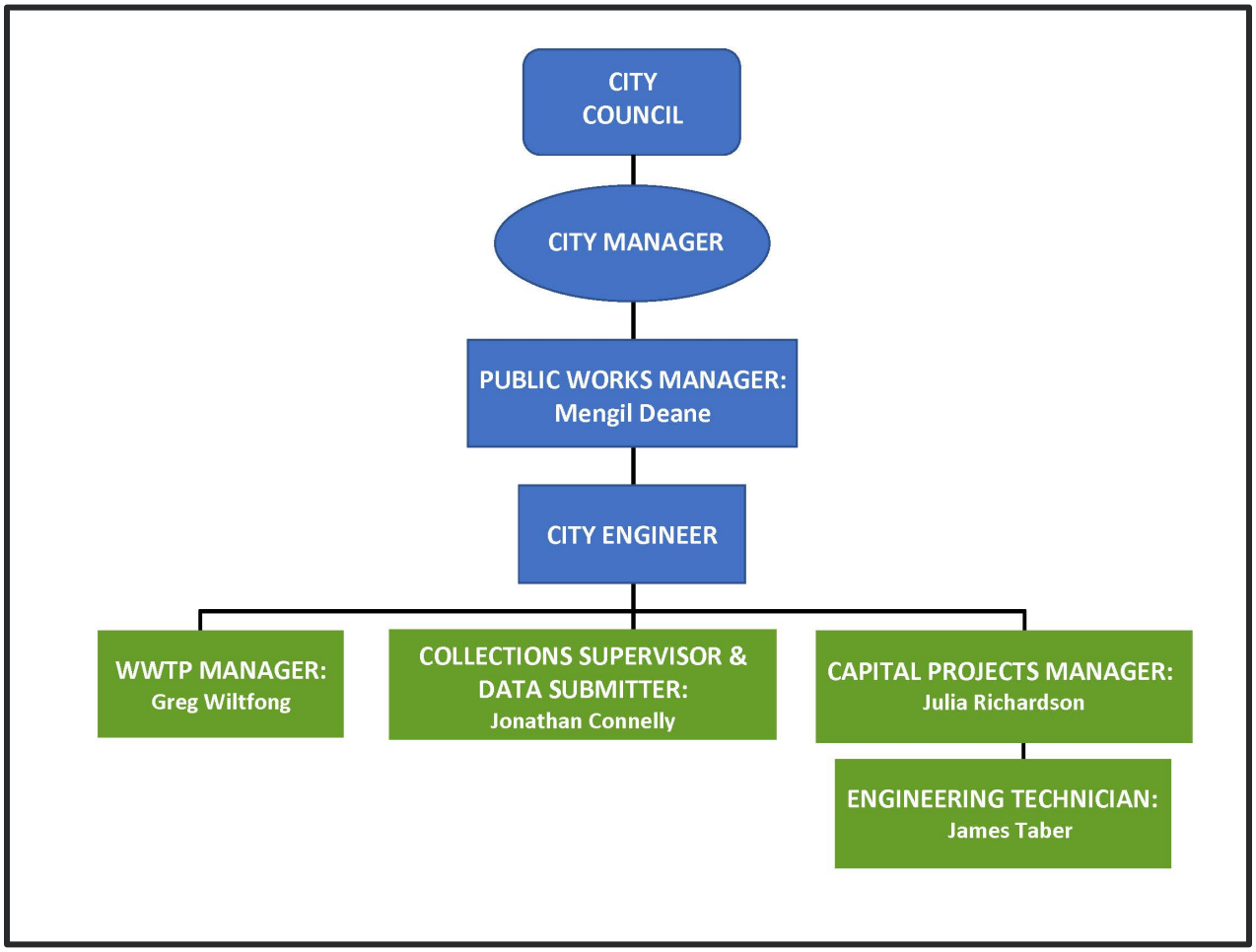

Figure 2-1: Organizational Structure for SSMP Implementation

The following table shows key personnel and includes descriptions of roles and contact information for each person.

TABLE 2-1: CITY OF AUBURN SSMP ORGANIZATIONAL ROLES AND RESPONSIBILITIES (2022)

Roles and Responsibilities	Name	E-mail Address	Phone Number
City Council: Establish policy	Sandy Amara	samara@auburn.ca.gov	(530) 823-4211 x 384
	Alice Dowdin Calvillo	adowdincalvillo@auburn.ca.gov	(530) 823-4211 x 304
	Daniel Berlant	dberlant@auburn.ca.gov	(530) 823-4211 x 380
	Rachel Radell-Harris	rradell-harris@auburn.ca.gov	(530) 823-4211 x 383
	Matt Spokely	mspokely@auburn.ca.gov	(530) 823-4211 x 381
City Manager:	John W. Donlevy, Jr.	jdonlevy@auburn.ca.gov	(530) 823-4211
Appointed by the City Council and is the chief administrative officer of the City of Auburn. Overseas operations and services and enforce the laws and policies as adopted by the City Council.			
Public Works Manager:	Mengil Deane (***Legally Responsible Official***)	mdeane@auburn.ca.gov	(530) 823-4211 x 145
Plans, directs, and reviews the activities, operations, and programs of the Public Works Department, including those related to the sewer system. Oversees the sewer system and performs system analyses, special studies, and manages capital improvement projects to ensure public works department compliance with federal, state, and local environmental regulations. Coordinates and confers with operation and maintenance division, consultants, and contractors on utility services and complex capital improvement projects. Prepares reports on sanitary sewer system and communicates utility services to the public, commissions, and city council. Plan, coordinate, supervise, and participate in the performance of professional engineering activities of a complex nature involving engineering planning and design, construction project management. Manages city utility maps and record drawings. Legally Responsible Official (LRO) for the SSMP.			
City Engineer:	Alan Mitchell	amitchell@auburn.ca.gov	(530) 668-5883
Assists the LRO with planning, reviews of the activities, operations, and programs of the Public Works Department, including those related to the sewer system. Assists in the delivery of capital improvements projects to ensure public works department compliance with federal, state, and local environmental regulations. Coordinates and confers with operation and maintenance division, consultants, and contractors on utility services and complex capital improvements projects. Assists with the preparation of reports on sanitary sewer system and communicates utility services to the public, commissions, and city council. Plans, coordinates, supervises, and participates in the performance of professional engineering activities of a complex nature involving engineering planning and design, construction project management. Manages city utility maps and record drawings.			
Wastewater Treatment Plant Manager:	Greg Wiltfong	Gregory.Wiltfong@jacobs.com	(530) 889-0624
Oversees the City's collection system operations and maintenance. Also responsible for managing the wastewater treatment plant operations and maintenance.			
Collections Supervisor/Operator:	Jonathan Connelly	Jonathan.Connelly@jacobs.com	(530) 889-0624

Roles and Responsibilities	Name	E-mail Address	Phone Number
	(***registered Data Submitter***)		
Plans, coordinates, and supervises all aspects of the operations and maintenance for sewer systems. Identifies sewer repairs and rehabilitation to notify City's Public Works Director. To lead a crew in the performance of duties related to sewer system operation and maintenance; and to perform semi-skilled and skilled work related to maintenance, repair and operation of sewer systems. Operates power equipment including hydraulic cleaning truck, root saw and closed-circuit television system.			
Collections Operators:	Paige Culbertson	Paige.Culbertson@jacobs.com	(530) 889-0624
To lead a crew in the performance of duties related to sewer system operation and maintenance; and to perform semi-skilled and skilled work related to maintenance, repair, and operation of sewer systems. Operates power equipment including hydraulic cleaning truck, root saw and closed-circuit television system			
Engineering Technician:	James Taber	jtaber@auburn.ca.gov	(530) 823-4211 x 130
Reviews and approves work orders. Provides inspection and construction management of sewer repair projects. Prioritizes repair and rehabilitation projects.			
Capital Projects Manager:	Julia Richardson	jrichardson@nexgenum.com	(530) 889-0624
Performs construction management. Reviews, prioritizes, and inspects repairs to the City's collection system. Responds to sewer spills and pump station emergencies. Inspects lift station construction.			

2.3 Chain of Communication for Reporting SSOs

The chain of communication for reporting sanitary sewer overflows (SSOs) is shown in Figure 2-2. Table 2-2 shows contact names and phone numbers for the chain of communication in the event of an SSO.

TABLE 2-2: CHAIN OF COMMUNICATION FOR REPORTING SSOS

Step	Contact Name	Title/Role	Phone Number
1a	During Business Hours: WWTP Operators	WWTP Operators	(530) 889-0624
1b	After Business Hours and Weekends: Police Dispatch – contacts whoever is on call at the WWTP	Police Dispatch	(530) 823-4222
2	Field Crew	Field Crew	N/A (contacted by WWTP staff)
3	Greg Wiltfong / Jonathan Connelly / Julia Richardson	Supervisor / Collections Operator	(530) 392-6322 / (530) 392-0393 / (916) 564-8000
4	Mengil Deane	PW Manager and LRO	(530) 823-4211 x 145
5	California Office of Emergency Services	California Office of Emergency Services	(916) 845-8510
	Placer County Department of Environmental Health	Placer County Department of Environmental Health	(530) 745-2300
6	Gil Vazquez	SWRCB – SSO Program Permit/Reporting Information	(916) 322-1400
7	Enter into CIWQS (http://ciwqs.waterboards.ca.gov/)		

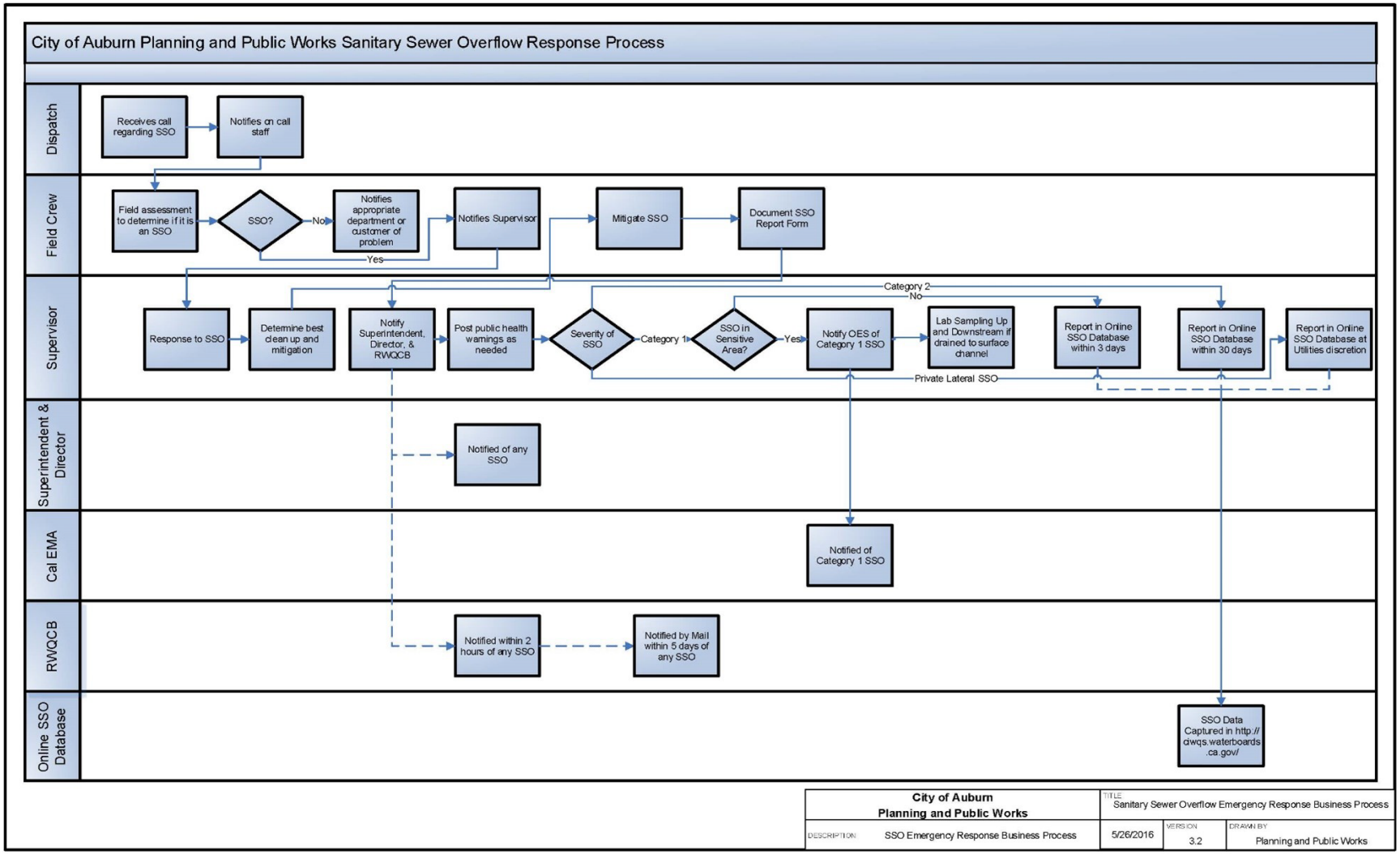

Figure 2-2: Chain of Communication for Reporting SSO

3. Legal Authority

D.13(iii) Each Enrollee must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to (1) prevent illicit discharges into its sanitary sewer system, (2) require that all sewers and connections are properly designed and constructed, (3)to ensure proper access to portions of the lateral owned by the agency,(4) to limit the discharge of FOG, and(5) to enforce any violation of its sewer ordinances.

The City's Municipal Code provides legal authority for the City to require and enforce various measures for ensuring proper and efficient operation, management and maintenance of the City's wastewater collection system. Table 3-1 shows the code section(s) for the required legal authority.

TABLE 3-1: CITY OF AUBURN MUNICIPAL CODE PROVISIONS RELEVANT TO SSMP

Req	Legal Authority	Municipal Code	Description
1,4	Ability to prevent illicit discharges into the wastewater system	52.062, 52.063, & 52.065	Industrial Wastewater Discharges Prohibited, Improper Maintenance or Use of Connected Sewers, Prohibited Waste Discharges
3	Specifies who owns and maintains which parts of private service laterals. Outlines City right to access private service laterals.	52.063	Improper Maintenance or Use of Connected Sewers
5	Ability to enforce or impose penalty for connection or violation of provision	52.035 & 52.999	Enforcement and Penalty for violations of provisions outlined in Title V of the City's Municipal Code
2	Ability to review and inspect sewer construction plans and operations	52.056 & 52.060	Approval of Plans; Issuance of Permits; Certification of final Inspectors & inspections of Sewerage Construction
2	Outlines Definitions and City Standards for Sewer Facilities	52.054 & 158.267	Street Sewer Mains and House Sewer Connections
4,5	Ability to enforce penalty to damaged sewer facilities	52.087	City may charge user that discharges waste that causes obstruction, impairment, or damage to city facilities

4. Operation and Maintenance Program

D.13.(iv) 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 storm water 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 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, maintenance, and require contractors to be appropriately trained; and

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

A summary of the operation and maintenance program for the City's wastewater collection system is included in Appendix B.

4.1 Contractors Used for Routine Maintenance

A list of contractors performing routine maintenance on the sewer system is provided in Table 4-1 below.

TABLE 4-1: CITY OF AUBRUN HISTORICALLY USED CONTRACTORS

Contractor Name	Address	Phone Number	Owner
Civil Engineering Construction	P.O. Box 1669 Loomis, CA 95650	(916) 652-9884	Michael Hogan
Gabe Mendez Inc.	9390 Ridge Road Newcastle, CA 95658	(916) 663-3372	Vince Mendez

These contractors provide the following services related to the City's sewer system on an as-needed basis:

- Excavate, backfill
- Repair pipes
- Replace pipes
- Remove blockages from pipes
- Dispose of debris
- Clean up spills
- Associated road repairs

4.2 O&M AND SEWER SYSTEM REPLACEMENT FUNDING

The fiscal year 2021/22 capital and operation budget for sewer systems is included in Appendix C.

4.3 Collection System Map and Information

4.3.1 Pipes

The City-owned wastewater collection system serves residences and businesses within the City Limits. The City limits contain over 85 miles of wastewater collection lines and about 1,500 manholes. Ten lift stations are also owned and operated by the City and are described in more detail in the next section.

The City's collection system is composed primarily of gravity sewers ranging from 4 inches to 24 inches in diameter. Some portions of the system, mostly in the old historic downtown area, are over 100 years old.

A map of the existing collection system from the City's CMMS is shown below in Figure 4-1. A detailed map showing collection system manholes and pump stations can be seen in Appendix D.

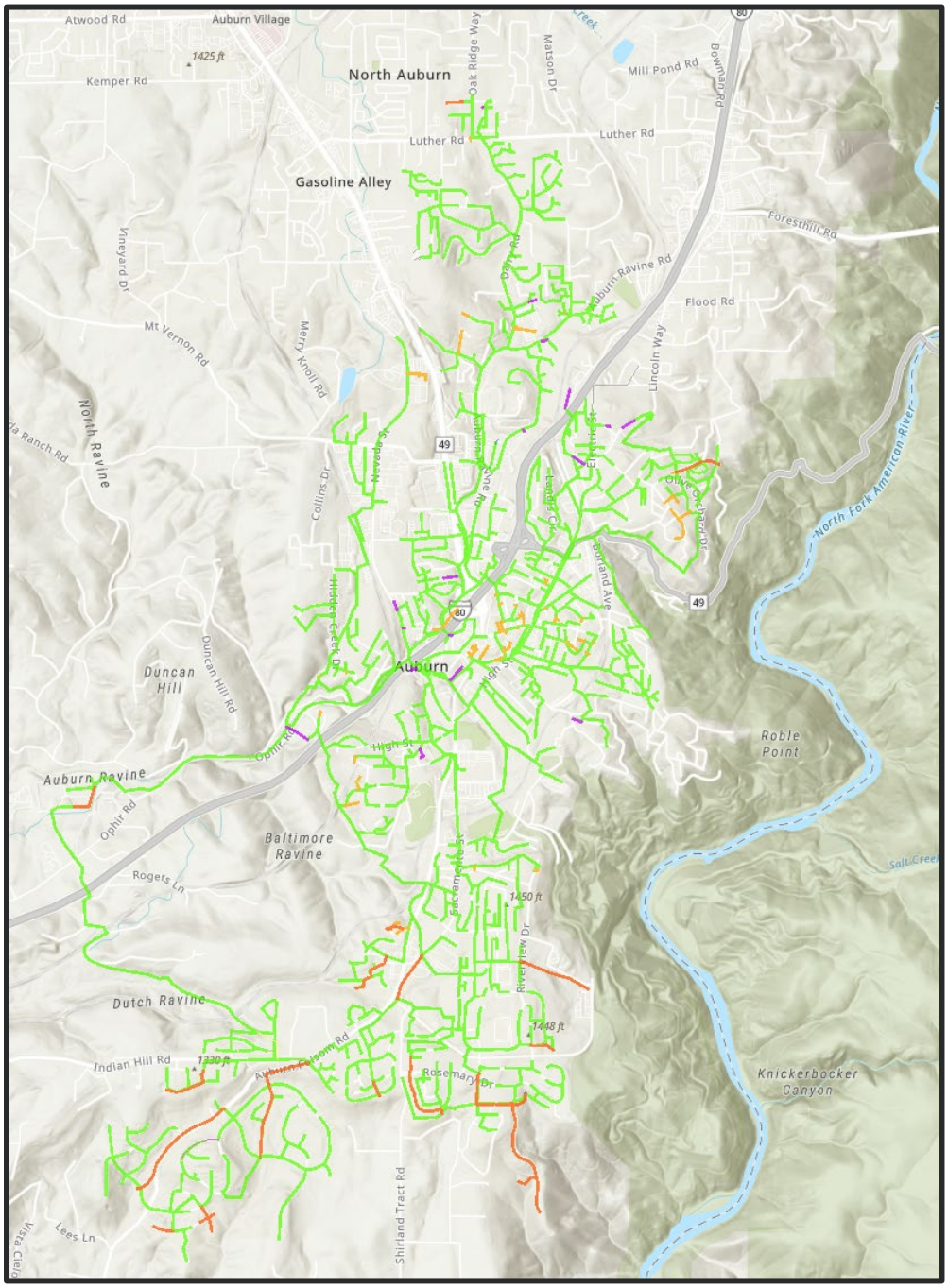

Figure 4-1. City of Auburn Wastewater Collection System (GIS)

4.3.2 Lift Stations

The City owns and operates 10 lift stations and the WWTP lift station. Table 9-1 below provides a summary of lift station information.

In the past 10 years, the City has completed reliability upgrades to 5 out of 10 pump stations. These upgrades included dedicated emergency generators, improved alarms, and new pumps. Each year, the City plans to complete upgrades to at least one pump station, depending on age and condition.

TABLE 9-1: LIFT STATION SUMMARY

Lift Station	Address	Pump Type	Force Main Diameter (in)	Emergency Generator	Odor Control
Monticello	601 Maidu	Flygt, 3.5 hp, 40 gpm	4	Generac	N/A
Vista de Valle	13085 Manzanita Way	Peabody Barnes, 15 hp, 200 gpm	4	N/A	N/A
Maidu	903 Auburn-Folsom Road	Peabody Barnes, 30 hp, 720 gpm	6	Kohler	N/A
Lower Vintage	10700 Sunrise Ridge Circle	Flygt, 205 hp, 577 gpm	6	Kohler	N/A
Southridge	1150 Humbug Way	---	4	---	N/A
Canyon Court	570 Canyon Way	Flygt, 23 hp	4	Kohler	N/A
Indian Hills (*now Diamond Ridge - under construction*)	12050 Mont Vista Drive	ABS, 17 HP, 200 gpm	6	N/A	N/A
Auburn Oaks	1540 Foxridge Circle	ABS, 25 hp, 200 gpm	4	Generac	N/A
Falcons Point	500 Blackstone	Flygt, 35 hp, 200 gpm	3	Kohler	N/A
Fawn Creek	929 Fawn Creek Trail	Peabody Barnes, 75 hp, 300 gpm	4	Generac	Bioxide

5. Design and Performance Provisions

D.13.(v) (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.

The City's standard details and specifications for installation, rehabilitation, and repair of sewer facilities are included in Appendix E.

6. Overflow and Emergency Response Plan (OERP)

D.13.(vi) 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 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 WDR 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.

The City, in coordination with Jacobs, maintains an Overflow Emergency Response Plan for the wastewater collection system, which is included in Appendix F.

7. Fats, Oils, and Grease (FOG) Control Program

D.13.(vii) Each Enrollee shall evaluate its service area to determine whether a FOG control program is needed. If an 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 establish 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.

The City of Auburn (City) has incorporated several elements of a fats, oils, & grease (FOG) program, but has not implemented a full-scale FOG program as outlined in the Statewide General Waste Discharge Requirements (GWDR) for Sanitary Sewer Systems. This section outlines the FOG program elements the City has already

established and provides justification as to why the City does not need to create a larger FOG program.

7.1 FOG Program Elements

The SSS WDRs specify that the following elements be incorporated, as appropriate, into a FOG control program:

1. Public education outreach

2. Plan and schedule for disposal of FOG generated in the sewer service area

3. Legal authority to prohibit FOG discharges and to implement measures to prevent SSOs and blockages caused by FOG

4. Requirements to install grease removal devices and design standards, maintenance, BMP, record keeping and reporting requirements for these devices

5. Authority to inspect grease-producing facilities and enforce violations

6. Identification of sewer sections subject to FOG blockages and establishment of regular cleaning of these sections

7. Development of source control measures for FOG sources

The City has completed the elements in bold, which are described in more detail in the sections below.

7.2 Public Outreach

In collaboration with the Cities of Lincoln, Colfax, Roseville, SPMUD and Placer County, the Live Sewer Smart web site was created with a focus on disposal of FOG and other common household waste (http://www.livesewersmart.com/). Figure 7-1 and 7-2 below show screen shots of the web site. Live Sewer Smart is updated regularly.

Figure 7-1: Home Page of LiveSewerSmart Website

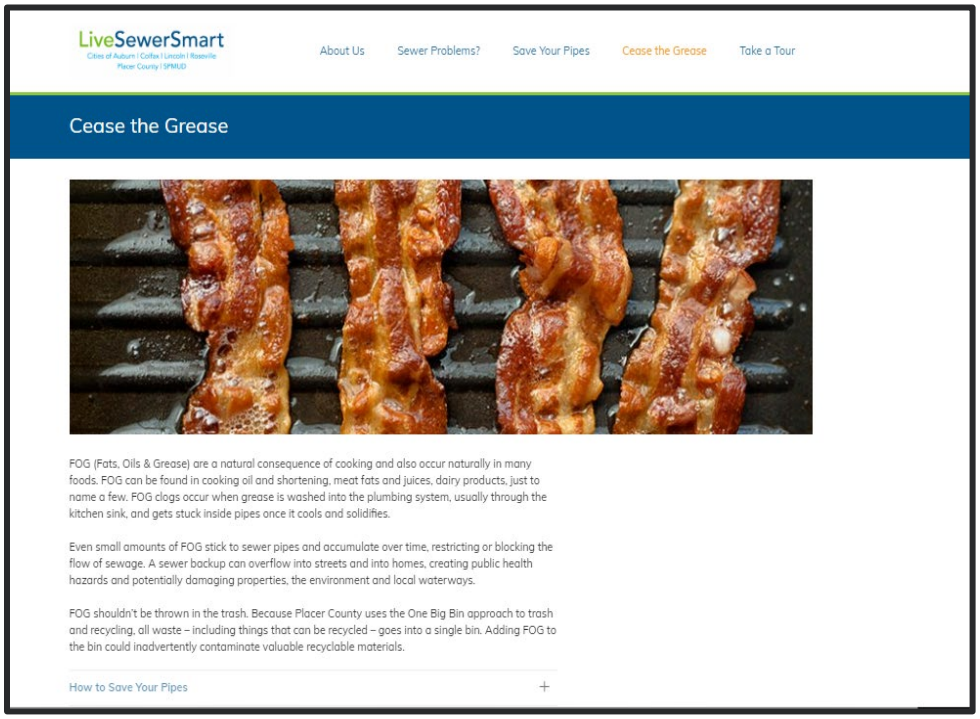

Figure 7-2: FOG Informational Section of LiveSewerSmart Website

7.3 Disposal of FOG Generated Within Service Area

The Live Sewer Smart web site lists several options available for residents and businesses to dispose of FOG:

1. To request curbside pick-up of FOG, residents need to call Recology at (530) 885-3735 to arrange an appointment day.

2. Placer County residents not within the city limits may take FOG to one of the following locations:

    a. Recology Auburn Placer Transfer Station (12305 Shale Ridge Road, Auburn, CA; Phone: (530) 885-3735)

    b. WPWMA Household Hazardous Waste Facility (3033 Fiddyment Road, Rooseville, CA; Phone: (916) 543-3960)

7.4 Legal Authority

The following selections from the City's Municipal Code give the City legal authority to (1) prohibit the discharge of any substance (including FOG) into the sewer system that could cause blockages and subsequently SSOs and (2) prohibit the discharge or any type of lard, fat, or oil which would have "adverse effects" on the sewer system.

> *CITY'S MUNICIPAL CODE, TITLE V: PUBLIC WORKS: CHAPTER 52:*
>
> *§ 52.065 PROHIBITED WASTE DISCHARGES.*
>
> *(B) No person shall discharge or cause to be discharged to a public sewer which directly or indirectly connects to the city's sewerage systems the following wastes:*
>
> *(4) Any solid or viscous substance of a size or in such quantity that they may cause obstructions to the flow in the sewer or be detrimental to proper wastewater treatment plant operations;*
>
> *(11) Any dispersed biodegradable oil or fat, such as lard, tallow or vegetable oil, in excessive concentrations that would tend to cause adverse effects on the sewerage system;*

7.5 Identification and Maintenance of FOG Hot Spots

The City maintains a computer maintenance management system (CMMS) which is used to track hot spots and schedule preventative maintenance activities based on a variety of parameters (such as pipe age and material, etc.). Table 7-1 below shows miles of pipe maintained by year from 2009 to 2015. Maintenance activities include hydrocleaning, CCTV inspection, repair, root sawing, and responding to callouts.

TABLE 7-1: SUMMARY OF SEWER MAINTENANCE BY YEAR (a)

Year	Miles of Pipe Maintained
2009	56.4
2010	41.6
2011	57.8
2012	55.2
2013	59.0
2014	59.8
2015	60.1
2016	59.8
2017	54.0
2018	56.2
2019	90.7
2020	71.6
2021	55.1
2022	87.1

(a) From the City's CMMS.

7.6 Justification for Existing FOG Program

Since beginning SSO tracking in the California Integrated Water Quality System (CIWQS) online database in 2007, the City has experienced 83 SSOs. Of these 78 SSOs, only 4 were related to FOG build-up, with almost all occurring in 2009. Table 6 below shows a summary of SSOs that occurred from 2017 to 2022 (five-year update period). There were no FOG-related spills in the City's system.

TABLE 7-2: SUMMARY OF SSOS (2017-2022)

Cause of Spill	# of Spills	% of Spills
Root Intrusion	5	31
Pipe Structural Problem/Failure	4	25
Debris	4	25
Rainfall Exceeded Design	0	0
Miscellaneous (each occurred once) (a)	1	6
Root Intrusion and Pipe Failure	1	6
Root Intrusion and Debris	1	6
Total	**16**	**100**

(a) Pump station failure

The low frequency of FOG-related SSOs within the City's sewer system indicates that FOG issues are minimized by the City's existing FOG program. Based on the minimal number of work orders and SSOs related to FOG within the past several years and the fact that the number of FOG-related SSOs are decreasing, it can be concluded that the City does not require a more comprehensive FOG program.

8. System Evaluation and Capacity Assurance Plan (SECAP)

D.13.(viii) The 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 capital improvement plan (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.

8.1 Background

As part of the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (SSS WDRs), the City of Auburn (City) must complete a System Evaluation and Capacity Assurance Plan (SECAP). The SECAP typically includes the following elements:

- Evaluation of portions of sewer system experiencing or contributing to sanitary sewer overflows (SSOs) because of hydraulic deficiencies.

- Develop appropriate design storm or wet weather event to analyze sewer system at peak flow conditions.

- Develop short- and long-term capacity enhancement measures to address identified hydraulic deficiencies. Develop Capital Improvement Plan (CIP).

- Devise a schedule for completion of the CIP.

- Include a budget for the CIP.

This section is intended to fulfill the SECAP requirements and contains the following sections:

- Existing Wastewater Collection System Components

- Evaluation

- Capital Improvement Plan, Budget, and 5-Year Schedule (see Appendix C)

8.2 Evaluation

8.2.1 Rainfall Events

A review of the City's sanitary sewer overflows (SSOs) since 2017 shows that the City had no overflows in the time period from 2017 to 2022 related to capacity.

The October 22-25, 2021 storm was the largest storm event that occurred in the last 5 years. This storm is evaluated in the sections below to determine its relative magnitude and frequency of occurrence and appropriateness as a wet weather event for the SECAP hydraulic evaluation.

Rainfall data for the evaluation was downloaded from a rain gauge operated by the US Bureau of Reclamation near the American River on the Auburn Dam Ridge (ADR). The data was obtained from the California Data Exchange Center (CDEC), operated by the California Department of Water Resources (DWR; http://cdec.water.ca.gov/). Statistical development of the DDF curves for the ADR rainfall data was downloaded from DWR's Flood Emergency Response Information Exchange (https://ferix.water.ca.gov/webapp/precipitation/).

8.2.2 Rainfall Analysis

From October 22-25, 2021, the City and surrounding northern California communities experienced heavy precipitation. According to the National Oceanic and Atmospheric

Administration (NOAA) California Nevada River Forecast Center, the storm event broke “several October and All-Time daily precipitation records”.

The City received 8.32 inches of rain over a 3-day period, including one day of 6.16 inches of rain. No sanitary sewer overflows were observed or reported and the WWTP did not experience and excessive amount of infiltration and inflow (I&I).

Depth-duration-frequency (DDF) curves are developed from statistical analysis of local precipitation records. They serve to classify storms of different durations by return period (probability of the frequency of occurrence) so storms from different years, but of the same duration, can be compared directly. The DDF curves for 1- and 2-day events for the ADF rainfall gauge are shown in Figure 8-1.

The curves below suggest that the return periods of the storm event in October 2021 ranged from 27 to 85 years (for 1- and 2-day durations, respectively). The largest return period of 85 years was for a 1-day duration storm event (when it rained 6.16 inches).

Neighboring municipalities and communities, such as the South Placer Municipal Utility District (SPMUD) and Placer County, have been utilizing a 6-hour, 10-year design storm for hydraulic analyses of their sewer systems. Rather than establishing a design storm, the October 2021 event was used in evaluation of the City’s hydraulic capacity. This storm is considered conservative because of the heavy amount of rain that came down in a short amount of time and is consistent with the level of storm event used by neighboring communities.

As mentioned previously, no SSOs were observed or reported during this time period, even during the 85-year return period event.

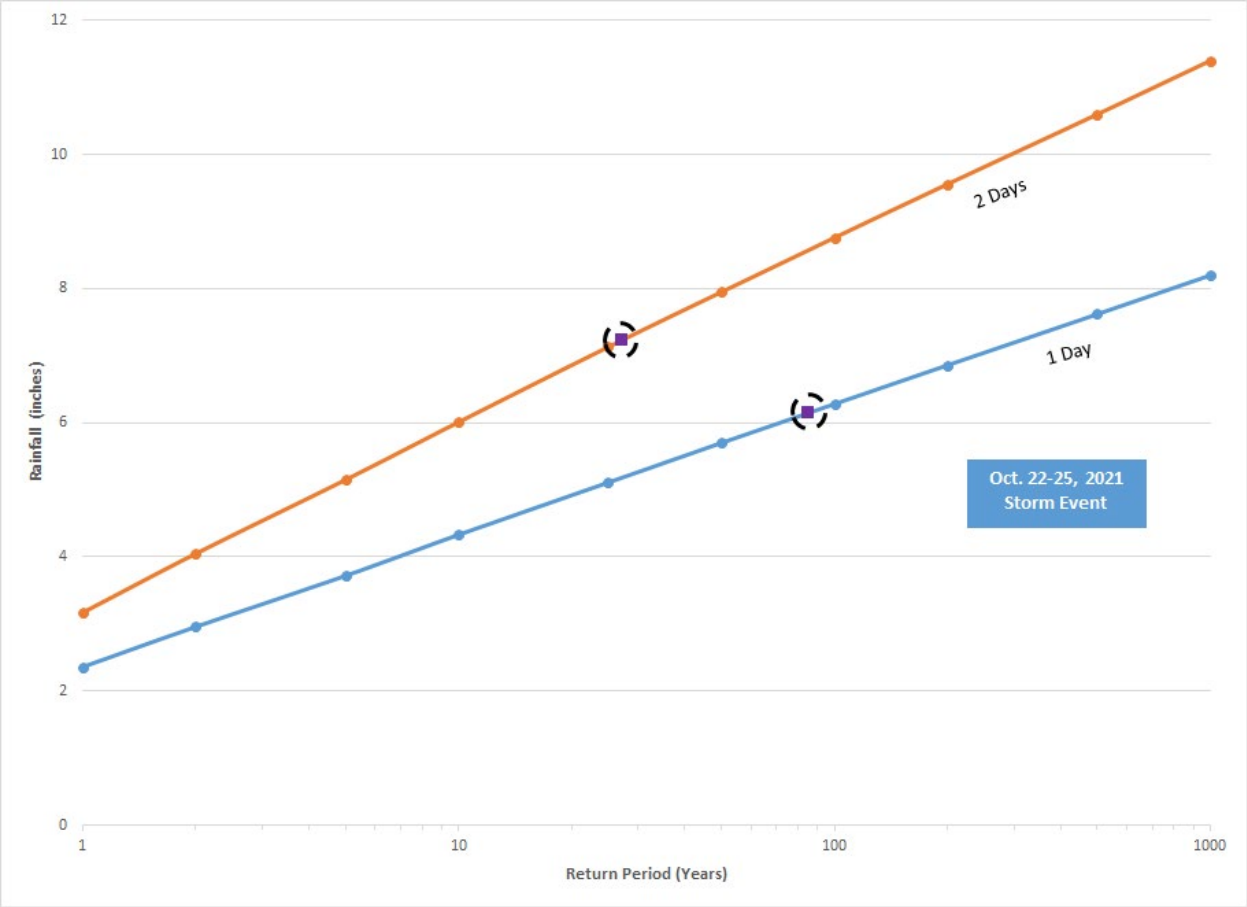

Figure 8-1: DDF Curves for ADR Rain Gauge with October 2021 Storm Event

8.2.3 Conclusions

The data from this storm event suggests that for a 10-year return period storm event, the City's sewer system has enough hydraulic capacity within the pipes and lift stations to avoid SSOs. A storm event of over a 100-year return period was needed before an SSO occurred, presumably from a capacity issue (from the February 2014 storm event discussed in the previous SSMP document). Therefore, further evaluation is not required at this time since capacity during a 10-year return period storm event (the standard return period for many communities in the Central Valley) appears more than adequate. This evaluation will be updated as more large storms occur and as the system ages.

9. Monitoring, Measurement and Program Modifications

D.13.(ix) 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.

9.1 Performance Targets

The City, in coordination with Jacobs, has developed the following performance targets (see Table 9-1) for sewer system maintenance. These performance targets have been established to help achieve and maintain the City's goal of minimizing/eliminating sanitary sewer overflows (SSOs) in mains and lift stations throughout the City.

TABLE 9-1: CITY OF AUBURN SSMP PERFORMANCE TARGETS (a)

Activity	Monthly City Contract (feet)	Yearly City Contract (feet)	Yearly City Goal (feet)
Hydrocleaning	7,480	89,760	90,000
Televising/CCTV	7,480	89,760	90,000

(a) Root sawing occurs on an as-needed basis.

The City utilizes a Computer Maintenance Management System (CMMS) and its GIS system for tracking inspections, repairs, and preventative maintenance activities. The data used in this section was taken from the CMMS database.

The following table (Table 9-2) shows actual performance from 2009 through 2022 as well as totals and averages per year of each activity.

TABLE 9-2: ACTUAL PERFORMANCE BY YEAR AND ACTIVITY

Year	Activity			
	Hydrocleaning (feet)	Root Sawing (feet)	Televising/CCTV (feet)	Other Activities (a) (feet)
2009	252,089	22,065	22,889	561
2010	185,828	15,155	18,411	0
2011	235,644	27,231	26,005	16,374
2012	216,041	27,138	31,670	16,477
2013	253,384	27,231	21,237	9,448
2014	251,422	25,212	26,391	12,465
2015	247,549	23,811	27,864	18,113
2016	246,586	31,716	22,910	14,342
2017	240,650	27,189	17,421	0
2018	256,094	21,784	18,610	0
2019	429,297	27,507	22,163	0
2020	322,495	27,398	28,082	0
2021	237,995	28,753	24,128	0
2022	402,779	14,883	42,034	0
TOTAL	**3,777,853**	**347,073**	**349,815**	**87,780**
AVERAGE	**269,847**	**24,791**	**24,987**	**6,270**

(a) Replacement, repair, chemical treatment, callout response, dye test, road clearing, inspection, unknown, CCTV for USA marking, and SSO response.

On average and in most years, the City has met or exceeded past established performance targets. As a part of increasing the effectiveness of preventative maintenance, the City is has committed to CCTV larger portions of the wastewater collection system.

Figure 9-1 below shows percentages of maintenance activities for 2017 to 2022.

Figure 9-2 shows totals for maintenance activities by linear feet.

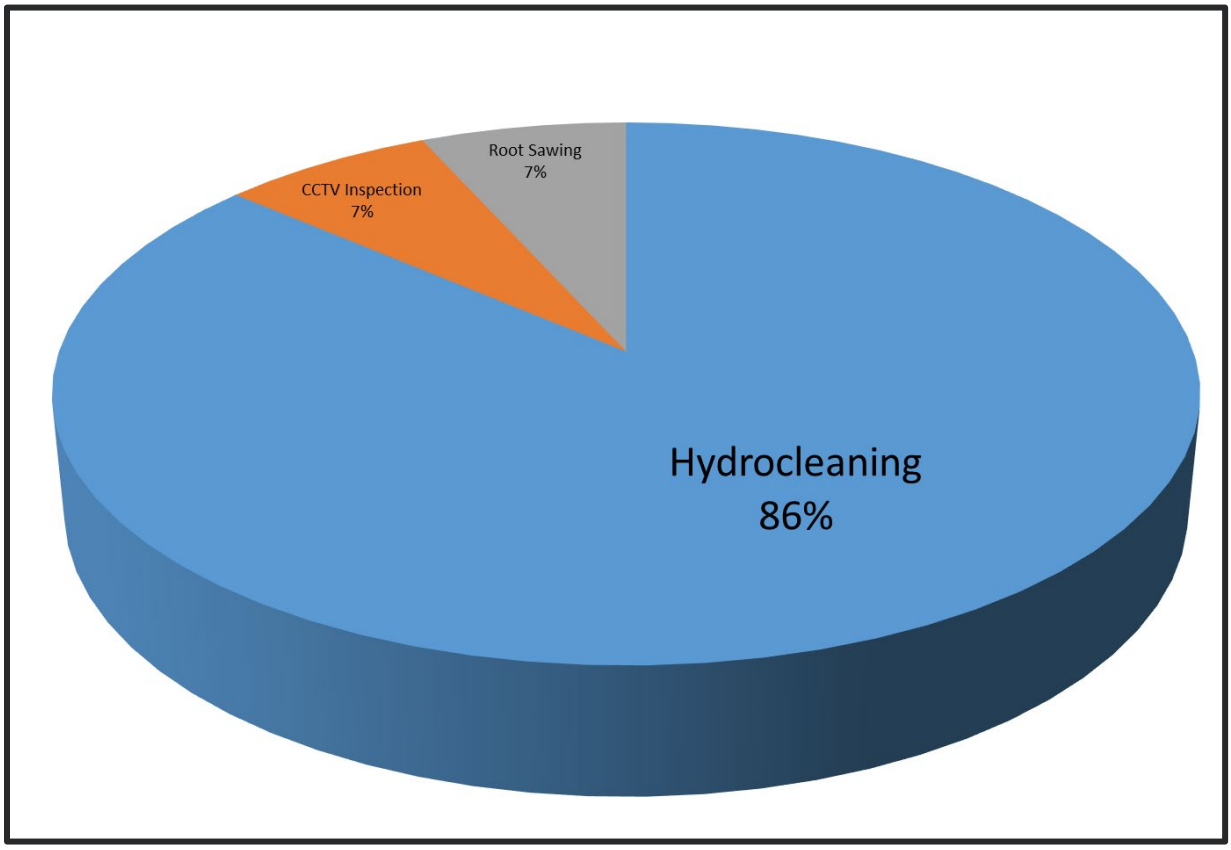

Figure 9-1. Percentage of Sewer Maintenance Activities from 2017 to 2022

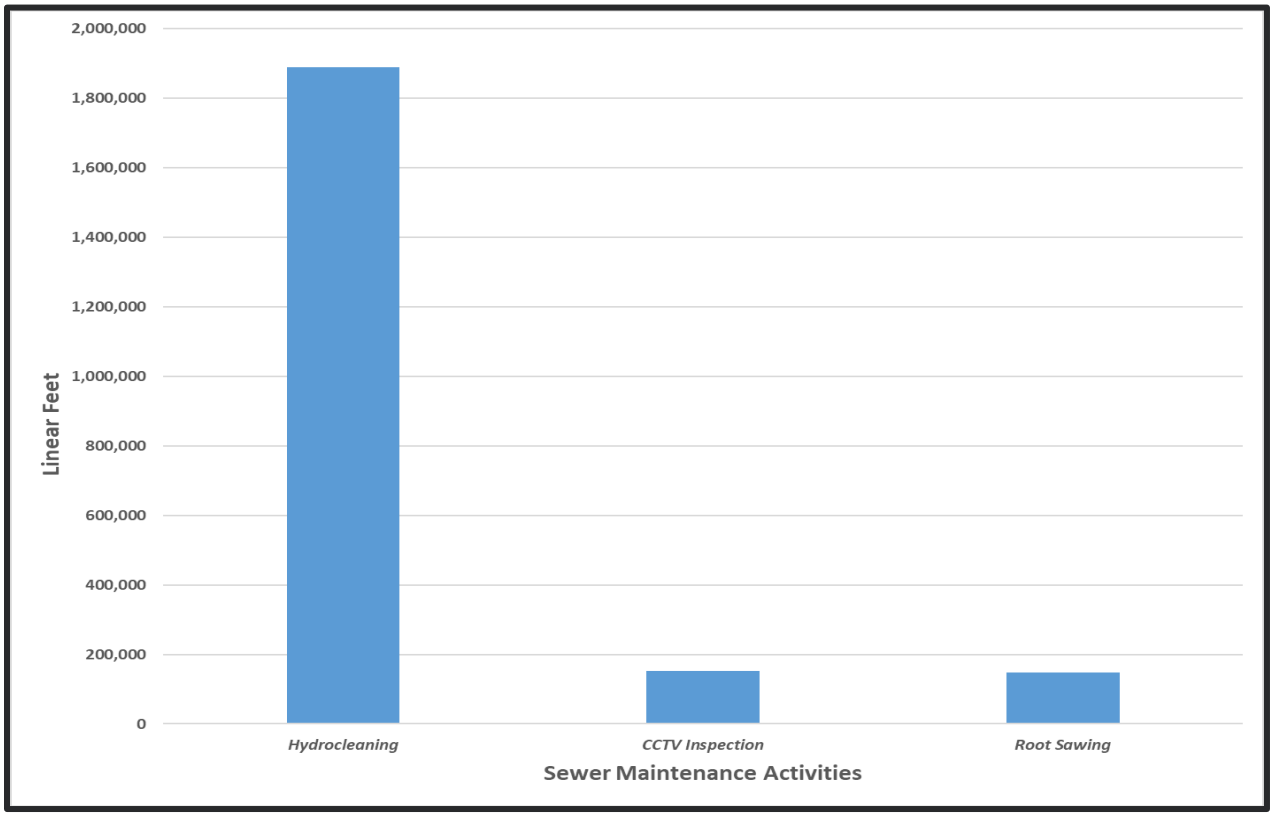

Figure 9-2 Sewer Maintenance Activities from 2017 to 2022 by Linear Feet

9.2 SSO Trends

Preventative maintenance programs are adjusted to address SSO trends with respect to the City's SSMP goals. Data is gathered from City's completed work orders stored in the City's CMMS and are evaluated. Figure 9-3 below shows the total number of SSOs from 2008 to 2022. The general trend is downward.

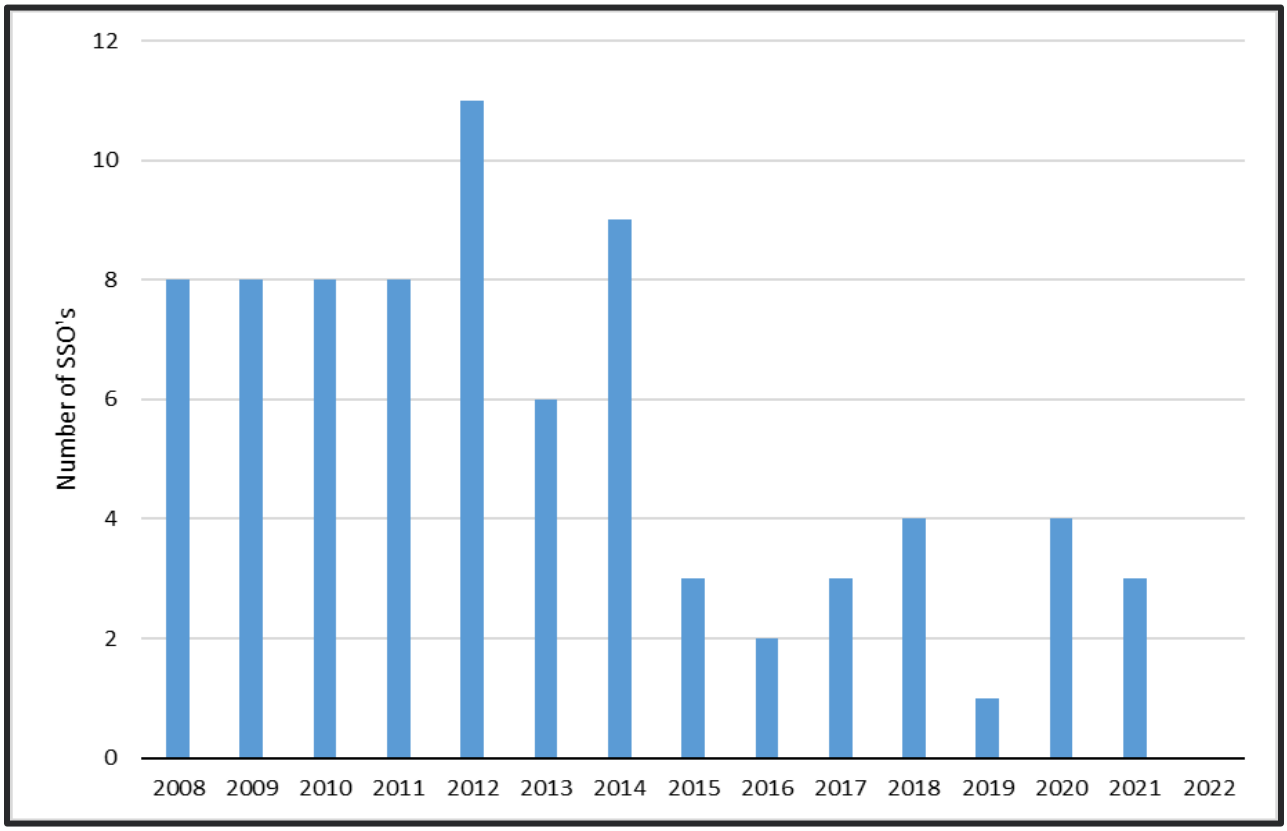

Figure 9-3: Total Number of SSOs from 2008 to 2022

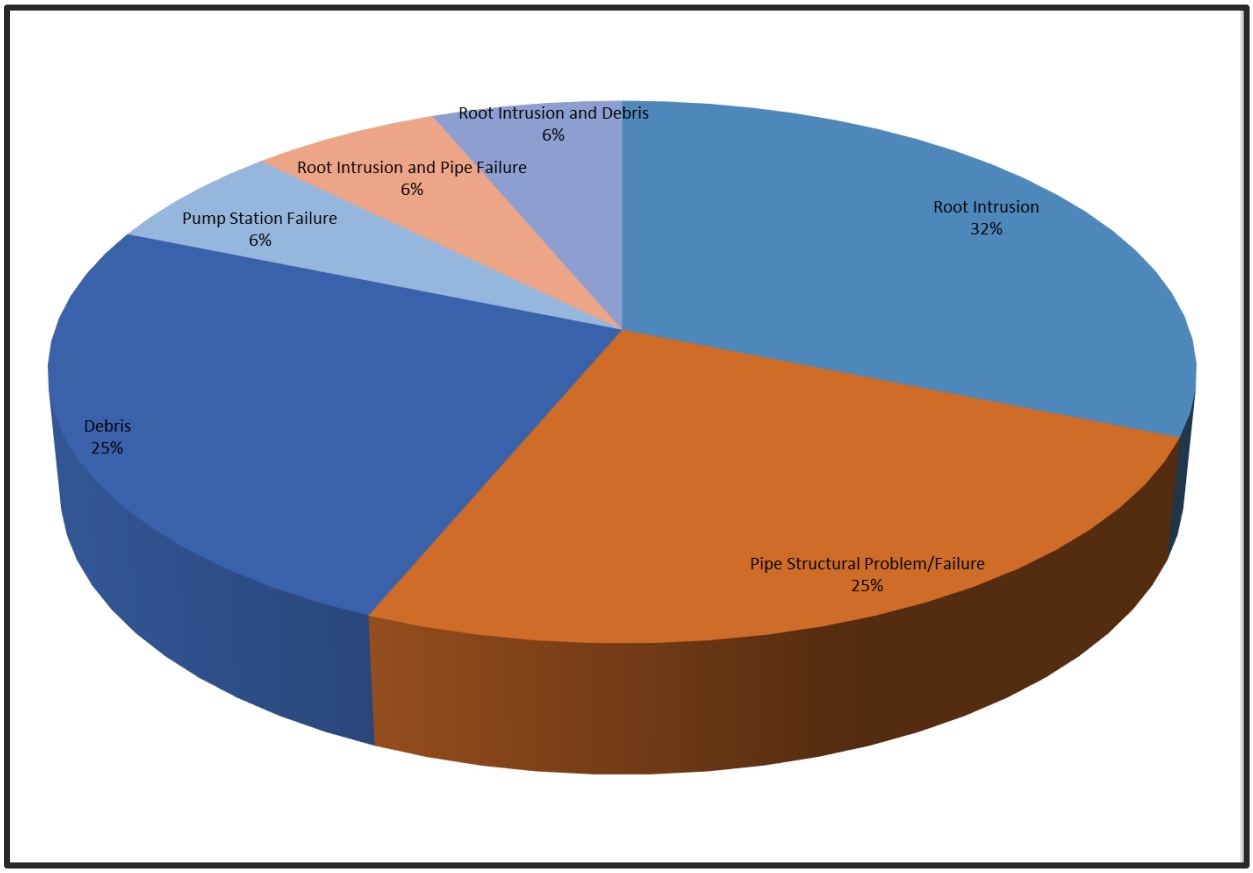

Figure 9-4: Causes of SSOs from 2017 Through 2022

10. SSMP Program Audits

> *D.13.(x) 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.*

Program audits are required every two years and consist of the evaluation shown in Section 9, a review of the goals shown in Section 1, and completion of the audit worksheet included in Appendix G. The CMMS database helps to track and direct maintenance activities to maximize the program's effectiveness.

11. Communications Program

D.13.(xi) 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.

Communication program activities include the following:

1. Communicate with stakeholders through regular updates to City staff and council
2. Public works newsletters and outreach websites on SSMP for the public (such as Live Sewer Smart)

Appendix A

City of Auburn SSMP Change Log

Monitoring and Reporting Program (MRP) Order No. WQ 2013-0058 EXEC E.(3):

All records documenting changes to the SSMP since its last certification shall be attached to the SSMP. These records should show when a subsection was changed or updated and who authorized the change.

Date	Section	Editor

Appendix B

Operation and Maintenance Program Summary

TECHNICAL MEMORANDUM

City of Auburn SSMP Implementation
Topic: Overview of Operations & Maintenance Program

PREPARED FOR: Mengil Deane /City of Auburn

PREPARED BY: Dan Rich/NEXGEN

Melissa Lee/NEXGEN

COPIES:

DATE: Updated: November, 2022

O&M Implementation

1 Computer Maintenance Management System

All of the City's collection system assets including sewers and maintenance holes are documented in a computer maintenance management system (CMMS). They are sorted and rolled up by sewer shed basins. Figure 1 presents an example of the details that are captured in the CMMS for asset inventory.

Using the CMMS, the City has established a formal Operations and Maintenance (O&M) program with routine preventive maintenance program on the higher risk assets. The City utilizes the CMMS to manage the O&M program which complies with the state's Sewer System Management Plan (SSMP) requirements.

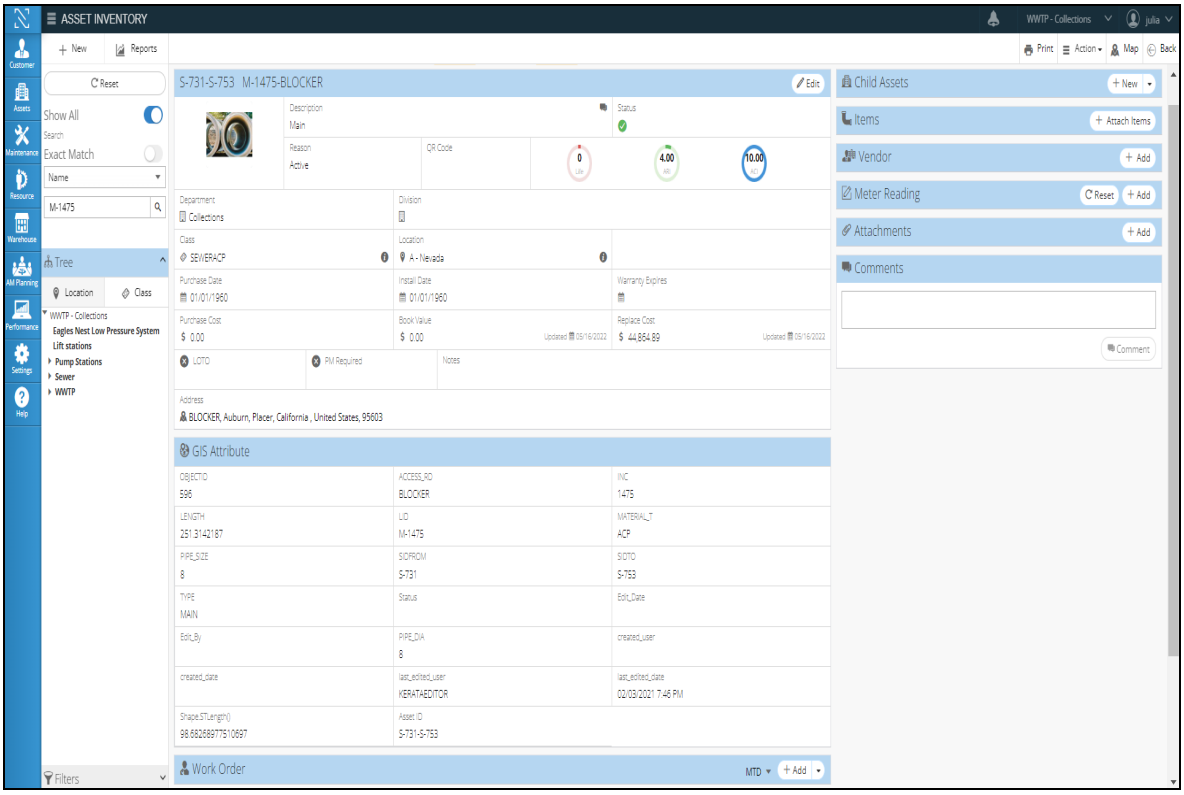

FIGURE 1. CITY'S COLLECTION SYSTEM ASSETS ARE MANAGED IN A CMMS

2 Migration of the City's Historical Work Orders to CMMS

The City has kept track of historical Work Orders (WO) from 12/9/99 to the present. There were 2 sets of data, historical WO from 12/9/99 to 2/13/03, which identified the dates, street and priority. The records did not identify WO types and causes for the WO. A separate set of historical WO data from 3/24/04 to present has identified dates, sewer lines, priority, street and memo. Some of the memo fields identified WO types and causes. Where possible, the WO types and causes were interpreted based on the memo field. There seems to be some missing data from February 2003 and March 2004. Therefore, historical work orders from 3/24/2004 to the present have been migrated into the City's new CMMS. Since 2007, new work orders have been entered into the CMMS, creating a real-time database.

3 Integration of GIS with CMMS

The City's Geographical Information System (GIS) is integrated with the CMMS. Users can access the asset inventory through the GIS map or asset inventory tree in the CMMS. Figure 2 shows a sample of GIS map in the CMMS. Users can query asset information or create work orders from the GIS map. The City's GIS is maintained by City staff.

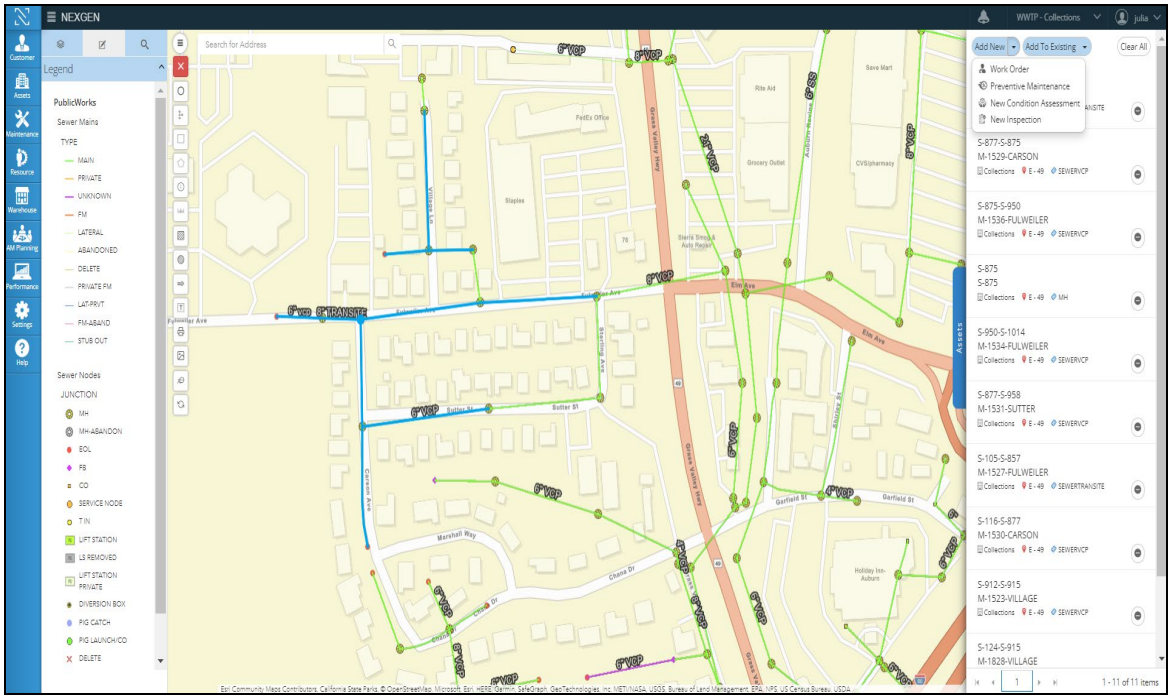

FIGURE 2. CITY'S GIS IS INTEGRATED WITH THE CMMS

4 Application of Asset Management Principles to Preventive Maintenance Program – Risk Assessment

The City prioritized its assets based on risk from a risk rating system that accounts for impact and probability. The purpose of the risk assessment is to prioritize Preventative Maintenance (PM) activities. The City rated groups of assets by the impact of asset failure from a rating system of 1- 10 as presented in Table 3.

TABLE 3. ASSET IMPACT INDEX RATINGS

All	Detailed Definitions
1	No operation and service interruptions. No impact on environment and regulatory compliance. No economic and financial impact.
2	Minimal operation interruptions but no service interruptions to customers. Minimal impact on environment and regulatory compliance. Trivial loss of economic and financial revenue from productions or service interruptions.
3	Minor operation interruptions but no service interruptions to customers. Minor impact on environment and no violation of regulatory compliance. Minor loss of economic and financial revenue from productions or service interruptions.
4	Limited operation interruptions with possible service interruptions to customers. Limited impact on environment and possible violation of regulatory compliance. Limited loss of economic and financial revenue from productions or service interruptions.
5	Moderate operation interruptions and minor service interruptions to customers. Moderate impact on environment and minor violation of regulatory compliance. Moderate loss of economic and financial revenue from productions or service interruptions.
6	Notable operation interruptions and service interruptions to limited customers. Notable impact on environment and minor violation of regulatory compliance. Notable loss of economic and financial revenue from productions or service interruptions.
7	Considerable operation interruptions, service interruptions to limited customers and potential public safety. Considerable impact on environment and violation of regulatory compliance with fines. Considerable loss of economic and financial revenue from productions or service interruptions.
8	Major operations interruptions, service interruptions to medium customers and inherent public safety. Major impact on environment and unavoidable violation of regulatory compliance with large fines. Major loss of economic and financial revenue from productions or service interruptions.
9	Significant operations interruptions, service interruptions to large number of customers and imminent public safety. Significant environmental impact and imminent violation of regulatory compliance with significant fines. Significant loss of revenue from productions or service interruptions.
10	Extended operations interruptions, service interruptions to large number of customers and serious public safety. Catastrophic environmental impact and monumental violation of regulatory compliance with extensive fines. Extreme loss of revenue from productions or service interruptions.

The City rated groups of assets by the probability of asset failure from a rating system of 1-10 as presented in Table 4.

TABLE 4. ASSET PROBABLITY INDEX RATINGS

Index	Definition
1	Extremely low probability of failure
2	Very low probability of failure
3	Low probability of failure
4	Low-intermediate probability of failure
5	Intermediate probability of failure
6	Moderate probability of failure
7	Moderate-high probability of failure
8	High probability of failure
9	Very high probability of failure
10	Extremely high probability of failure

The Asset Risk Index (ARI) was calculated based on Asset Impact Index multiplied by Asset Probability Index. ARI scores ranged from 1- 100. Depending on the asset risk index scores, different asset management strategies may apply as presented in Table 5.

TABLE 5. ASSET MANAGEMENT STRATEGIES

Risk					Definition		
1	<	ARI	<	10	Extremely Low Risk	→	No Activity
11	<	ARI	<	20	Very Low Risk	→	No Activity
21	<	ARI	<	30	Low Risk	→	Sample monitoring
31	<	ARI	<	40	Low Intermediate Risk	→	Routine monitoring
41	<	ARI	<	50	Intermediate Risk	→	Routine monitoring
51	<	ARI	<	60	Moderate Risk	→	Aggressive monitoring
61	<	ARI	<	70	Moderate High Risk	→	Aggressive monitoring
71	<	ARI	<	80	High Risk	→	Plan Work
81	<	ARI	<	90	Very High Risk	→	Immediate Work
91	<	ARI	<	100	Extremely High Risk	→	Immediate Work

5 Document and Optimize Preventive Maintenance Program

The City's preventive maintenance program is organized by months. In some months, only specific sewer lines are to be cleaned depending on if they are assigned odd or even years. Work order tracking provides a reliable means for updating and optimizing the PM program.

The City's PM program has been established in the CMMS and reminders and work orders for PM activities are automatically generated when they are due. Figure 3 and 4 presents a sample screen of the City's PM program in the CMMS software.

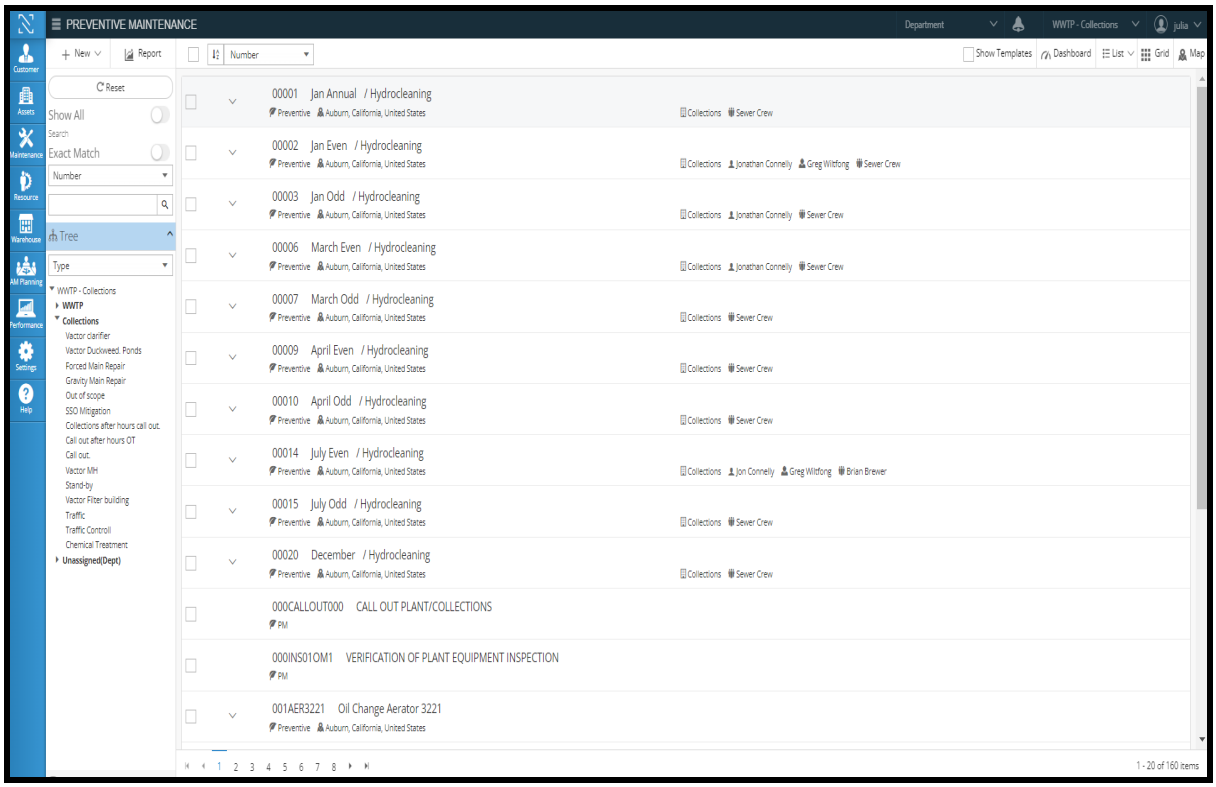

FIGURE 3. CITY'S PREVENTIVE MAINTENANCE PROGRAM AUTOMATICALLY GENERATED FROM CMMS

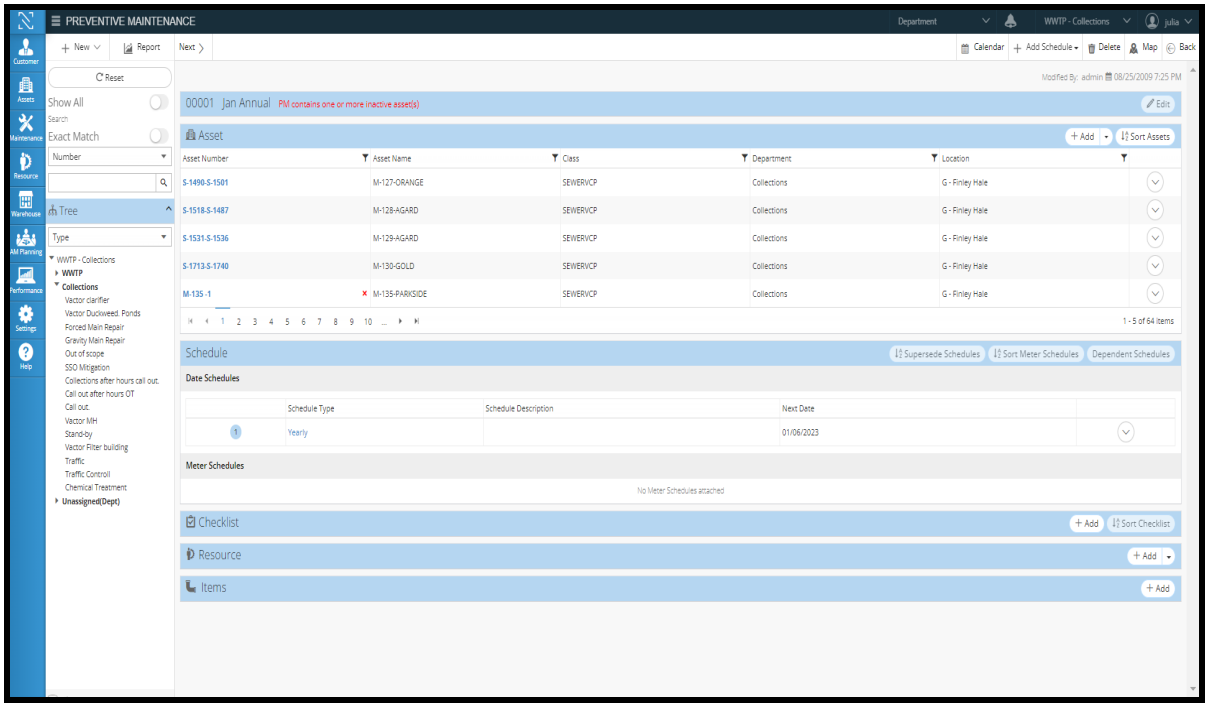

FIGURE 4. CITY'S PREVENTIVE MAINTENANCE PROGRAM AUTOMATICALLY GENERATED FROM CMMS (SPECIFIC PM)

6 CCTV Schedule

The City works with Jacobs to complete systematic hydrocleaning, root sawing, and CCTVing throughout the sewer system.

The City actively uses CCTV inspection to monitor the condition of its sewer lines, identify problem areas, identify locations in need of repairs, and to determine the effectiveness of the cleaning/root sawing program.

After cleaning or repairing the sewer lines as necessary, the City uses CCTV inspection to confirm the adequacy or the cleaning/root removal and the competency of any repair or replacement operations.

The City's yearly goal is to CCTV 89,760 feet of pipe (approximately 17 miles) each year.

Appendix C

2020-2021 Capital and Operation Budget for Sewer Systems and 5 Year Schedule

BUDGET - FY Sewer - Fund 11 Dept 410

	Budget Code	Project Name	FY 21/22 Approved	FY 21/22 Actual (8.29.2022) FINAL	FY22/23 Requested	FY 22/23 Approved	FY 22/23 Actual (10.12.2022)	FY23/24 Request	Budget Comments
1		**Revenues**							
2	74211	Sewer Connection Fees							
3	76600	Interest							
4	78014	Sewer Service Charges							
5	79006	Surplus Property Sales							
6	79014	Auburn Bluffs Sewer Reimbursement							
7	79101	Miscellaneous							
8	79300	Debt Proceeds							
9		**SUBTOTAL REVENUES**							
10									
11		***Sewer Operations***							
12	40000	Regular Salaries	$321,406.00	$371,313.89		$501,243.00	$57,437.10		*Admin Services to Provide Data*
13	40002	Overtime Pay	$1,500.00	$1,158.60		$1,500.00	$2,032.10		*Admin Services to Provide Data*
14	40003	Leave Balance Payoff	$0.00	$132.45		$0.00	$0.00		*Admin Services to Provide Data*
15	40004	Retirement Contributions (PERS)	$93,086.00	$20,950.58		$88,898.00	$2,740.94		*Admin Services to Provide Data*
16	40005	UAAL: Pension Expense	$0.00	$17,546.00		$0.00	$22,620.00		
17	40006	Employee Insurance Programs	$12,507.00	$26,328.97		$12,943.00	$8,785.00		*Admin Services to Provide Data*
18	40007	FICA	$2,220.00	$3,172.52		$2,329.00	$819.04		*Admin Services to Provide Data*
19	40011	Emergency Sick Leave	$0.00	$0.00		$0.00	$0.00		
20	40099	Salary Reimb. to Other Funds							
21	40100	Postage	$100.00	$13.48	$100.00	$100.00	$0.00	$100.00	
22	40200	Printing	$0.00	$2,589.20					
23	40300	Travel & Transportation			$1,500.00	$1,500.00	$0.00	$1,500.00	*Travel for 3 PW Employees*
24	40400	Legal Advertising	$0.00	$1,611.98					
25	40500	Dues & Subscriptions	$5,000.00	$13,285.90	$23,000.00	$23,000.00	$4,524.32	$23,000.00	*Parcel Quest Fees / IT Pipes / USA North*
26	40601	Workers Compensation Insurance	$25,000.00	$36,423.52		$30,000.00	$0.00		*Admin Services to Provide Data*
27	40602	General Liability Insurance	$266,000.00	$305,590.50		$335,693.00	$409,366.35		*Admin Services to Provide Data*
28	40604	Dishonesty/Crime Policy							
29	40606	Pollution Liability Insurance	$30,000.00	$0.00	$30,000.00	$30,000.00	$0.00	$30,000.00	
30	41000	Materials & Supplies	$1,500.00	$5,319.75	$1,500.00	$1,500.00	$793.61	$1,500.00	
31	41100	Clothing Allowance	$0.00	$857.58					
32	41170	Refund of Service Charges							
33	41200	Fuel for Vehicles	$15,000.00	$21,902.34	$19,500.00	$19,500.00	$3,589.28	$19,500.00	
34	41300	Professional Services	$100,000.00	$237,884.34	$100,000.00	$100,000.00	$3,947.90	$100,000.00	*Nexgen - Eng & CM for Sewer System & WWTP*
35	41340	SWRCB Fees	$12,000.00	$30,510.00	$12,000.00	$12,000.00	$0.00	$12,000.00	
36	41500	Minor Equipment							
37	41900	Training & Education	$3,000.00	$1,050.31	$7,500.00	$7,500.00	$1,350.00	$7,500.00	*James, Natalie, Mengil*
38	42000	Rents & Leases	$4,000.00	$3,728.20	$4,000.00	$4,000.00	$3,996.63	$4,000.00	*UPRR*
39	43000	Maintenance of Vehicles	$15,000.00	$22,904.21	$18,750.00	$18,750.00	$3,598.82	$18,750.00	*The City added 2 Dump Trucks to fleet*
40	43100	Maintenance of Equipment	$15,000.00	$25,753.27	$18,750.00	$18,750.00	$5,569.96	$18,750.00	
41	43110	Maintenance - Sewer Repairs							
42	43300	Mainenance of Buildings							
43	44000	Contractual Services	$20,000.00	$114,544.70	$120,000.00	$120,000.00	$3,000.00	$120,000.00	*BSK - Groundwater Monitoring Ponticello Enterprises*
44	44011	WWTP Operations Contract	$2,225,000.00	$2,065,514.49	$2,322,900.00	$2,322,900.00	$516,089.79	$2,425,107.60	*CH2M Contract - Covers 4.4% Increase from FY15/16*
45	44025	C/S Tree Maintenance							
46	44040	GF Property Tax Admin Fees							*Admin Services to Provide Data*
47	44042	Collection Expense	$63,500.00	$61,923.78	$63,500.00	$63,500.00	$0.00	$63,500.00	FY17/18 Note: Is this Account Needed?
48	44050	Bank Fees	$8,000.00	$14,893.44	$8,000.00	$8,000.00	$0.00	$8,000.00	*Admin Services to Provide Data*
49	44600	Special Projects	$0.00	$117,970.00					FY17/18 Note: Delete Account Code
50	44605	Bond Closing Costs							*Admin Services to Provide Data*

	Budget Code	Project Name	FY 21/22 Approved	FY 21/22 Actual (8.29.2022) FINAL	FY22/23 Requested	FY 22/23 Approved	FY 22/23 Actual (10.12.2022)	FY23/24 Request	Budget Comments
51	45000	Communications	$12,000.00	$6,750.00	$14,500.00	$14,500.00	$2,340.00	$12,500.00	*ipads FY22/23*
52	45045	Depreciation Charges							
53	45100	Utilities	$3,500.00	$10,133.00	$5,000.00	$5,000.00	$2,744.49	$5,000.00	
54	46602	Pollution Insurance	$0.00	$24,372.83					*Admin Services to Provide Data*
55	46604	Vehicle Insurance	$35,000.00	$0.00	$4,000.00	$35,000.00	$0.00	$4,000.00	
56	48000	Debt Service - Prinicipal Payment	$654,646.00	$643,107.19		$654,646.00	$393,107.19		*Admin Services to Provide Data*
57	48001	Debt Service - Interest Payment	$322,445.00	$173,240.70		$322,445.00	$0.00		*Admin Services to Provide Data*
58	48002	Debt Service - CalPERS							*Admin Services to Provide Data*
59	48004	Debt Service - Bound Amort Disc							
60	48005	Debt Svcs - Bond Amort Cost							
61	49000	Operating Transers/Out	$0.00	$77,201.00					*Admin Services to Provide Data*
62		**Sum Total Sewer Operations**	*$4,266,410.00*	*$4,459,678.72*	*$2,774,500.00*	*$4,148,284.00*	*$1,354,018.34*	*$2,874,707.60*	
63									
64		***Sewer Capital***							
65	45001	Public Outreach	$0.00	$1,256.98	$5,000.00			$5,000.00	*Regional Sewer Group Contribution and Rx Ads*
66	50302	Vehicles	$0.00	$206,993.00	$750,000.00	$760,000.00	$0.00	$80,000.00	New Vactor Truck / Pick Truck
67	50303	Machinery & Equipment	$0.00	$2,000.00	$15,000.00	$0.00	$5,112.65	$2,000.00	FY22/23 Notes: CCTV Equipment ($10K), Mower ($5K)
68	50800	Computer Equipment	$0.00	$2,260.30	$2,500.00	$0.00	$35,400.00	$2,500.00	
69	61003	Fawn Creek Lift Station	$150,000.00	$0.00	$150,000.00				
70	63054	Groundwater Monitoring Well							
71	63305	Business License System							
72	63317	Fawn Creek SCADA				$250,000.00	$107,540.00		
73	63318	Monticello SCADA				$60,000.00	$0.00		
74	63319	Maidu SCADA				$100,000.00	$0.00		
75	63320	Asset Mgmt - Sewer				$250,000.00	$0.00		
76	63856	Auburn Ravine Stream Sampling	$10,000.00	$88.12	$10,000.00	$10,000.00	$0.00	$10,000.00	
77	63871	Old WWTP Security/Demolition							
78	63890	BioAssy Testing WWTP							
79	63895	Lift Station Repairs/Upgrades	$50,000.00	$38,911.90	$360,000.00	$0.00	$3,655.75	$240,000.00	FY22/23 Notes: SCADA System for 6 lift stations / South Ridge & Maidu Lift Stations Electric Panel upgrade
80	63899	Emergency Sewer Repairs	$250,000.00	$11,518.31	$250,000.00	$250,000.00	$0.00	$250,000.00	
81	63901	Sewer Map Updates	$40,000.00	$0.00		$15,000.00	$0.00		
82	63903	WWTP - Repairs/Upgrades	$60,000.00	$73,306.12		$60,000.00	$900.00		
83	63913	Gunite Ditches							
84	63914	NPDES Permit Compliance	$60,000.00	$0.00	$30,000.00	$30,000.00	$0.00	$30,000.00	*Stantec Professional Services Contract*
85	64004	SSMP Updates	$20,000.00	$0.00		$220,000.00	$0.00		
86	64006	Oxidation Ditch - NPDES - Advanced Oxidation Process - Ditch	$0.00	$0.00					
87	64007	Aeration Improvements							
88	64009	Source Control Program							
89	64010	I & I Reduction Program							
90	64012	Vista de Val Lift Station	$150,000.00	$157,276.74					
91	64014	Nevada Street Sewer Relocation							
92	65000	Regional Sewer Project							
93	65001	Back Flow Preventer Device-Lift Stations	$1,000.00	$490.00		$0.00	$1,125.00		
94	65602	Utility Billing Software				$50,000.00	$0.00		
95	65603	Collection System Computer Software							*Combine with Utility Billing Software*
96	65605	Tractor/Mower							
97	65606	WWTP Pond Improvements							
98	67011	Electric Sewer Collections Project	$0.00	$1,811.00					
99	67023	Diamond Ridge Lift Station	$250,000.00	$52,909.35	$1,000,000.00	$1,000,000.00	$895.00		FY22/23 Note: Design & Construction
100	67024	Pond 1B Lift Station							

	Budget Code	Project Name	FY 21/22 Approved	FY 21/22 Actual (8.29.2022) FINAL	FY22/23 Requested	FY 22/23 Approved	FY 22/23 Actual (10.12.2022)	FY23/24 Request	Budget Comments
101	67025	Southridge Lift Station				$100,000.00	$0.00		
102	67026	Borland Sewer Realignment	$800,000.00	$11,915.50	$800,000.00	$150,000.00	$0.00		
103	67027	Infrastructure Mgmt/Config	$300,000.00	$0.00		$100,000.00	$0.00		
104	67028	Annual Collection System Rehab	$500,000.00	$254,349.43	$750,000.00	$500,000.00	$169,098.11	$750,000.00	
105	67029	510 High Street Sewer Rehab	$200,000.00	$255,219.99		$50,000.00	$0.00		
106	69999	IT Efficiency Solution							
107	63533	WWTP Sludge Dewatering	$6,300,000.00	$3,461,775.97		$500,000.00	$959,915.30		
108	MACHINERY	Towable Air Compressor							
109		**Sum Total Sewer Capital Program**	*$9,141,000.00*	*$4,532,082.71*	*$4,117,500.00*	*$4,455,000.00*	*$1,283,641.81*	*$1,364,500.00*	
110									
111		**Sewer Program Grand Totals**	*$13,407,410.00*	*$8,991,761.43*	*$6,892,000.00*	*$9,210,197.00*	*$2,732,094.33*	*$4,239,207.60*	
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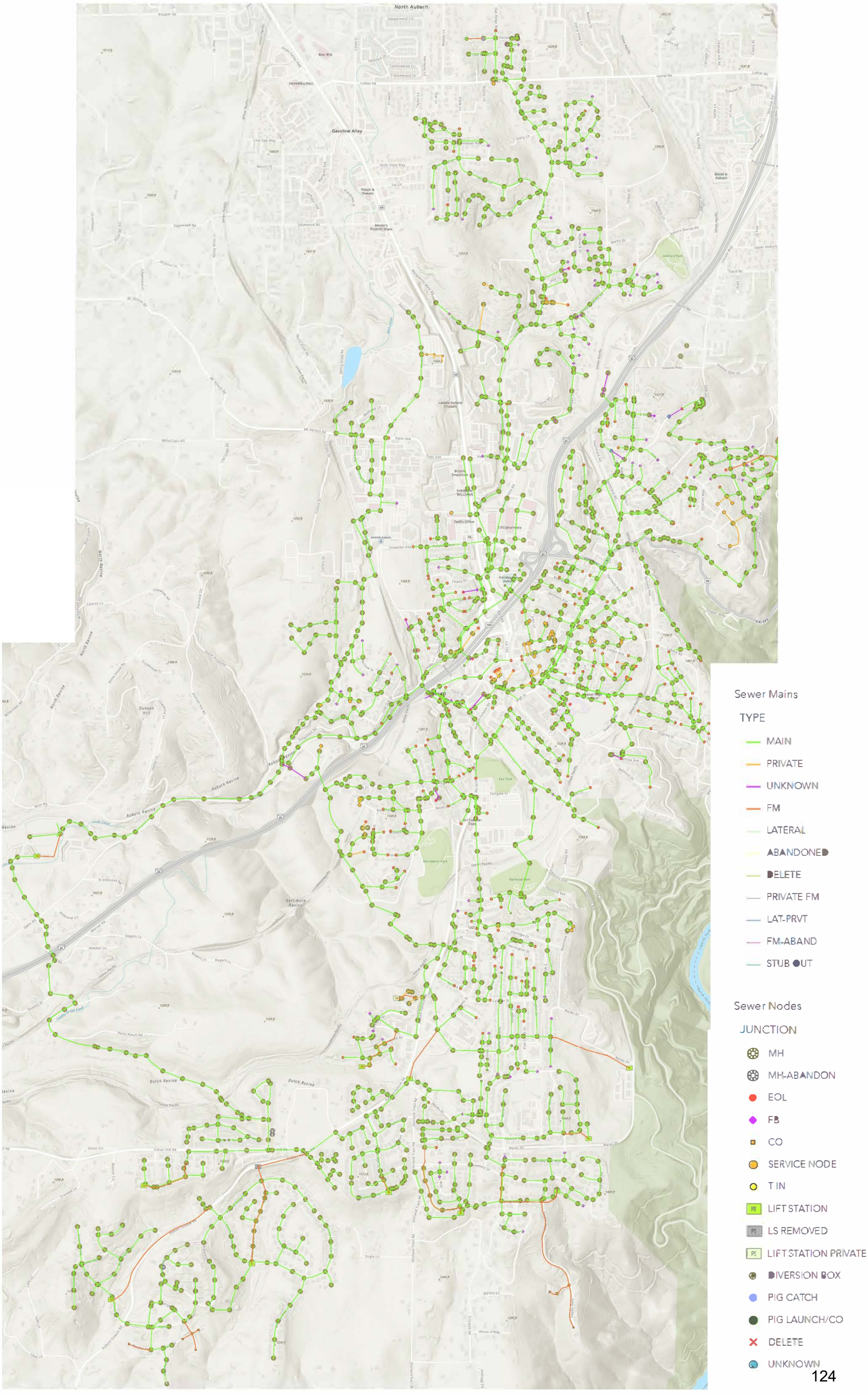
Appendix D

City of Auburn Detailed Wastewater Collection System Map


North Auburn
Gasoline Alley
Petals & Sweets
Moulé's Foothill Glass
Motel 6-Auburn
Ashford Park
Fair Park
Recreation Park
Railroad Park
Duncan Hill
Auburn Ravine
Dutch Ravine
Baltimore Ravine
Sewer Mains
TYPE
MAIN
PRIVATE
UNKNOWN
FM
LATERAL
ABANDONED
DELETE
PRIVATE FM
LAT-PRVT
FM-ABAND
STUB OUT
Sewer Nodes
JUNCTION
MH
MH-ABANDON
EOL
FB
CO
SERVICE NODE
T IN
LIFT STATION
LS REMOVED
LIFT STATION PRIVATE
DIVERSION BOX
PIG CATCH
PIG LAUNCH/CO
DELETE
UNKNOWN

Appendix E

Sewer System Design and Performance Provisions

158.265 Provision Of Sanitary Sewers

The subdivider shall make adequate provision for the disposal of all sanitary wastes which will originate within the proposed subdivision by connection to the sanitary sewer system of the city or any other public sewer system as approved by the City Engineer. If the subdivider, by the submission of a report by a registered civil engineer specializing in sanitary engineering, can establish to the satisfaction of the City Engineer that it is in the public interests, sewage collection and disposal may be accomplished through the use of septic tanks or a community sewage treatment plant constructed by the subdivider and operated by the city.

(1973 Code, § 9-3.1810) (Ord. 770, eff. 3-24-1982)

158.266 Standards For The Design Of Septic Tanks And Leaching Fields

When septic tanks and leaching fields are approved, the installations shall meet the minimum requirements specified by the Environmental Health Department of the County and the City Engineer.

(1973 Code, § 9-3.1815) (Ord. 770, eff. 3-24-1982)

158.267 Street Sewer Mains And House Sewer Connections

Street sewer mains and house sewer lines shall be constructed in accordance with the standard specifications and shall be designed to meet the following minimum standards.

A. *Capacity*. House sewer and connecting lines shall be designed to carry the flow from the contributing area assuming that each single family unit will contribute 400 gallons of sanitary waste each 24 hours and providing for a peak load of twice the average flow. No street sewer main shall be smaller than 8 inches in diameter.

B. *Grades*. A minimum grade of 0.005% shall be maintained for all sewers constructed in subdivisions, unless otherwise approved by the City Engineer.

C. *Manholes*. Manholes shall be provided at all changes in grade and at all changes in direction, but in no case shall be spaced further apart than 400 feet center to center, except in situations which justify or require variations from this requirement. Drop manholes shall be provided where the inlet is more than 2 feet above the invert of the manhole.

D. *Materials for sewer mains and house sewers*. Sewer mains and house sewers in industrial subdivisions shall be constructed of Class I asbestos cement sewer pipe or vitrified clay pipe, unless otherwise approved by the City Engineer.

E. *House sewers*. The subdivider, unless otherwise approved by the City Engineer, shall install a wye branch in the sewer main for each lot in the subdivision, and a 4-inch connection house sewer shall be constructed from the street main to the property line for each lot. House sewers shall be constructed of asbestos cement pipe or vitrified clay pipe. The location of all house sewers should be clearly marked by the letter "S" at least 3 inches in height, marked in the curb face. Cleanouts shall be constructed at the property line of all sewer laterals.

F. *Computations*. The City Engineer may require the submission of computations to indicate compliance with the standards set forth in this section.

G. *Cost of connections to existing sewer mains*. The cost of constructing sewer mains to connect the subdivision sewer mains to the existing city sewer mains shall be home by the subdivider.

H. *Sewers along curves*. Sanitary sewers may be installed on horizontal and vertical curves which conform to the curves of the street with the approval of the City Engineer. Manholes for such curves shall be installed at locations approved by the City Engineer.

(1973 Code, § 9-3.1820) (Ord. 770, eff. 3-24-1982)

City of Auburn
Sewage Pump Station Design Guidelines

The following lists the current design guidelines for new or retrofitted sewage pump stations within the City of Auburn:

General

1. Design calculations, signed by a Professional Engineer, must be submitted to the City for review and shall contain the following computations:

    a. Capacity at peak flow
    b. System head - tabulated and plotted on pump performance curve
    c. Cycle time - including starts per hour for peak flow and average flow conditions
    d. Buoyancy calculations
    e. Storage volume - show volume of storage available in the even of a power outage

    The City Engineer shall approve the final design.

2. Design, along with supporting sewage flow and hydraulic calculations, shall be stamped and signed by a profession civil engineer licensed in the State of California and submitted to the City for approval. All electrical drawings shall be stamped and signed by a professional electrical engineer licensed in the State of California.

3. Design the pump station to serve the entire tributary at build-out densities conforming to the General Plan, and in accordance with City peaking standards and I/I allowances.

4. The pump station shall sit on a plot at least 40 feet by 40 feet square. This plot should be at least 150 feet away from any area designated for public use or recreation and 100 feet away from the nearest home or business. The City will consider locations closer than this with a vegetative barrier on a case-by-case basis. The area inside the fence line shall be filled in with gravel to a depth sufficient to allow for vehicle access and sufficient drainage during rain events.

5. Pump stations shall have a 6-foot high security fence.

6. The pump station shall consist of a minimum of two submersible centrifugal sewage pumps, guide rails, wet well access, discharge seal and elbow, motor control center, starters, liquid level control system and all hardware necessary to make a complete working system. Supply and warranty shall be through a single company.

7. The pumps shall be electric, submersible, centrifugal non-clogging units capable of passing a 3-inch sphere. Pump and motor shall be suitable for continuous operation at full name plate load while the motor is completely submerged, partially submerged or totally non-submerged. All electrical equipment/panels will be above ground.

8. The level control systems, telemetry and generator and all associated equipment shall be of a brand, type and configuration acceptable to the City.

Pump and Wet Well

9. Submersible pumps, minimum of two, each sized to handle peak flow with one standby pump. Pumps shall be equipped with three phase 480-volt electric motors. Deviation from this standard shall be at the City Engineer's approval.

10. The pumps shall be in the manufacturer's preferred operating range. This range shall be indicated on the selected pump curve.

11. Provide two complete rebuild kits for the pumps.

12. The removal system shall be stainless steel pipe guide rail pump removal system. Cable guide pump removal systems will not be considered.

13. The pump removal system shall be stainless steel chain suspended from a stainless steel hook located in the opening of the hatch. The chain shall be attached to the pump with a stainless steel shackle. There shall be one chain for each pump.

14. The minimum acceptable pump operating range shall be 3 feet. This range shall fall entirely below the well influent line. The engineer shall demonstrate that the pump system will not exceed the maximum rated motor starts per hour.

15. Access panels shall have an internal grate, which prevents accidental falls while the main lid is open. Three complete sets of O&M manuals and keys shall be provided for the pumps and all keyed panels.

16. Wet Well hatches shall be H-20 rated.

17. The pit access panel shall be a minimum of 2-½ feet square. This pit should drain into the pump station.

18. The wet well influent line shall be equipped with a stainless steel influent baffle.

19. All hardware and other basic mechanical parts (not including piping and valves) internal to the wet well and valve vault shall be 316 stainless steel, including the level transducer/float hanger, anchor bolts, cable grip systems etc.

20. All hardware in wet well, chains, cables and slide rails shall be 316 stainless steel.

21. All piping internal to the wet well shall be coated with coal tar epoxy.

22. The anchoring system shall be Hilti HIT HY 150, or equal, epoxy in place anchor bolts. Expansion anchors shall not be used.

23. Provide restrained flexible couplings on all outlet piping within 2 feet of the station wall.

24. Each pump shall be furnished with a discharge connection system, which shall permit removal and installation of a pump without the need for the operator to enter the wet well.

Valve Vault

25. All valves shall be enclosed in an external valve vault.

26. Check valves shall be ball check valves.

27. Isolation valves shall be Clow plug valves with square operating nut.

28. Parallel to the pipeline, all flanges must be at least one foot from the vault walls. All flanges are to be minimum one foot from the floor of the vault. Perpendicular to the pipeline all valve bodies or flanges to be no less than 18 inches from the vault walls.

29. Pipe supports shall be hot dip galvanized.

30. The valve vault shall drain to the pump station wet well. When gravity drainage is used, a "P" trap shall protect the vault. When gravity drainage is not possible the valve vault shall incorporate a sump pump discharging to the wet well. Sump pump or gravity drainage line shall extend below the water level in the wet well and be equipped with a Tideflex all-rubber check valve, Red Valve Co., or equal.

31. The minimum inside height of the vault shall be 4 feet.

32. Plug valves shall be accessible for operation through the hatch or shall be equipped with a valve stem riser to the surface.

33. Provide an operating wrench for the valves.

34. All hardware and other basic mechanical parts (not including piping and valves) internal to the valve vault shall be 316 stainless steel, including float hangers, anchor bolts, cable grip systems, etc.

35. The anchoring system shall be Hilti HIT HY 150, or equal, epoxy in place anchor bolts.

36. All piping internal to the valve vault shall be coated with coal tar epoxy.

Force Main

37. The force main shall be sized for a minimum of two feet per second flow with the pump station operating at minimum flow. All force mains shall be ductile iron pipe. Force mains shall have concrete thrust blocks as required at all bends. All fittings shall be mechanical joints. Air release valve locations and sizes shall be as required by the City. Sewer force mains must be marked by tape to identify the pipe as a sewer force main in order to prevent accidental water service taps.

38. Force Main Design: Force mains shall be designed in accordance with the following requirements:

    Velocity Limits
    a. Re-suspension initial velocity of a minimum of 3.5 ft/s.
    b. Minimum velocity shall be 2 ft/s.
    c. Maximum velocity shall be 10 ft/s.

39. When required, air release valves shall be Golden Anderson Figure 935 Sewage Air Release valve.

Basic Electrical

40. All electrical enclosures, except the explosion proof enclosure, shall be stainless steel.

41. All conduit exiting the wet well or valve vault shall be PVC coated (both inside and outside) galvanized rigid steel conduit.

42. Minimum conduit size shall be one inch.

43. No conduit shall be more than one half full of conductor(s).

44. Separate electrical conduits shall be installed for each pump. A separate conduit shall be supplied for the level control float. A separate conduit shall be supplied for the level transducer. The level transducer conduit shall run directly to the control panel. All other conduits shall exit the wet well and run directly to an explosion proof enclosure.

45. The explosion proof enclosure shall be located in a below grade vault. The enclosure shall be manufactured by the Appleton Corp. model AJBEW and shall be epoxy coated and equipped with quad lead bolts.

46. The explosion proof enclosure vault shall drain to the wet well.

47. The explosion proof enclosure shall be equipped with an explosion proof space heater to prevent condensation.

48. All wires entering and exiting the enclosure shall land on terminal strips.

49. Intrinsically safe wiring shall be in a separate zone in the explosion proof enclosure.

50. All conduit seal-offs shall be located just below the control panel.

51. All hardware, unistrut, anchor bolts etc. shall be 316 stainless steel.

52. The anchoring system shall be Hilti HIT HY 150, or equal.

Motor Control Panel

53. Building architecture shall be per the requirements of the City. For pump station with pumps in excess of 120 hp, motor starters, motor control centers, and miscellaneous electric controls shall be housed in a building. Pump control panels for stations below 120 hp shall be pedestal mounted in a NEMA 4 enclosure.

54. The engine generator transfer switch shall be included in the control panel. The transfer switch shall be an ASCO Series 7000 automatic transfer switch with exercise clock.

55. Pump stations may require flow monitoring. The City Engineer may determine that for other operational reasons, a pump station may require flow monitoring. If required the flow meter shall be a magnetic type flow meter. The meter shall be placed in a separate vault; the vault shall drain to the wet well. The meter shall be explosion proof and submersible. The flow signal shall be reported to the WWTP. The flow meter transmitter shall be included in the control panel enclosure.

56. The control panel and all other electrical enclosures shall be mounted on stainless steel feet or stainless steel unistrut; all hardware and other basic electrical parts shall be 316 stainless steel.

57. The level transducer and the high level float shall be attached to a stainless steel chain dedicated for this purpose.

58. The control panel will communicate by radio or phone to the WWTP or as determined by the City Engineer.

59. Programming is required at the WWTP to incorporate the new pump station into the telemetry system.

Controls

60. Pump stations shall have telemetry installed to monitor power failure and generator status, wet well levels and alarm conditions, pump failure, seal failure, hour meter readings, and other sensing points as required by the City. At the discretion of the City Engineer, telemetry shall be capable of turning pumps on and off, acknowledging and resetting alarms, and resetting starters.

61. Level controller shall be ultrasonic type

62. Level sensing equipment shall be a transducer type capable of measuring depth over the full range of expected and unexpected pumping conditions.

63. NEMA weatherproof outdoor enclosures shall be provided for controls. Electric service shall be provided by underground conduit to the utility pedestal.

Engine Generator and Transfer Switch

64. All pump stations are required to be equipped with a standby diesel-powered engine generator sized or equipped as follows:

a. Sized to run both pumps at the same time; one pump may delay start.

b. The standby generator shall be commissioned in accordance with NFPA 110 Standards. Provide factory test, startup by a supplier authorized by the manufacturer, and on-site testing of the system.

c. The generator shall be housed in a CMU building Quiet site soundproofing shall be provided to reduce noise to 70 dB at a distance of 7 meters for diesel powered generators. The soundproofing shall meet the City and the State of California noise limit requirements.

d. The entire standby generator set shall be warranted for a period of five years from the date of commissioning.

e. Generator shall be supplied with all auxiliary systems necessary for operation (i.e. batteries, battery charger, block heater, etc.).

f. The generator set shall operate at 1800 rpm and at a voltage of: 460 volts AC, three phase, four wire, 60 hertz. Voltage regulation shall be plus or minus 1.0 percent for any constant load between no load and rated load. Random voltage variation with any steady load from no load to full load shall not exceed plus or minus 0.5 percent.

g. Frequency regulation shall be isochronous from steady state no load to steady state rated load. Random frequency variation with any steady load from no load to full load shall not exceed plus or minus 0.25 percent. An electronic governor system shall provide automatic isochronous frequency regulation.

h. The generator set shall be provided with a mounted main line circuit breaker, sized to carry the rated output current of the generator set on a continuous basis.

i. The standby power system shall include an automatic transfer switch. Transfer switch shall be rated for 100 percent of full load. This switch shall be provided with indicators for all phases of operation and be equipped with a fully programmable timer for exercising the equipment. The switch must be selectable for load or no load. The switch shall be configured with in-phase transition or neutral delay.

j. The generator shall be load tested at 100 percent full load on site for a period of four hours using resistive load banks. Notify the City inspector prior to test and provide certification letter from the manufacturer.

k. Three complete sets of O&M manuals and keys shall be provided for the generator and the automatic transfer switch.

l. The generator control system must include a programmable control device to allow automatic start-up and test functions. Test functions can be programmed for daily, weekly or monthly testing (this will be in the transfer switch). Connections for remote monitoring of function and failure must be provided.

m. Pump stations are required to have continuous standby power. Generators shall be diesel powered with 100 gallons minimum fuel storage capacity or 24-hour operating time, which ever is greater. Fuel storage shall be accomplished by the use of corrosion-resistant double wall sub-base fuel tank only, no underground storage will be allowed. The fuel tank shall also be equipped with a low fuel level alarm. The fuel tank shall have secondary containment basin. A leak detection device shall be provided in the interstitial space for sensing fuel leakage. The device contact shall be connected to the generator control panel terminals for telemetry.

n. The generator manufacturer shall provide a 60-month comprehensive warranty to include parts and labor. No deductibles shall be allowed for travel time, service hours, repair parts cost, etc.

o. The generator set shall be serviced by a local service organization that is trained and factory certified in generator set service. The supplier shall maintain an inventory of critical replacement parts at the local service organization, and in service vehicles. The service organization shall be on call 24 hours per day, 365 days per year.

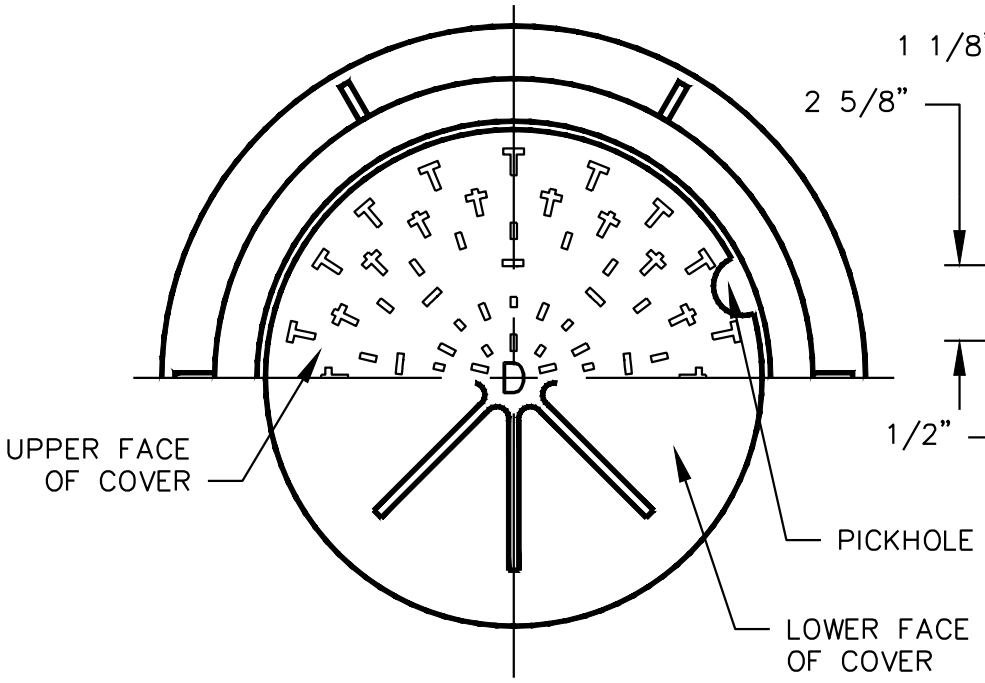
p. Transfer switches shall be in NEMA-4 enclosure

q. The transfer switches shall be configured to switch back when power is restored to the station.

r. A generator ground grid shall be provided. The ground grid design shall be in accordance with the National Electric Code (NEC) and subject to City approval.

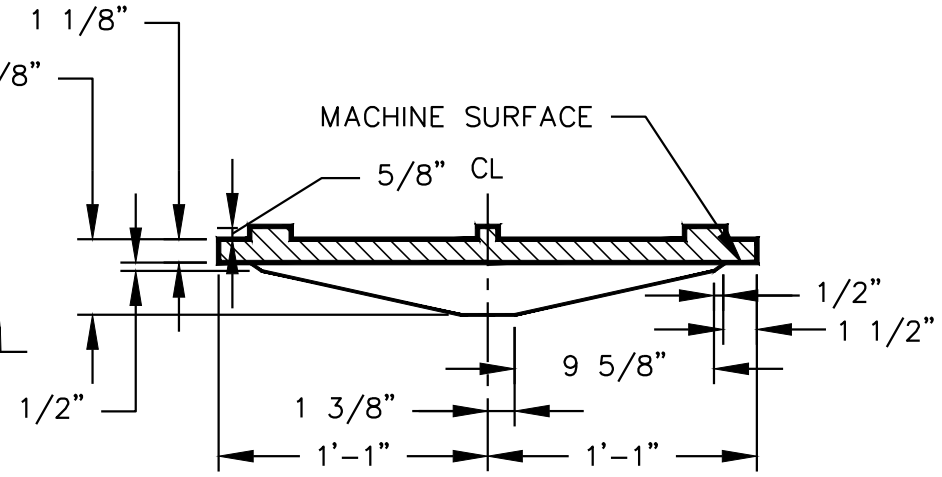
s. The equipment supplier shall provide training for the facility operating personnel covering operation and maintenance of the equipment provided. The training program shall be not less than 4 hours in duration. Training date shall be coordinated with the facility owner.

t. The generator shall be mounted on seismic spring isolators.

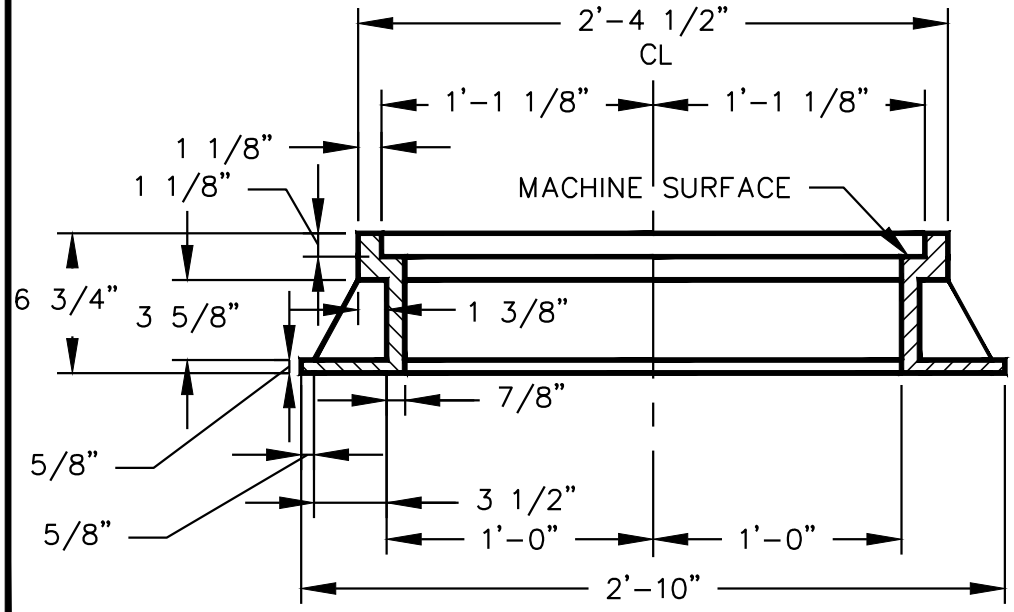


HALF PLAN OF MANHOLE FRAME & COVER

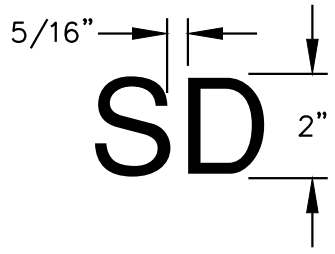
SD or D = STORM DRAIN



SECTION ON CL THROUGH COVER



SECTION ON CL THROUGH FRAME



LETTER "S" AND/OR "D" AT
CENTER OF COVER

C□□ □□A□□□r□

D□□□r□□ □□□□P□□□□□□ □ P□□□□W□r□□

STANDARD 24" STORM
DRAIN MANHOLE FRAME
AND COVER DETAILS

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A□r□2017

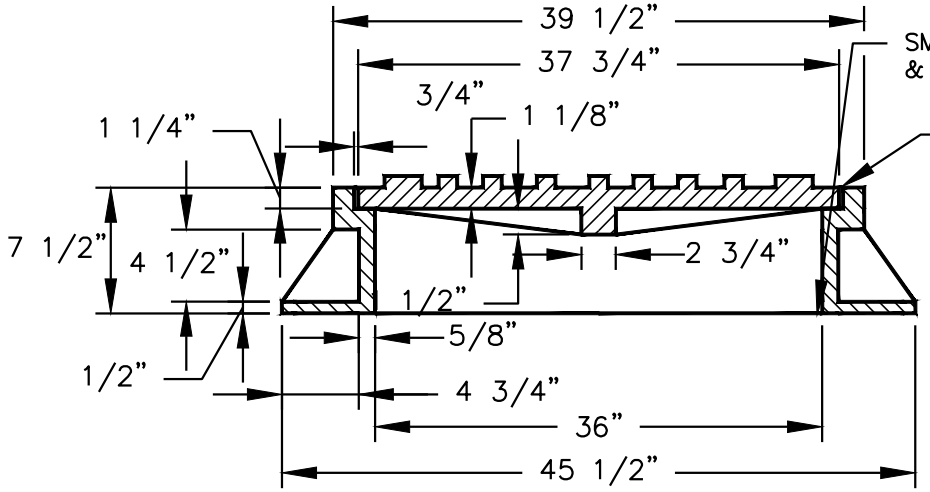
C□□E□□□□□r

D□r□□□r □□P□□□□□□ □ P□□□□W□r□□

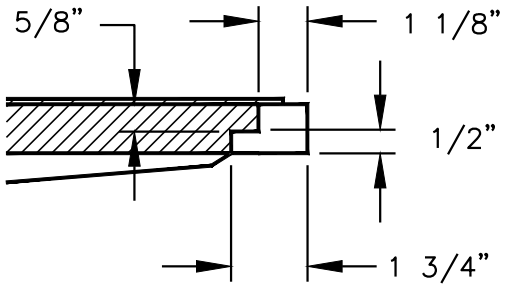
SCALE□
NOT TO SCALE

Dr□□ □□□N□

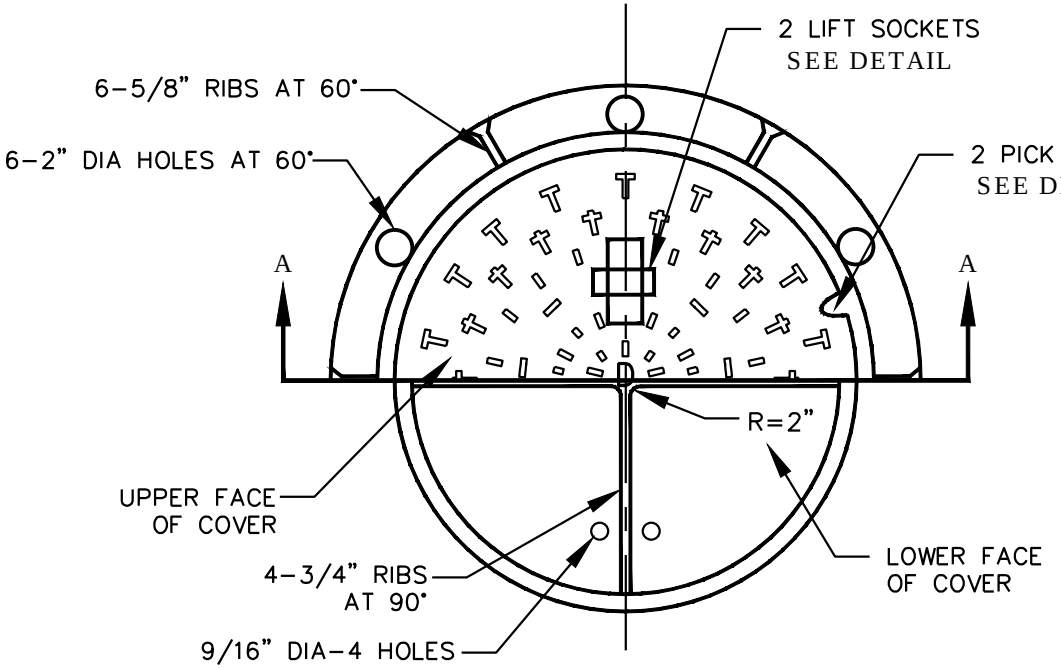
SD-01



SECTION A-A

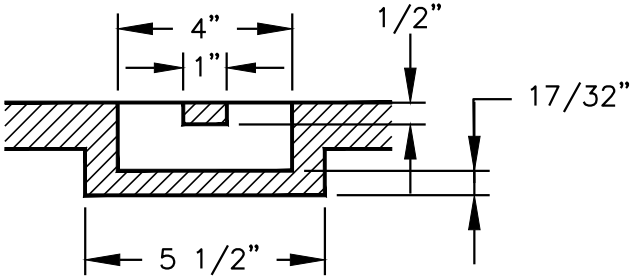


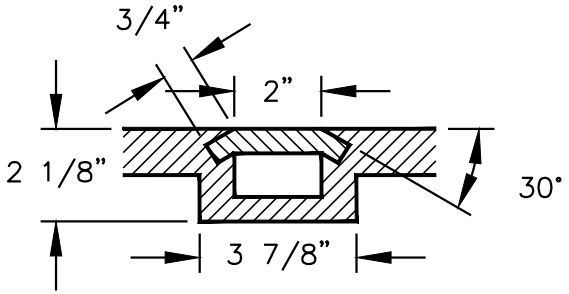
PICK HOLE DETAIL



HALF PLAN OF MANHOLE FRAME & COVER

APPROX. WEIGHTS:
FRAME - 300 LBS.
COVER - 375 LBS.





LIFT SOCKET DETAIL

STANDARD 36" STORM DRAIN MANHOLE FRAME AND COVER

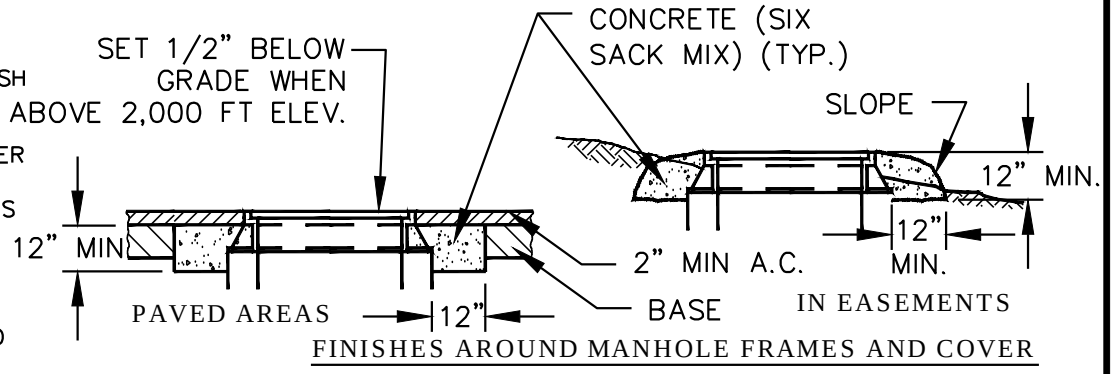
SCALE: NOT TO SCALE

SD-02

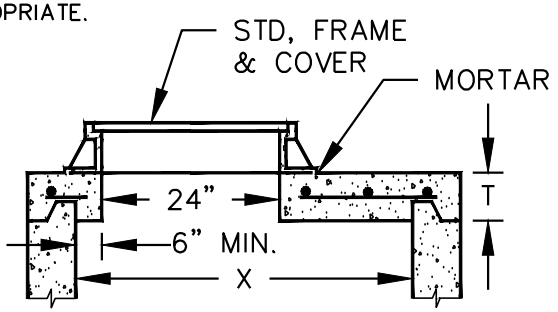
NOTES:

1. ECCENTRIC CONES SHALL BE USED WHEN SPECIFIED ON THE PLANS.
2. JOINTS MAY BE EITHER KEYED OR TONGUE AND GROOVE.
3. RISER SECTIONS, CONES, AND ADJUSTING RINGS SHALL CONFORM TO ASTM DESIGNATION C-478.
4. FRAME SHALL BE SECURED TO RISER OR FLAT SLAB TOP WITH CEMENT MORTAR.
5. DIMENSION "Y" IS A MINIMUM DIMENSION AND MAY BE GREATER IF DEPTH PERMITS.
6. MANHOLE FLOORS SHALL HAVE WOOD TROWEL FINISH AND SLOPED FROM ALL DIRECTIONS TOWARD THE OUTLET.
7. COVER FOR STORM DRAINS SHALL BEAR THE LETTER "D" OR "SD". SEE DWGS: SD-01 & SD-02.
8. EXTRA DEPTH MANHOLES OR MANHOLES WITH PIPES OVER 54 INCHES IN DIAMETER SHALL REQUIRE SPECIAL DESIGN.
9. THERE SHALL BE AN 8 INCH MINIMUM CLEAR DISTANCE BETWEEN ALL PIPE OUTSIDE DIAMETERS AT THE MANHOLE UNLESS SPECIFICALLY APPROVED BY THE ENGINEER.
10. CAST-IN-PLACE MANHOLE WALLS MAY BE APPROVED BY THE ENGINEER. ALL CAST-IN-PLACE MANHOLES MUST BE FORMED IN A CIRCULAR SHAPE CONSISTENT WITH THE DIAMETER SPECIFIED ON THE PLANS AND REQUIRED TO FIT UPPER PRECAST SECTIONS. MINIMUM WALL THICKNESS SHALL BE 8 INCHES. MAXIMUM HEIGHT OF THE CAST-IN-PLACE SHALL BE 60 INCHES (MEASURED FROM THE TOP OF THE MANHOLE). PRECAST RINGS SHALL BE SET WET OR REQUIRED KEY FORM SHALL BE INCLUDED IN THE FORM WORK TO ACCEPT THE PRECAST KEY. ALL CAST-IN-PLACE CONCRETE SHALL BE CONSOLIDATED BY AN ACCEPTABLE METHOD TO ENSURE ALL VOIDS ARE REMOVED.
11. ANY VARIATIONS FROM THIS PLATE OR SPECIAL MANHOLES AND JUNCTION BOXES WILL REQUIRE REVIEW AND APPROVAL OF THE DESIGN BY THE ENGINEER.
12. M.H. LID TO BE RAISED AFTER FINAL PAVING, WHERE APPROPRIATE.

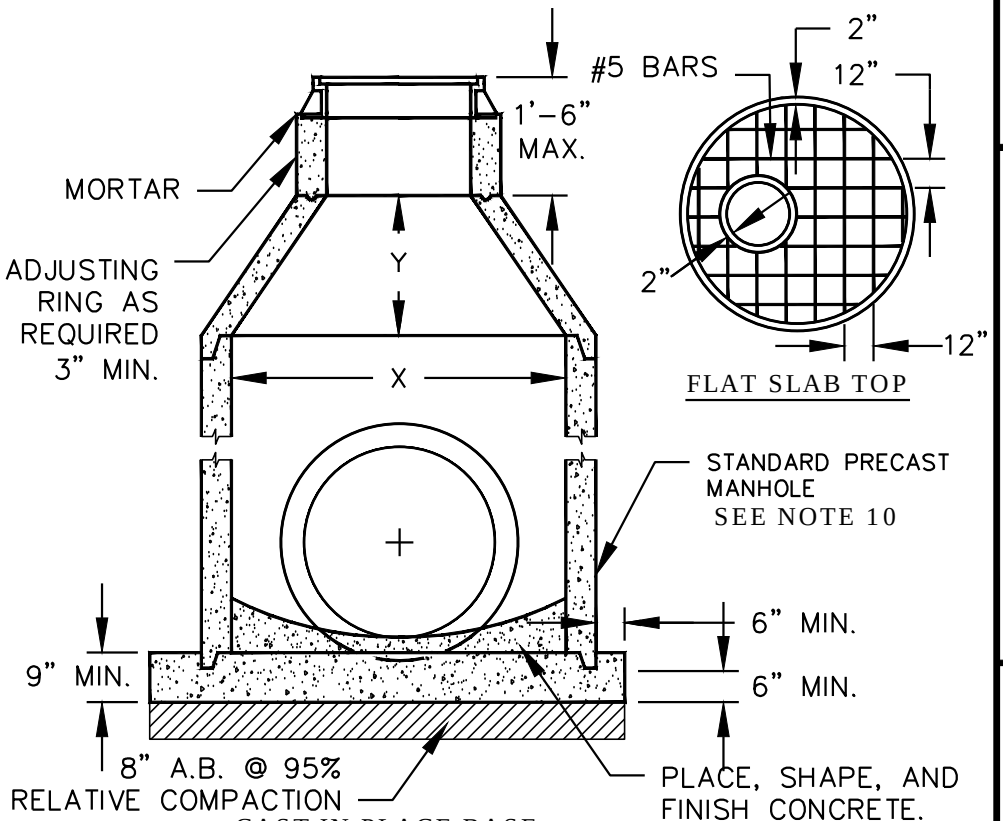
TABLE OF DIMENSIONS M.H.	X	Y	T MIN.	MAX. PIPE INNER DIA
48"	48"	18"	8"	30"
60"	60"	30"	9"	42"
72"	72"	42"	10"	54"



FINISHES AROUND MANHOLE FRAMES AND COVER



FLAT SLAB SHALL BE USED WHEN DEPTH DOES NOT PERMIT USE OF TAPER UNIT.



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STANDARD PRECAST
STORM DRAIN MANHOLE

D□□□□
A r□2017

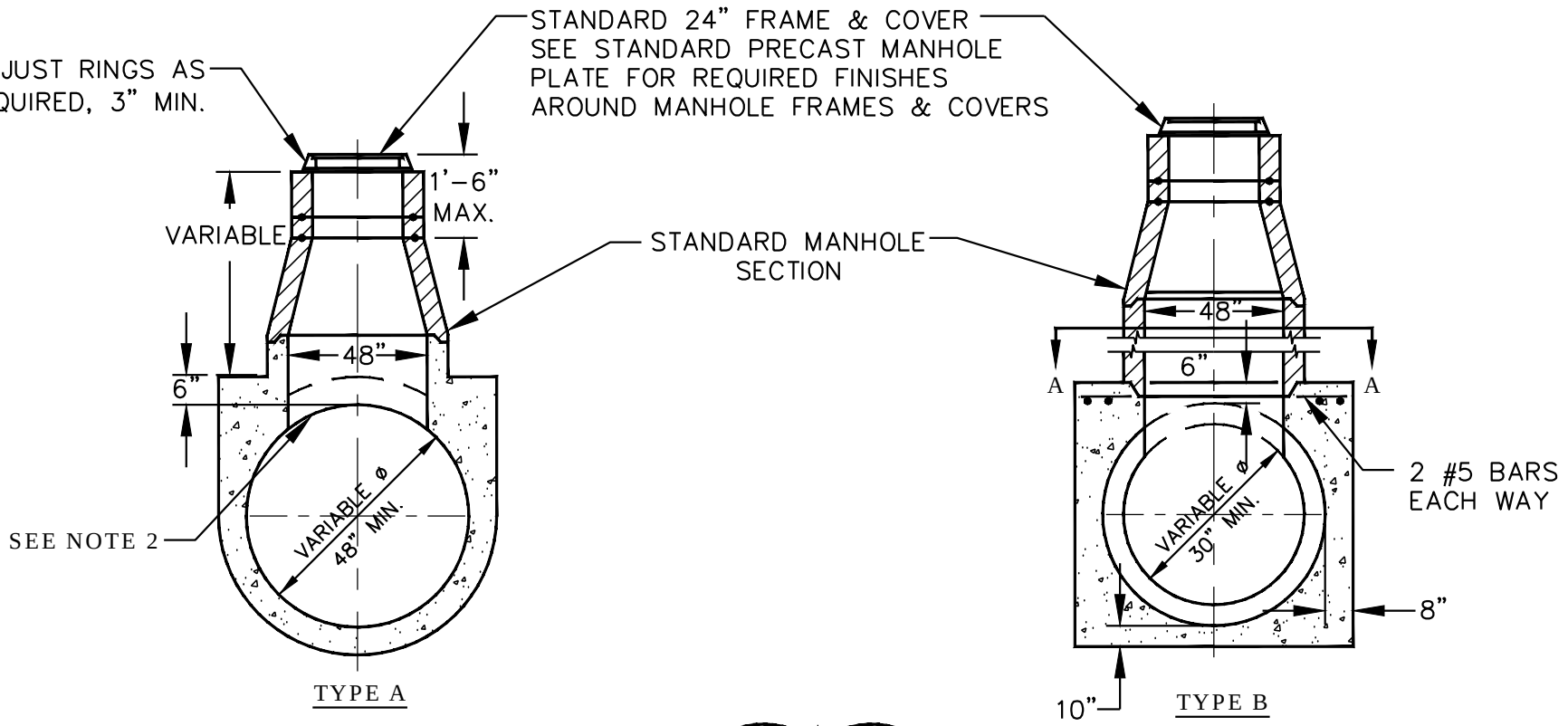
C□□□E□□□□□r

Dr□□□r □□P□□□□□□ □ P□□□□W r□□

SCALE□
NOT TO SCALE

Dr□□ □□□N□

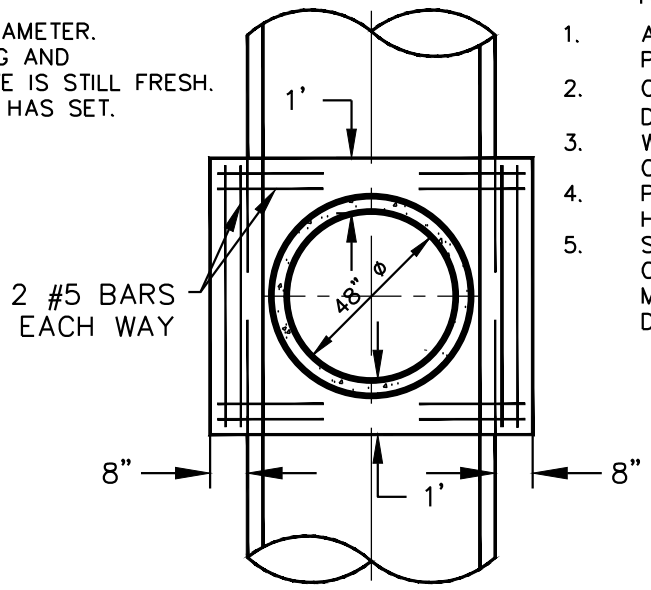
SD-03



TYPE A

TYPE B

1. CAST-IN-PLACE PIPE ONLY, 48" MIN. DIAMETER.
2. REMOVE CONCRETE IN MANHOLE OPENING AND CONSTRUCT RISER BASE WHILE CONCRETE IS STILL FRESH.
3. PLACE RISER SECTION AFTER CONCRETE HAS SET.



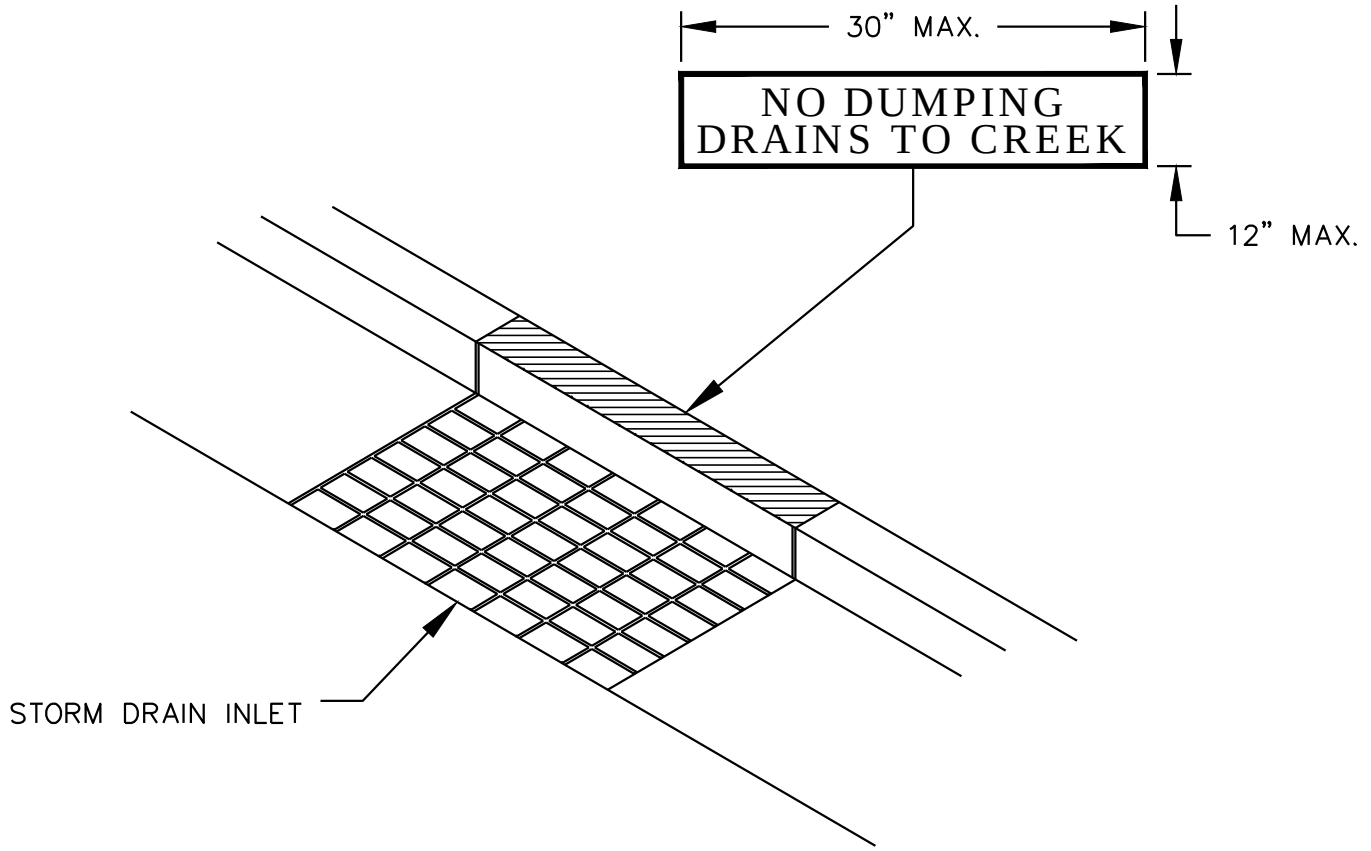
SECTION A-A

1. ALL PIPE OTHER THAN CAST-IN-PLACE PIPE.
2. CAST-IN-PLACE PIPE LESS THAN 48" DIAMETER. (SEE NOTE 2 UNDER TYPE A).
3. WET SET RING FOR FIRST RISER WHILE CONCRETE IS STILL WET.
4. PLACE RISER SECTION AFTER CONCRETE HAS SET.
5. SPECIAL INSPECTION AND STAMPED CERTIFICATION BY THE DESIGN ENGINEER MAY BE REQUIRED AT THE SOLE DISCRETION OF THE CITY.

SADDLE STORM DRAIN MANHOLES
TYPE A & B

SCALE: NOT TO SCALE

SD-04



ACCEPTABLE MESSAGES:

1. NO DUMPING–DRAINS TO CREEK
2. NO DUMPING–DRAINS TO STREAM
3. NO DUMPING–DRAINS TO LAKE
3. ONLY RAIN DOWN THE DRAIN
4. OTHER MESSAGES MAY BE USED WITH PRIOR APPROVAL BY THE DEPARTMENT OF PUBLIC WORKS.

NOTES:

1. THE STORM DRAIN MESSAGE SHALL BE PERMANENTLY STAMPED INTO CONCRETE DURING CONSTRUCTION OF THE SIDEWALK. IF SIDEWALK IS NOT PLACED ADJACENT TO BACK OF CURB, THE ENGINEER WILL DETERMINE MESSAGE PLACEMENT AND METHODOLOGY.
2. LETTERING HEIGHT SHALL BE 1½" AND STAMPING DEPTH SHALL BE APPROXIMATELY 0.25".
3. THE MESSAGE SHALL BE CLEAR, LEGIBLE AND ACCEPTABLE TO THE ENGINEER.
4. MESSAGE DIMENSIONS SHALL BE 12" X 30" MAXIMUM.
5. MESSAGE SHALL BE PLACED ADJACENT AND PARALLEL TO THE LONG AXIS OF THE DRAIN.

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STORM DRAIN MARKING

D□□□□
A□r□2017

C□□E□□□□□r

D□r□□□r □□P□□□□□ □ P□□□□W□r□□

SCALE□
NOT TO SCALE

Dr□□ □□□N□

SD-05

CLASS / DIA	CONCRETE PIPE C-14 SS	CONCRETE PIPE C-14 ES	CONCRETE PIPE REINFORCED I	CONCRETE PIPE REINFORCED II	CONCRETE PIPE REINFORCED III	CONCRETE PIPE REINFORCED IV	CONCRETE PIPE REINFORCED V	CMP UNSTRUTTED 16 GA	CMP UNSTRUTTED 14 GA	CMP UNSTRUTTED 12 GA	CMP UNSTRUTTED 10 GA	CMP UNSTRUTTED 8 GA	VCP EXTRA STRENGTH
10	13	30	NOT PERMITTED				NO LIMIT						30
12	12	26		8	12	30		60	80				26
15	12	26		10	15	35		50	70				26
18	12	29		11	16	38		40	60	100			29
21	12	29		12	17	39		35	50	80	100		29
24	12	24		12	18	39		17	47	72	82		24
27	NOT PERMITTED	NOT PERMITTED		13	19	39							19
30				14	19	38		17*	32	47	72		19
33				14	20	38							20
36				13	17	27	64	13*	18	33	48		NOT PERMITTED
42				14	18	29	62		18*	28	38	100	
48				15	19	30	60		16*	24	29	39	
54				16	20	31	58		14*	20	25	35	
60			14	16	21	31	57		12*	17*	20	30	
66			15	17	22	32	56			14*	20	25	
72			15	18	23	33	56			7 *	16	21	

MAXIMUM ALLOWABLE COVER - DRAINAGE PIPES

MEASURED FINISH GRADE TO BOTTOM OF TRENCH IN FEET
* ONLY ON MINOR STREETS AND UNTRAVELED AREAS

LEGEND:
SS = SINGLE STRENGTH
ES = EXTRA STRENGTH

NOTES:
1. CONCRETE PIPE SHALL CONFORM TO ASTM C-76 57-T OR C-14.
2. VITRIFIED CLAY PIPE SHALL BE EXTRA STRENGTH AND CONFORM TO ASTM C-278, CL 2.
3. ALL DEPTHS SHOWN FOR FLEXIBLE PAVEMENT ONLY.
4. MIN. COVER ON VCP EXTRA STRENGTH SHALL CONFORM TO THAT OF CONCRETE PIPE CLASS 3.
5. 12 IN. MIN. COVER ON CONCRETE PIPE OUTSIDE STREET AREAS.
6. PIPES SHALL NOT EXTEND INTO ROAD STRUCTURAL SECTIONS UNLESS SPECIFICALLY APPROVED BY THE ENGINEER.

THICKNESS	GAGE NO. 22	20	18	16	14	12
UNCOATED (in)	0.0299	0.0359	0.0478	0.0598	0.0747	0.1046
GALVANIZED (in)	0.034	0.040	0.052	0.064	0.079	0.109
GALVANIZED (mm)	0.762	1.02	0.32	1.63	2.01	2.77
	10	8	7	5	3	1
UNCOATED (in)	0.1345	0.1644	0.1838	0.2145	0.2451	0.2758
GALVANIZED (in)	0.138	0.168	0.188	0.218	0.249	0.280
GALVANIZED (mm)	3.51	4.27	4.78	5.54	6.32	7.11

CLASS / DIA	CONCRETE PIPE C-14 SS	CONCRETE PIPE C-14 ES	CONCRETE PIPE REINFORCED I	CONCRETE PIPE REINFORCED II	CONCRETE PIPE REINFORCED III	CONCRETE PIPE REINFORCED IV	CONCRETE PIPE REINFORCED V	CORRUGATED METAL PIPE ALL SIZES H-20 LOADING	CORRUGATED HIGH DENSITY POLYETHYLENE DUAL WALL SMOOTH INTERIOR ONLY
ALL SIZES	27"	24"	27"	24"	18"	12"	12"	18"	18"

MINIMUM ALLOWABLE COVER - DRAINAGE PIPES

MEASURED SURFACE TO TOP OF PIPE IN INCHES

CORRUGATED HIGH DENSITY POLYETHYLENE PIPE
DUAL WALL
SMOOTH INTERIOR ONLY

DIA (INCHES)	MIN. COVER (INCHES)	MAX. FILL (HEIGHT - FEET)
12	18	23
15	18	22
18	18	22
24	18	24
30	18	23
36	18	26

COVER REQUIREMENTS

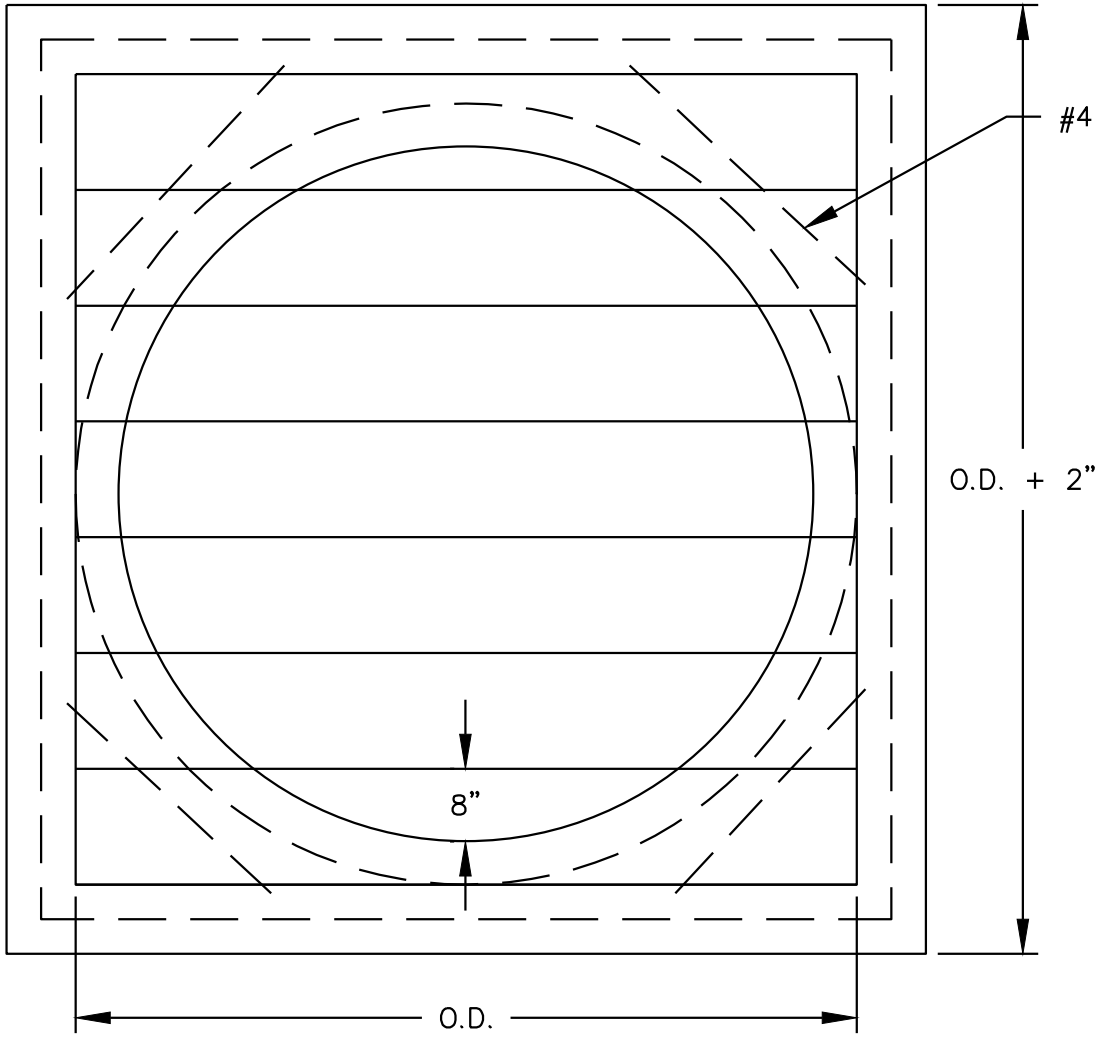
SCALE: NOT TO SCALE

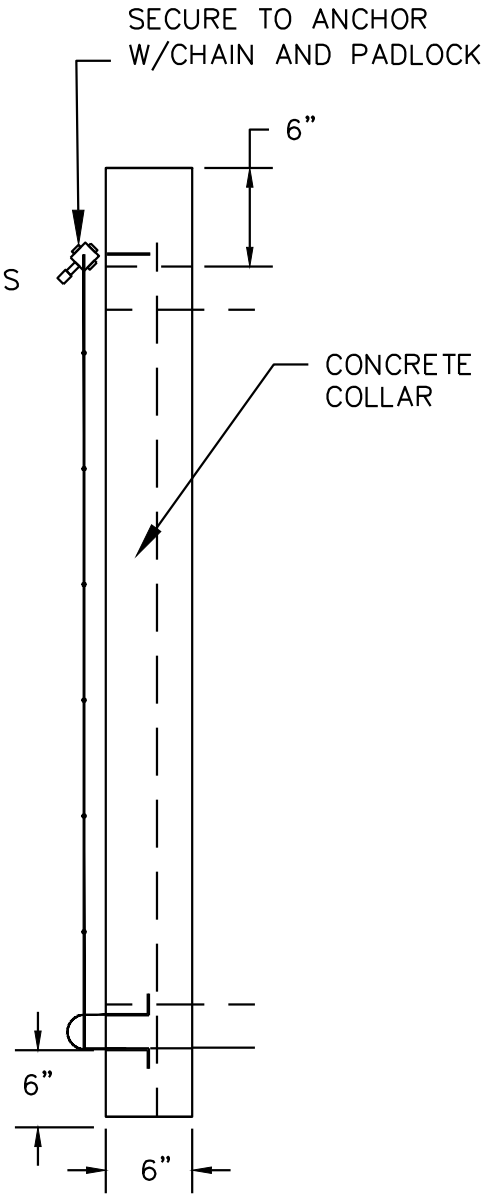
SD-11

NOTES:

1. ENTIRE RACK TO BE WELDED REINFORCING STEEL OR ROUND BARS OF EQUAL DIAMETER WITH HORIZONTAL BARS BEING 8" CENTER TO CENTER.
2. USE 6 SACK MIX CONCRETE.
3. ROOM SHALL BE PROVIDED DOWNSTREAM TO LAY RACK FLAT.

PIPE SIZE	24"	27"	30"	33"	36"	42"	48"
BAR SIZE	#4	#5	#5	#6	#6	#7	#7





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TRASH RACK
48" PIPE & SMALLER

D□□□□
A□r□2017

C□□E□□□□r

D□r□□□r □□P□□□□□□ □ P□□□□W□r□□

SCALE□
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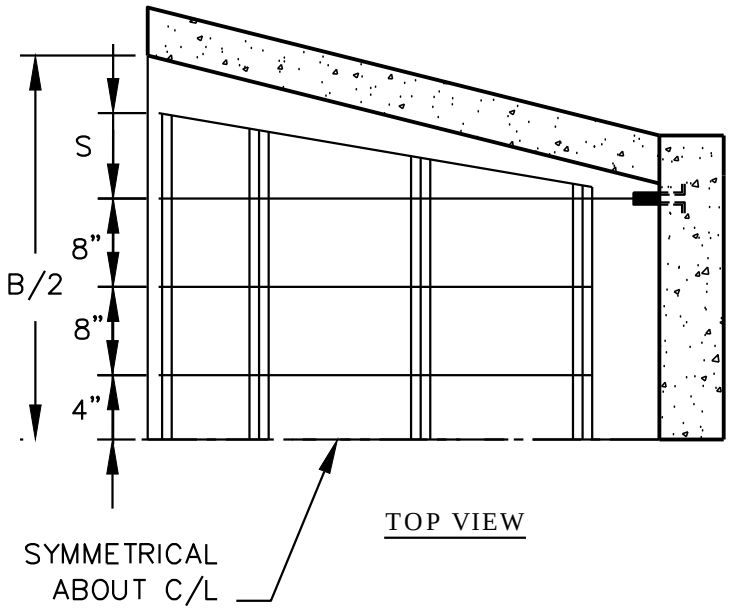
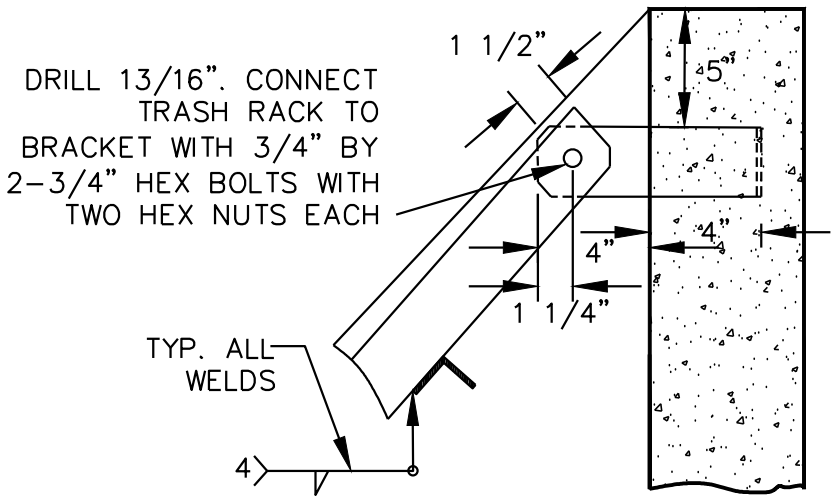
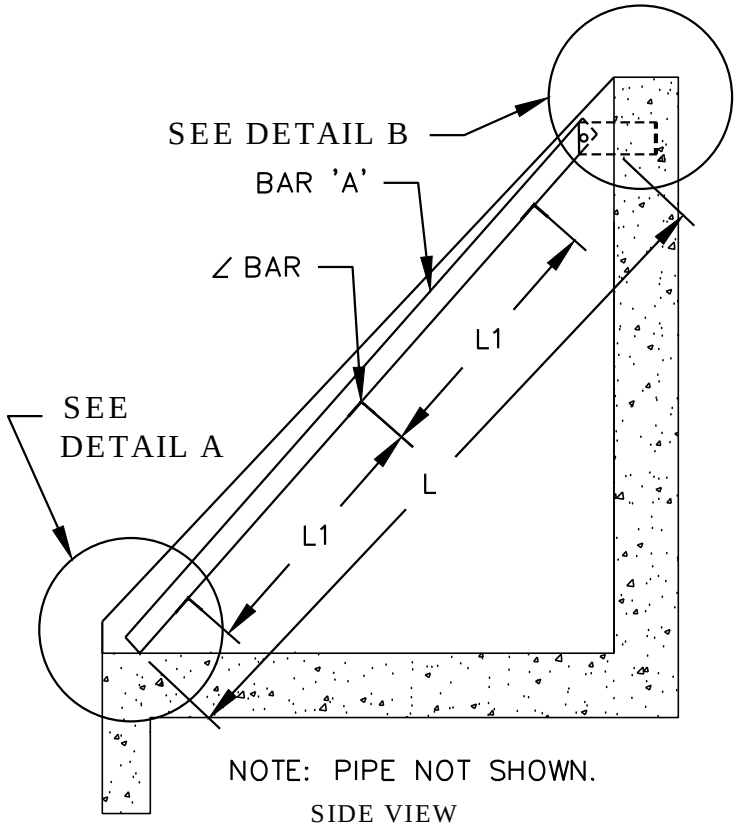
SD-12



TOP VIEW

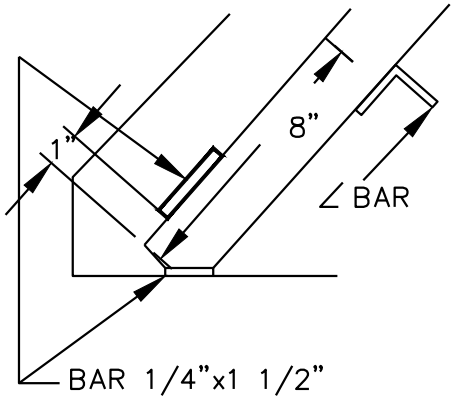


DETAIL B



NOTE: PIPE NOT SHOWN.

SIDE VIEW



DETAIL A

NOTES:

1. THIS TRASH RACK MAY BE USED WITH PIPE INLET STRUCTURES.
2. MATERIAL TO CONFORM TO ASTM DESIGNATION A-36.
3. ALL FILLET WELDS TO BE 3/16".
4. 3 HINGES REQUIRED.

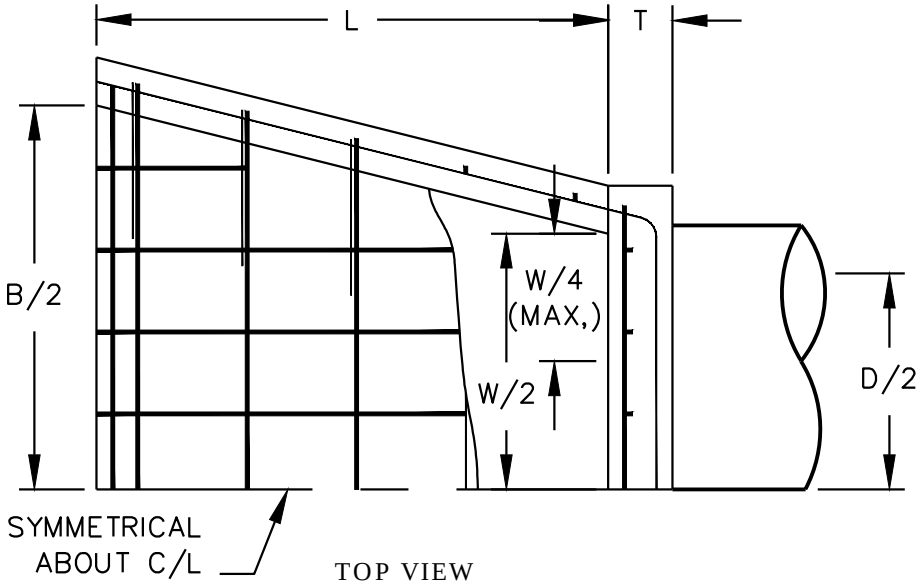
TRASH RACK DIMENSIONS

DIA.	NUMBER & SIZE BAR A	NUMBER & SIZE ∠ BAR	L	L1	S	H
54"	10-$\frac{3}{8}$X3	4-3X3X$\frac{1}{4}$	7'-9"	2'-1$\frac{1}{2}$"	10$\frac{1}{2}$"	5'-8"
60"	11-$\frac{3}{8}$X3$\frac{1}{2}$	4-3X3X$\frac{1}{4}$	8'-5"	2'-4"	11"	6'-2"

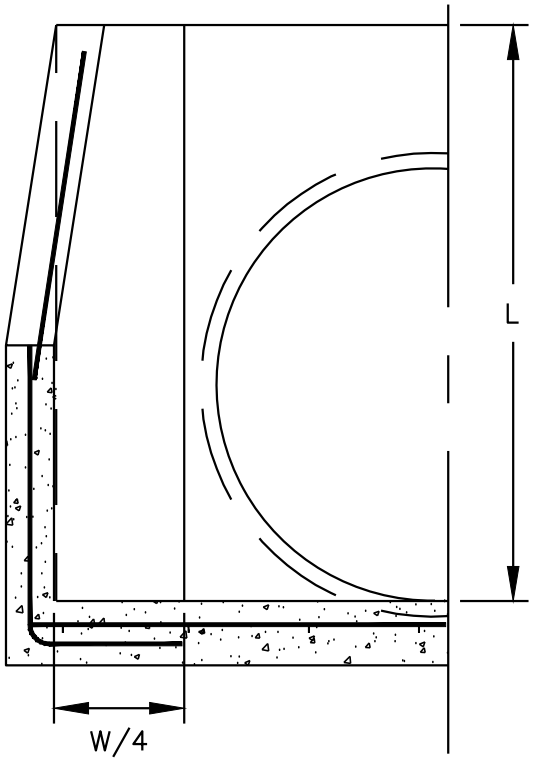
TRASH RACK
54" PIPE & LARGER

SCALE: NOT TO SCALE

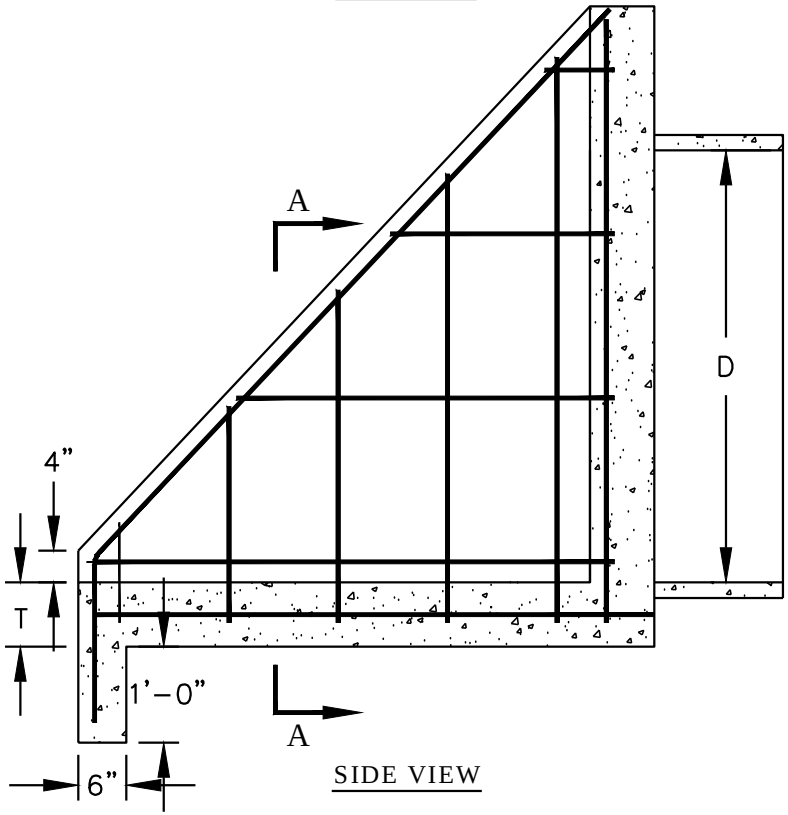
SD-13



TOP VIEW



HALF SECTION A-A



SIDE VIEW

DIMENSIONS AND REINFORCING

D	W	B	L	T	ALL REINFORCING
54"	5'-4"	8'-0"	6'-0"	8"	#6 @ 12"
60"	6'-0"	8'-10"	6'-6"	8"	#6 @ 12"

NOTES:

1. "B" MAY BE REDUCED IF REQUIRED BY CHANNEL DIMENSIONS.
2. REINFORCING BAR SPACING SHOWN IS MAXIMUM SPACING.
3. USE 6 SACK MIX CONCRETE.
4. REFER TO SECTION 5.09(1)(h) IN THE LAND DEVELOPMENT MANUAL.

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54" - 60" PIPE

STORM DRAIN INLET STRUCTURE

D□□□□

A□r□□2017

C□□□E□□□□□□r

D r□□□□□r □□P□□□□□□□ □ P□□□□W r□□

SCALE□

NOT TO SCALE

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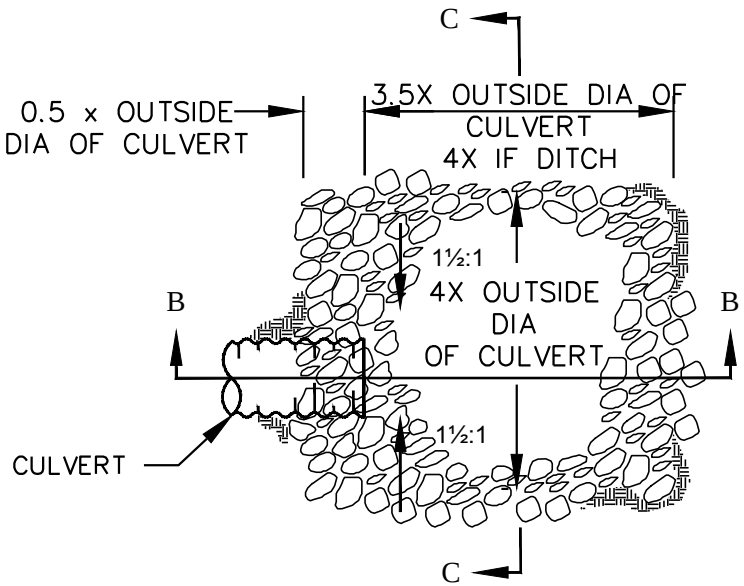
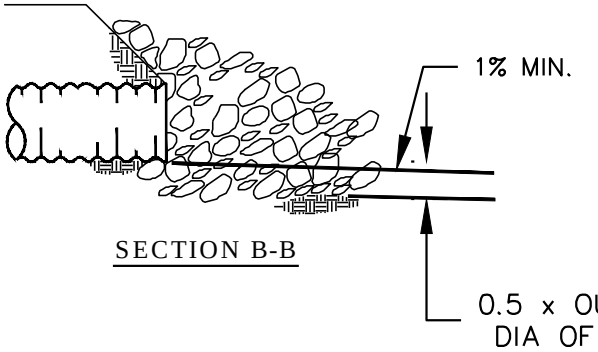
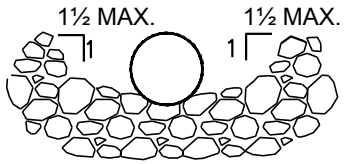
SD-14



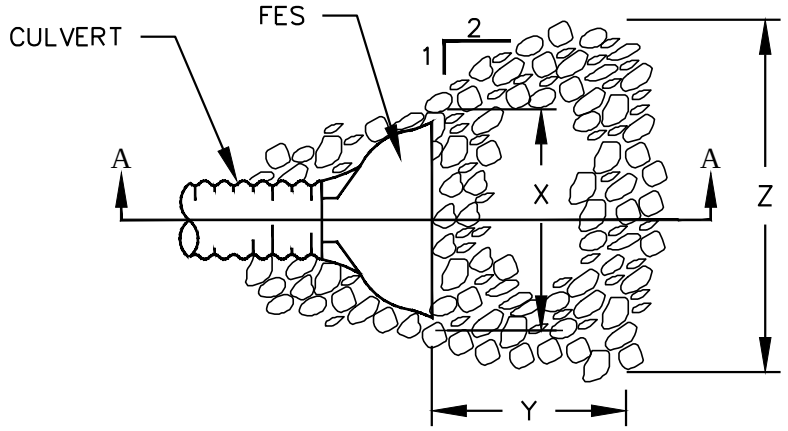
OUTLET PROTECTION
PLAN VIEW



SECTION B-B



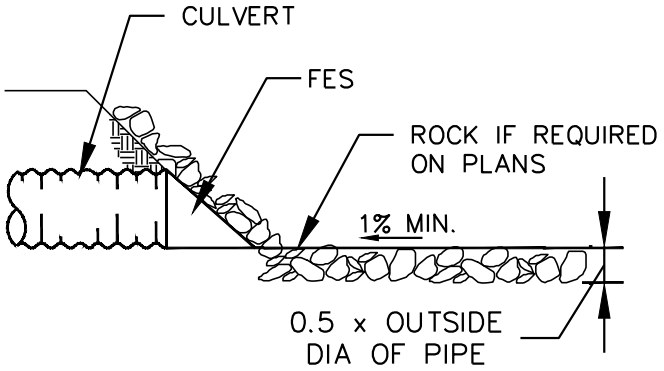
SECTION C-C



INLET PROTECTION
PLAN VIEW

INLET PROTECTION
MINIMUM DIMENSIONS

ROCK CLASS	PIPE ø IN.	X FEET	Y FEET	Z FEET
NO. 1 BACKING	12	3	4	5
NO. 1 BACKING	15–18	4.5	6	7.5
NO. 1 BACKING	21–24	6	8	10
NO. 1 BACKING	27–30	7.5	10	12.5
NO. 1 BACKING	36	9	12	15
NO. 1 BACKING	42	10.5	14	17.5
NO. 1 BACKING	48	12	16	20



SECTION A-A

NOTES:

1. HAND PLACE ROCKS.
2. ALL ROCKS SHALL BE ANGULAR AND HAVE TWO FACES.
3. WHERE SLOPE OF OUTLET EXCEEDS 5%, A SEDIMENT BOWL OR ENERGY DISSIPATER SHALL BE REQUIRED.
4. FLARED END SECTION AND ROCK SLOPE PROTECTION SHALL BE SLOPED AT A MIN. OF 1% INTO OR OUT OF CULVERT.
5. ALL CULVERTS OF 48 IN. OR LESS SHALL BE INSTALLED WITH FLARED END SECTIONS (FES) ON INLETS. REINFORCED CONCRETE HEADWALLS AND END WALLS WITH CUTOFF WALLS SHALL BE CONSTRUCTED FOR ALL PIPES LARGER THAN 48 IN. UNLESS OTHERWISE APPROVED BY THE ENGINEER.
6. ON OUTLET APPLICATIONS, 50% OF THE ROCKS SHALL BE LARGER THAN HALF THE DIAMETER OF THE PIPE.
7. FOR ADDITONAL EROSION PROTECTION, ENGINEER MAY REQUIRE FILTER FABRIC BENEATH ROCK.

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D□□□r□□ □□□□P□□□□□□ □ P□□□□W r□□

STORM DRAIN
ROCK INLET/OUTLET PROTECTION
48" DIAMETER OR SMALLER

D□□□□
A r□2017

C□□E□□□□r

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SCALE□
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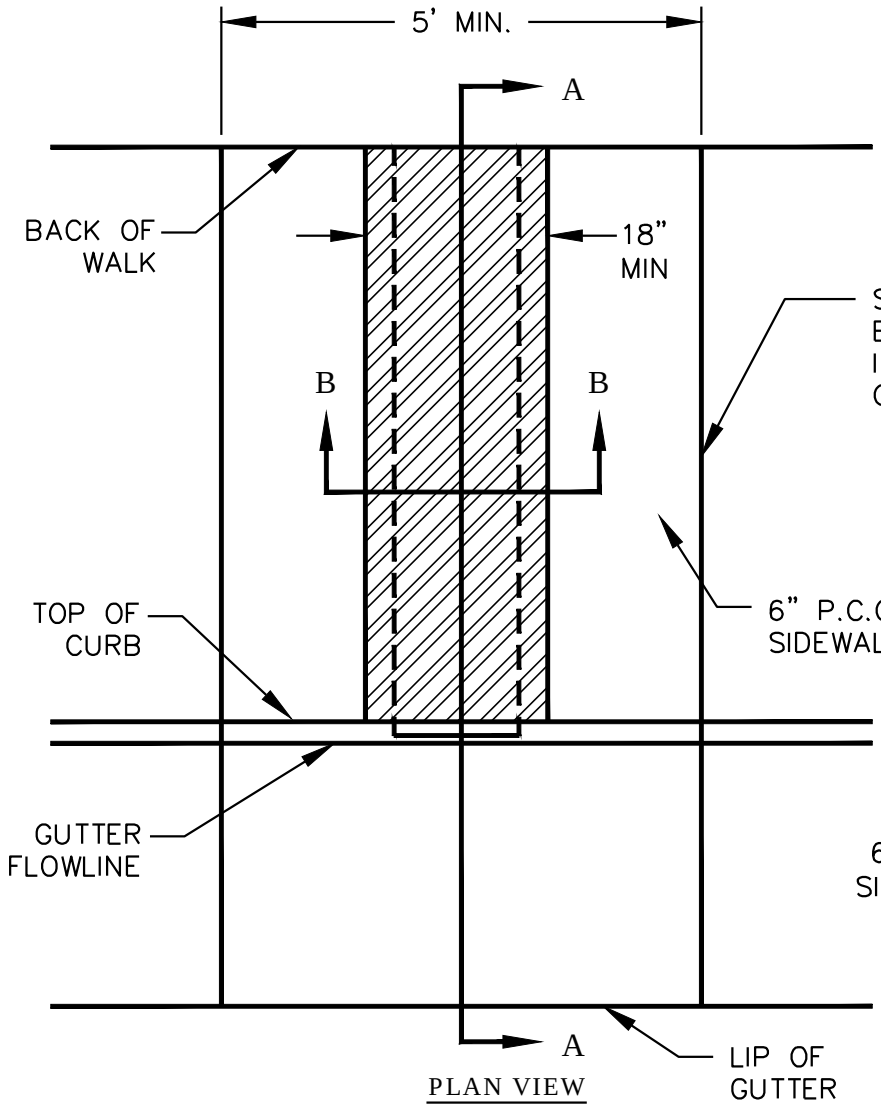
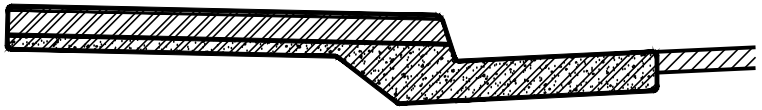
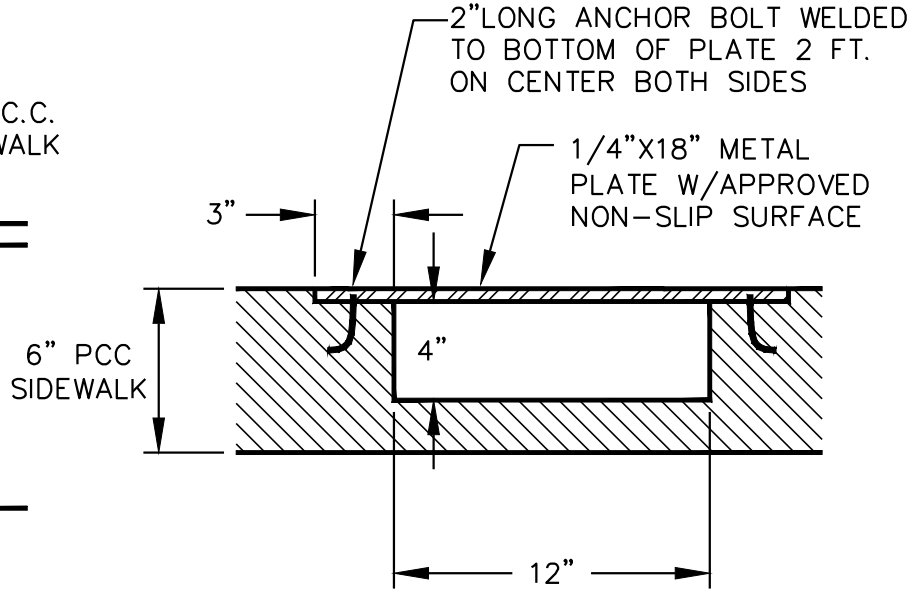
SD-15



PLAN VIEW



SECTION A-A



SECTION B-B

NOTES:

1. GALVANIZE AFTER FABRICATION AND ASSEMBLY.
2. FOR INSTALLATION IN EXISTING SIDEWALK, SAWCUT AT EXISTING EXPANSION JOINTS AND RECONSTRUCT SIDEWALK.
3. ALLOWABLE ONLY WHEN DRAINAGE HAS BEEN ADEQUATELY TREATED FOR QUALITY ON SITE.
4. ALTERNATIVES MAY BE APPROVED BY THE ENGINEER.

STORM DRAIN
UNDER SIDEWALK DRAIN

SCALE: NOT TO SCALE

SD-16

NOTES:

1. TWO FLEX JOINTS REQUIRED FOR VCP OUTSIDE OF SEWER MANHOLES. ONLY ONE FLEX JOINT REQUIRED FOR PVC & DIP OUTSIDE OF SEWER MANHOLES.
2. ON PRE-CAST MANHOLE BASES, THE BUILT IN JOINT CAN BE USED FOR THE FIRST FLEX JOINT.
3. ALL MANHOLES BARRELS AND CONES SHALL BE ASTM C-478.
4. FOR MANHOLES LARGER THAN 48-INCH IN DIAMETER, ADDITIONAL REDUCING CONE SECTIONS ARE REQUIRED.
5. FLAT TOPS ARE NOT ALLOWED WITHOUT PERMISSION FROM THE ENGINEER.
6. NEW CHANNELS IN THE MANHOLE BASES SHALL BE CONSTRUCTED IN THE FIELD USING NON-SHRINK GROUT AND THE FOLLOWING REQUIREMENTS AT A MINIMUM:
   A. CHANNEL SURFACES SHALL BE FINISHED WITH A SMOOTH FINISH AND BLEND INTO THE EXISTING BASE IN A MANNER ACCEPTABLE TO THE ENGINEER.
   B. THE EXISTING MANHOLE BASE SHALL BE BUSH-HAMMERED IN THE AREA OF THE NEW CHANNELS PRIOR TO THE CONSTRUCTION OF THE CHANNELS.
   C. A CONCRETE BONDING AGENT SHALL BE USED IN THE AREA OF THE NEW CHANNELS TO ENSURE PROPER BONDING BETWEEN THE NEW NON-SHRINK GROUT CHANNELS AND THE EXISTING BASE.
   D. CONTRACTOR SHALL SUBMIT SPECIFICATION SHEETS FOR REVIEW AND APPROVAL BY THE ENGINEER FOR ALL MATERIALS TO BE USED IN THE CONSTRUCTION OF THIS SPECIFIC CHANNEL. ALL SUBMITTALS MUST BE SUBMITTED THROUGH THE PROJECT DESIGN ENGINEER.
   E. NO DEBRIS FROM CHANNEL CREATION SHALL BE ALLOWED TO FALL IN TO THE ACTIVE FLOW.
7. BACKFILL MATERIAL AROUND SEWER MANHOLES AND OTHER SANITARY SEWER STRUCTURES THAT MUST REMAIN WATERTIGHT SHALL BE COMPACTED WITH RAMMER COMPACTORS ("WHACKER" TYPE). HEAVY EQUIPMENT SHALL NOT BE USED TO COMPACT AROUND THESE STRUCTURE UNLESS SPECIFICALLY APPROVED BY THE ENGINEER IN WRITING. BACKFILL SHALL BE PLACED UNIFORMLY AROUND THE CIRCUMFERENCE OF THE STRUCTURE IN 8-INCH LIFTS.
8. PRIOR TO INSTALLATION OF ANY SANITARY SEWER FACILITIES THE CONTRACTOR SHALL PROVIDE TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL MATERIAL SUBMITTALS FOR THE COMPONENTS VERIFYING THAT THEY MEET CITY OF AUBURN REQUIREMENTS AND SPECIFIC PROJECT REQUIREMENTS. THE MATERIAL SUBMITTALS SHALL INCLUDE, BUT NOT LIMITED TO, MANHOLES, PIPING, LIFT STATION COMPONENTS, UNDERGROUND STORAGE TANKS AND APPURTENANCES, ETC. THEY SHALL PROPERLY IDENTIFY WHICH FACILITY THE ITEM PERTAINS TO ON THE PROJECT PLANS (E.G. FROM THE PRECAST MANUFACTURER FOR ALL PRECAST MANHOLE BASES). AFTER DESIGN ENGINEER REVIEW AND APPROVAL OF THE SUBMITTALS A COPY SHALL BE SENT TO THE ENGINEER FOR FINAL REVIEW AND ACCEPTANCE. ONCE ACCEPTED, COPIES SHALL BE RETURNED TO THE CONTRACTOR. THE CONTRACTOR SHALL NOT START INSTALLATION OF THE APPLICABLE SANITARY SEWER FACILITIES UNTIL THE CITY INSPECTOR HAS VERIFIED ALL COMPONENTS DELIVERED TO THE PROJECT SITE CONFORM TO THE APPROVED MATERIAL SUBMITTALS.
9. PRECAST MANHOLE BASES REQUIRE THE HORIZONTAL ALIGNMENT OF A SEWER LINE AT THE MANHOLE TO MATCH THE PRECAST BASE WITHIN A TOLERANCE OF ±4 DEGREES.
10. MANHOLES SHALL BE WATER-TIGHT STRUCTURES CONSTRUCTED BY PLACING PRECAST CONCRETE SECTIONS ON A POURED CONCRETE BASE OR A PRECAST MANHOLE BASE. PRECAST MANHOLE BASES SHALL ONLY BE ALLOWED WHERE PRECAST DIRECTION GEOMETRY MATCHES ALL INCOMING AND OUTGOING LINES BY ± 4 DEGREES.
11. MANHOLES SHALL BE TESTED PER THE REQUIREMENTS OF THE PROJECT TECHNICAL SPECIFICATIONS.
12. FOR ALL FORCE MAIN, LOW PRESSURE AND GRAVITY SEWER PIPING SYSTEMS INSTALL SOLID INSULATED #10 THHN SOFT DRAWN COPPER WIRE. THE WIRE SHALL BE TAPED CONTINUOUSLY TO THE TOP OF THE PIPE AND ACCESSIBLE AT MANHOLES (PLATE SS-02), VALVE BOXES (PLATE SS-22), SEWER LATERAL CLEANOUTS (PLATES SS-12 & SS-13), FLUSHING BRANCHES (PLATE SS-14), AND SEWER SERVICE CONNECTIONS (PLATE SS-10).

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STANDARD SANITARY
SEWER MANHOLE NOTES

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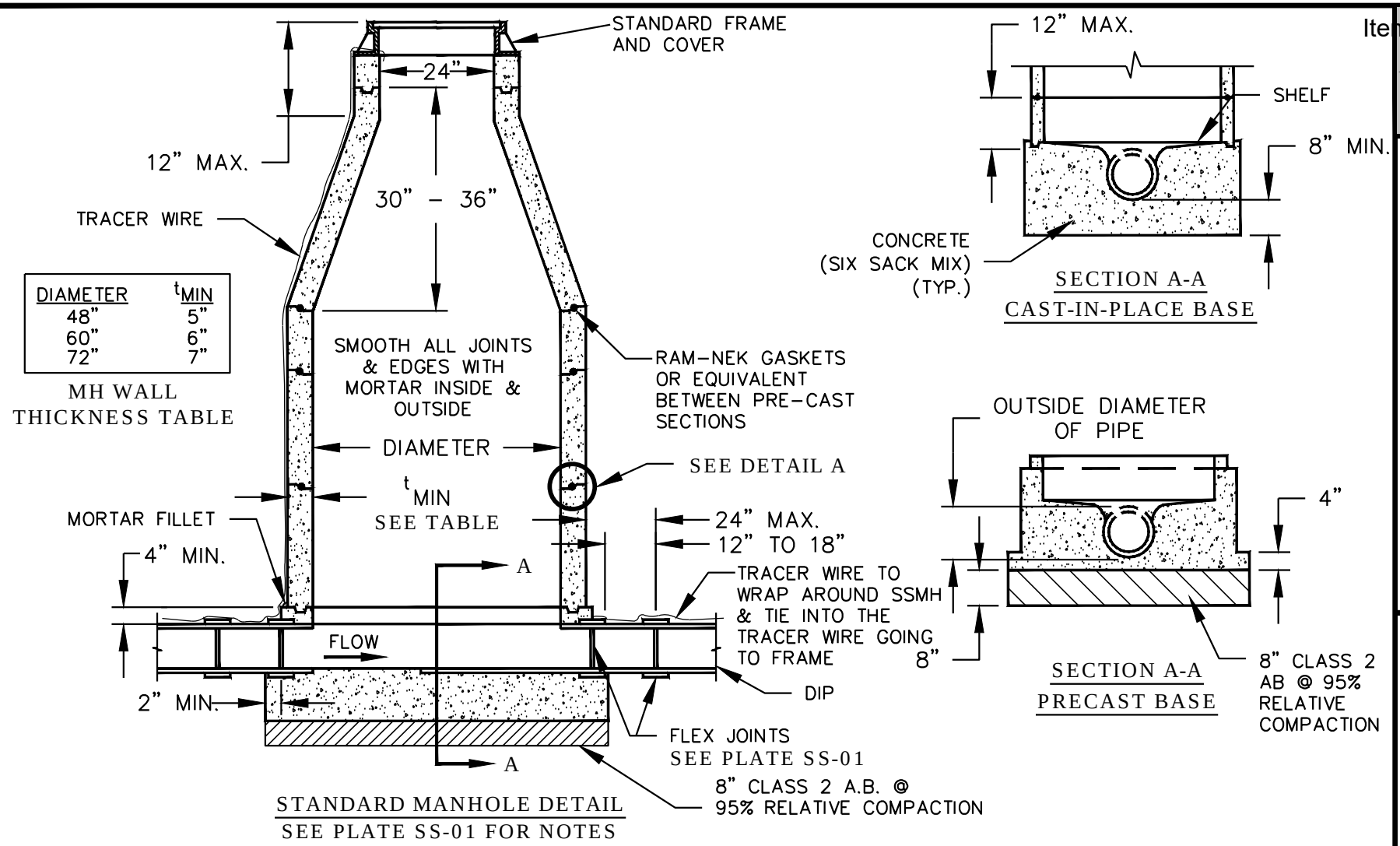
SS-01



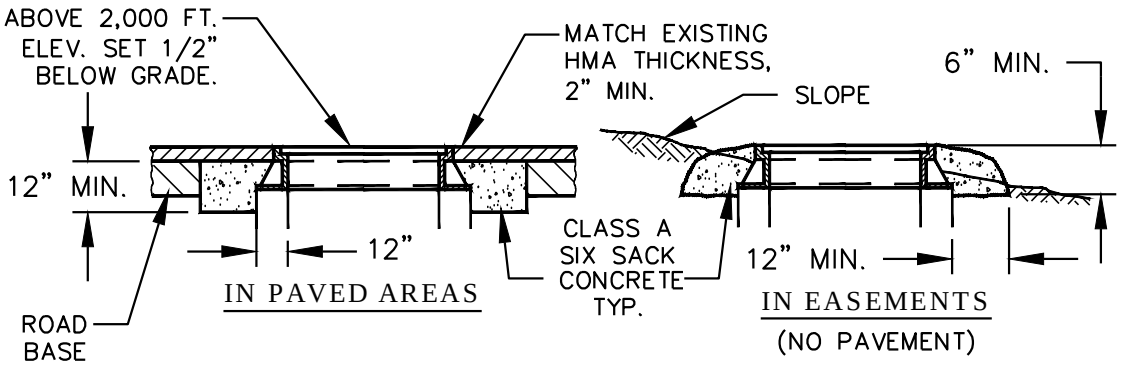
DIAMETER	t_{MIN}
48"	5"
60"	6"
72"	7"

MH WALL THICKNESS TABLE

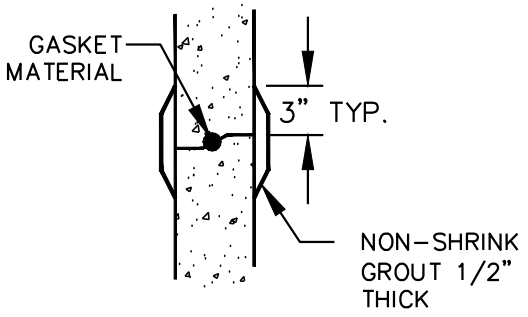
STANDARD MANHOLE DETAIL
SEE PLATE SS-01 FOR NOTES

SECTION A-A
CAST-IN-PLACE BASE

SECTION A-A
PRECAST BASE



FRAME AND COVER DETAILS



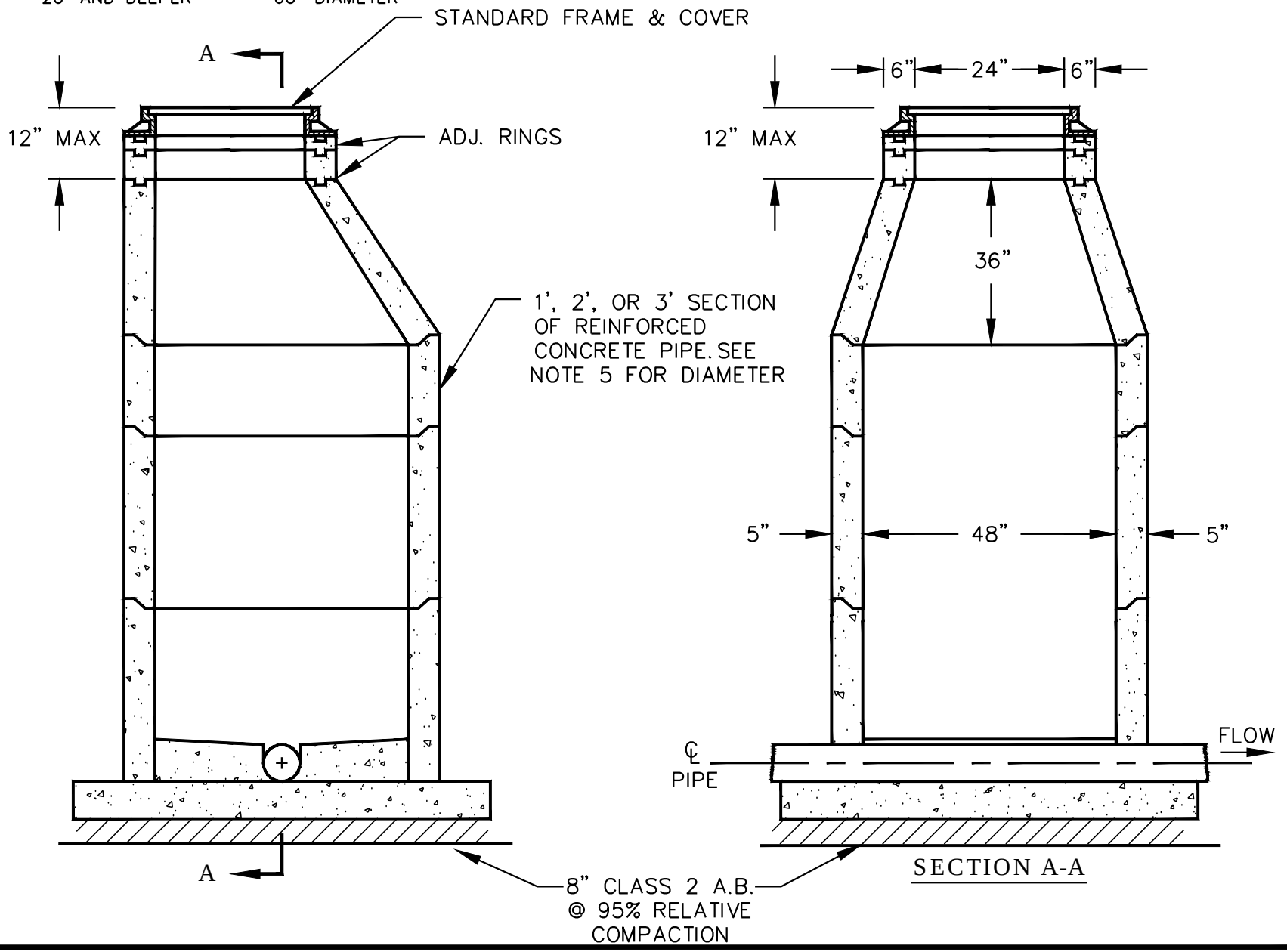
DETAIL "A"

STANDARD SANITARY SEWER MANHOLE

SCALE: NOT TO SCALE

SS-02

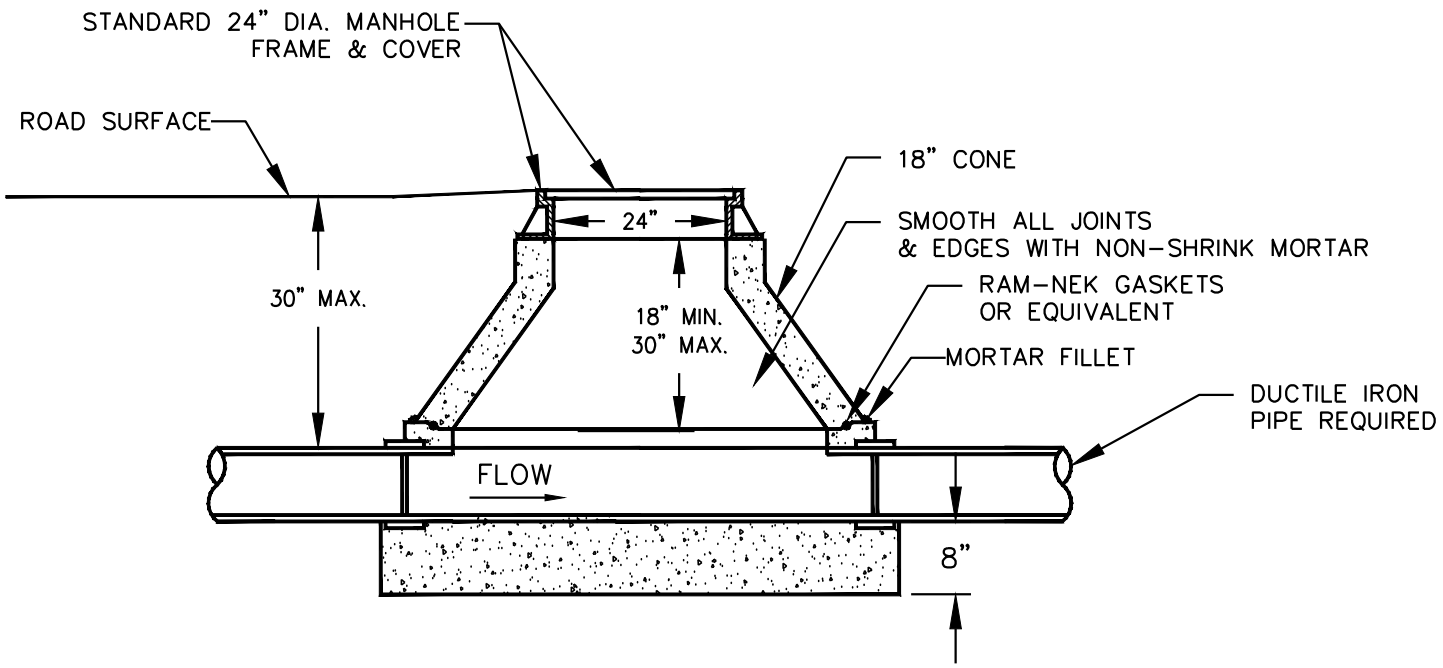
NOTES:
1. REFER TO PLATES SS-02 AND SS-05 FOR ADDITIONAL DETAILS.
2. INSTALL TRACER WIRE AS SHOWN ON PLATE SS-02
3. 48 IN. DIAMETER MANHOLE SHOWN.
4. ALL SECTIONS TO BE ASTM C-478.
5. TO BE USED ONLY WITH ENGINEER'S APPROVAL.
6. MANHOLE SIZE DETERMINED BY DEPTH, UNLESS OTHERWISE APPROVED BY THE CITY.
   3' TO 20' DEPTH - 48" DIAMETER
   20' AND DEEPER - 60" DIAMETER



PRECAST SANITARY SEWER MANHOLE WITH ECCENTRIC CONE

SCALE: NOT TO SCALE

SS-03



THIS MANHOLE IS USED WHERE TOP OF PIPE IS LESS THAN 30 INCHES BELOW SURFACE.

NOTES:

1. FOR MANHOLE FRAME & COVER DETAILS, SEE PLATE SS-06.
2. FOR CAST-IN-PLACE BASE DETAIL SEE PLATE SS-02. INSTALL TRACER WIRE AS SHOWN ON PLATE 413.
3. FOR PIPES WITH LESS THAN 22 IN. COVER, NOTCH HOLE IN SIDE OF CONE.
4. SEE PLATE SS-01 FOR STANDARD NOTES.
5. REQUIRES APPROVAL BY CITY ENGINEER.
6. MORTAR SUBMITTAL IS REQUIRED PRIOR TO CONSTRUCTION.

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SHALLOW SANITARY SEWER MANHOLE

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SS-04

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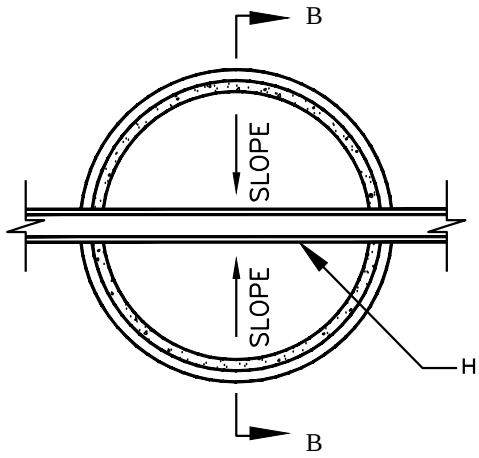
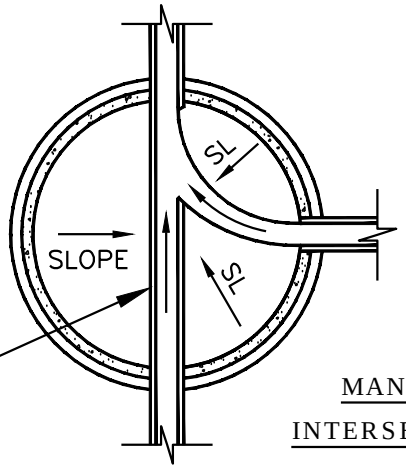
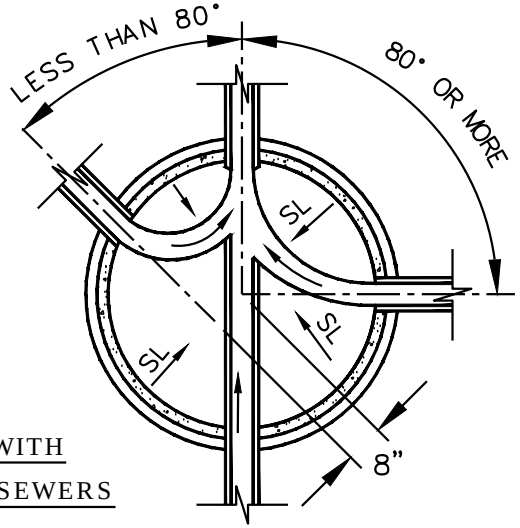


SECTION A-A

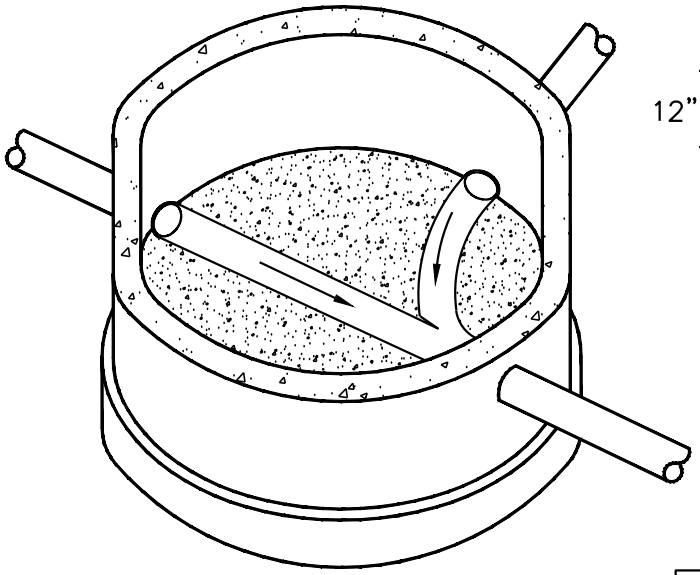


SECTION A-A

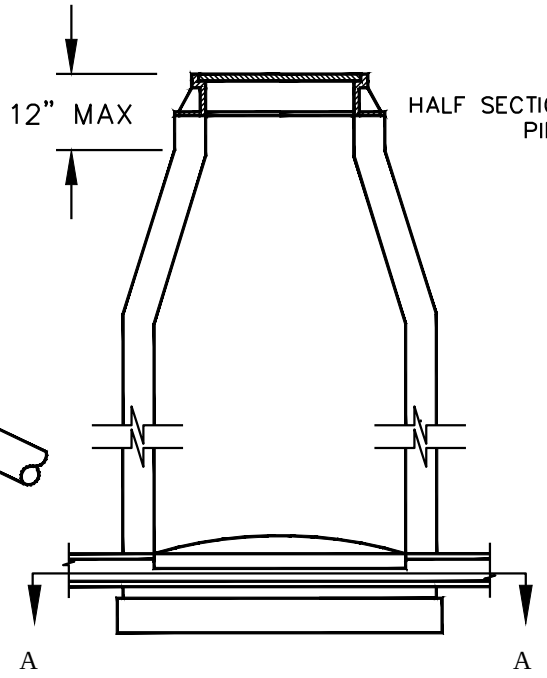
MANHOLES WITH INTERSECTING SEWERS

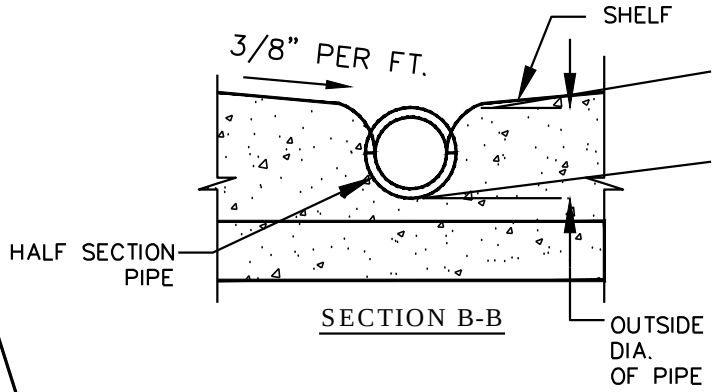


SECTION A-A



ISOMETRIC DRAWING SHOWING CHANNELIZATION





SECTION B-B

NOTES:

1. PIPE MAY STOP AT INSIDE FACE OF MANHOLE, OR BE CONTINUOUS THROUGH MANHOLE. IF PIPE LAID CONTINUOUS, TOP HALF SHALL BE CUT AWAY AFTER BASE IS POURED.
2. MIN 0.1' DROP BETWEEN INLET AND OUTLET PIPES.
3. SEWER SERVICES SHALL BE INSTALLED WITH THE INVERT ELEVATION MATCHING THE CROWN ELEVATION OF THE OUTLET PIPE.
4. FOR SEWER CAMERA ACCESSIBILITY, PROVIDE A STRAIGHT THROUGH CHANNEL SECTION OF 30" OR MORE.
5. SEE SECTION 71-1.07 OF THE GENERAL SPECIFICATIONS.
6. SEE PLATE SS-01 FOR STANDARD NOTES.

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STANDARD SANITARY SEWER MANHOLE CHANNELIZATION DETAIL

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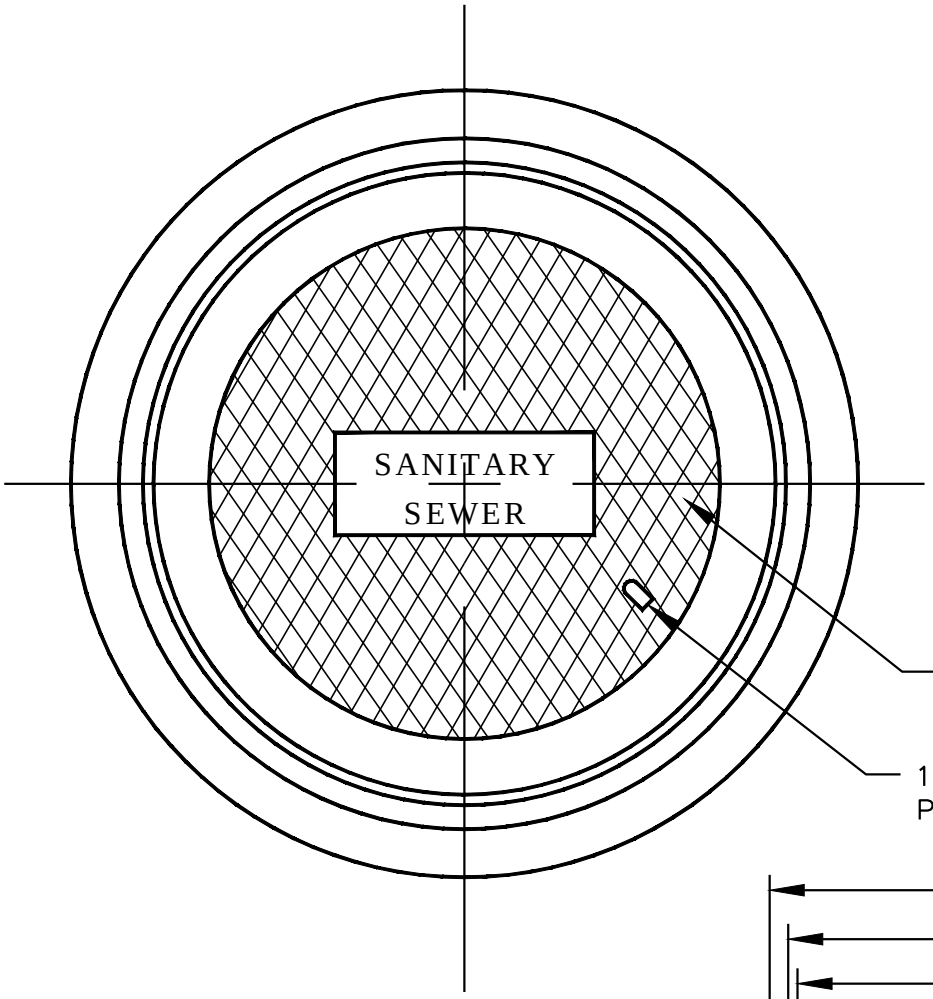
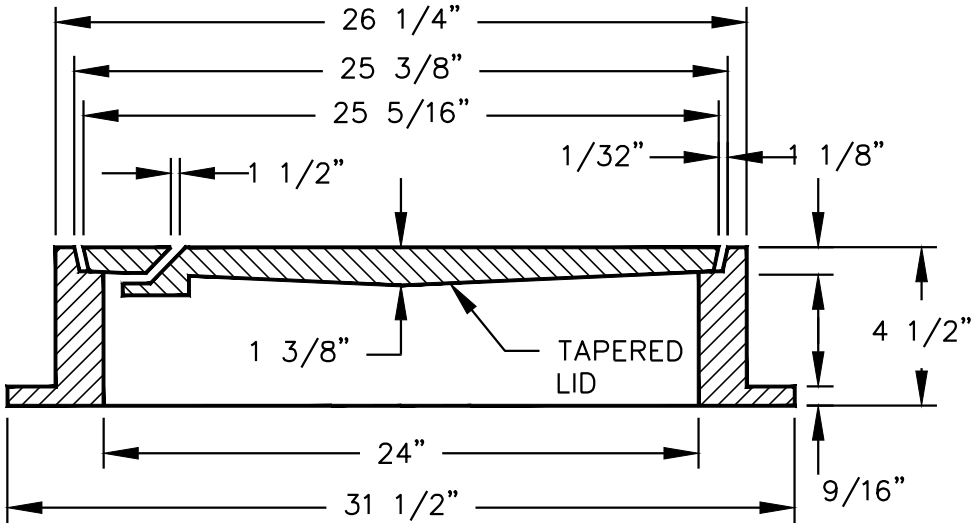
SS-05



NOTES:

1. FRAME AND COVER BEARING SURFACES MACHINED TO ASSURE INTERCHANGEABILITY AND CLOSE, QUIET FIT.
2. CASTINGS DIPPED IN BLACK BITUMINOUS PAINT.
3. ALL MATERIAL USED IN MANUFACTURING SHALL CONFORM TO ASTM SPECIFICATIONS A159-64T-G3000, 48-30, OR OF UNITED STATES GOVERNMENT SPECIFICATIONS QQ1-653.
4. FRAME AND COVER EXCEEDS H-20 WHEEL LOADING.
   APPROX. WEIGHTS:
   FRAME - 140 LBS.
   COVER - 130 LBS. MIN.
5. WHEN BOLT DOWN MANHOLE LIDS ARE SPECIFIED, USE D&L SUPPLY, A-1024 BOLT DOWN/WATER TIGHT MANHOLE RING AND COVER OR EQUAL.
6. SEE PLATE SS-01 FOR STANDARD NOTES



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STANDARD 24" SANITARY SEWER MANHOLE - FRAME AND COVER

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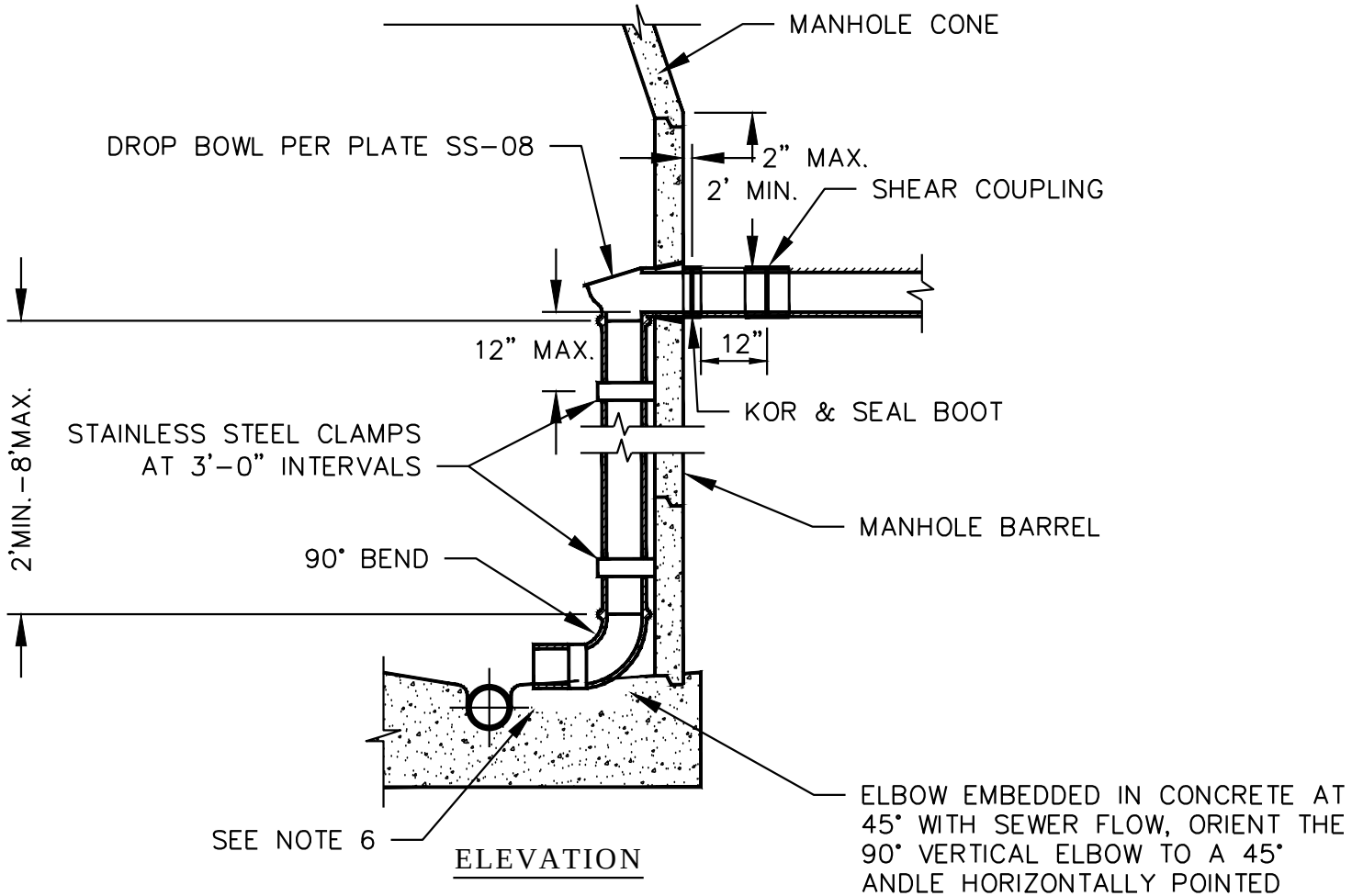
SS-06



ELEVATION

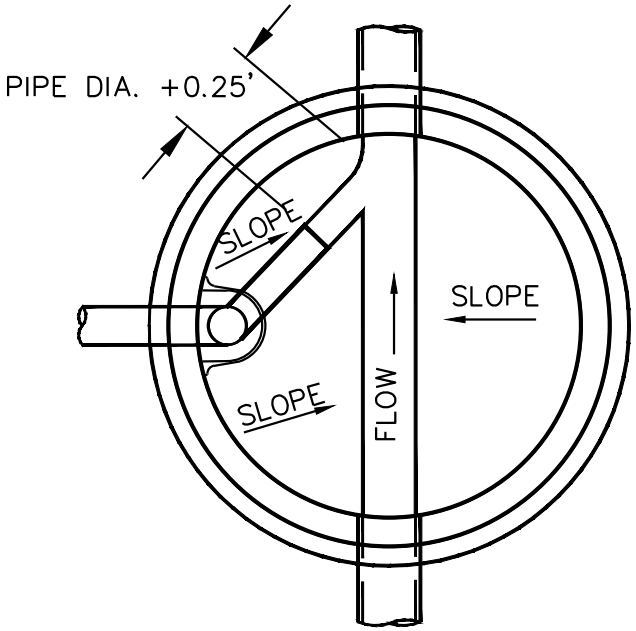
NOTES:

1. ALL INSIDE DROP PIPING SHALL BE P.V.C. PIPE, SCHEDULE 40.
2. INSTALL TRACER WIRE AND DAYLIGHT AT MANHOLE COVER AS SHOWN ON PLATE SS-02.
3. PRIME AND CEMENT ALL JOINTS AS RECOMMENDED BY THE MANUFACTURER.
4. DROP CONNECTION PIPE AND FITTINGS TO BE SAME SIZE AS ENTERING PIPE.
5. CLAMPS SHALL BE 1 1/2 IN. BY 12 GAUGE STAINLESS STEEL, ANCHORED TO MANHOLE WALL WITH 2 1/2 IN. CADMIUM PLATED BOLTS.
6. FOR CONNECTIONS TO MANHOLES WITH EXIT PIPES 10 IN. DIAMETER OR LARGER, MATCH THE FLOWLINE OF THE DROP PIPE TO THE CROWN OF THE EXIT PIPE.
7. THE INVERT OF THE DROP CONNECTION SHALL BE PLACED AT THE SAME ELEVATION AS THE EXIT PIPE.

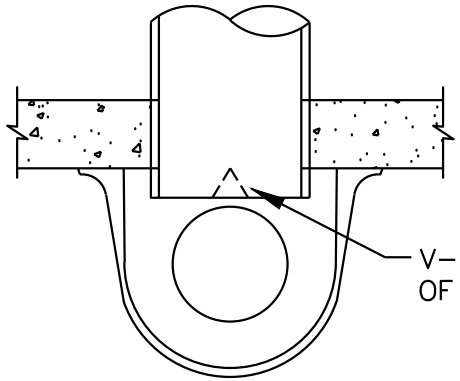
INSIDE DROP CONNECTION
SANITARY SEWER 4", 6" & 8" ONLY

SCALE: NOT TO SCALE

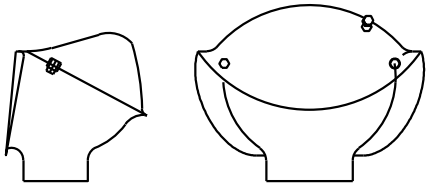
SS-07



PLAN
PER PLATE 416

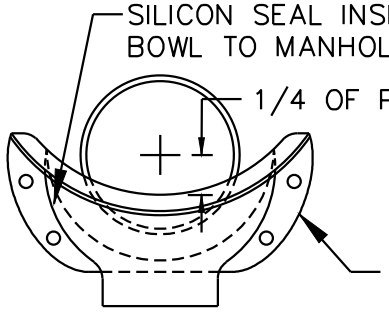


DROP BOWL
MOUNTING POSITION
TOP VIEW



FORCE LINE HOOD

REQUIRED FOR FORCE MAINS
AND LOW PRESSURE PIPES
OR WHEN THE SLOPE EXCEEDS 3%



DROP BOWL
MOUNTING POSITION
FRONT VIEW

City of Auburn
Department of Planning & Public Works

STANDARD SEWER

INSIDE DROP CONNECTION DETAILS

Date: April 2017

City Engineer

Director of Planning & Public Works

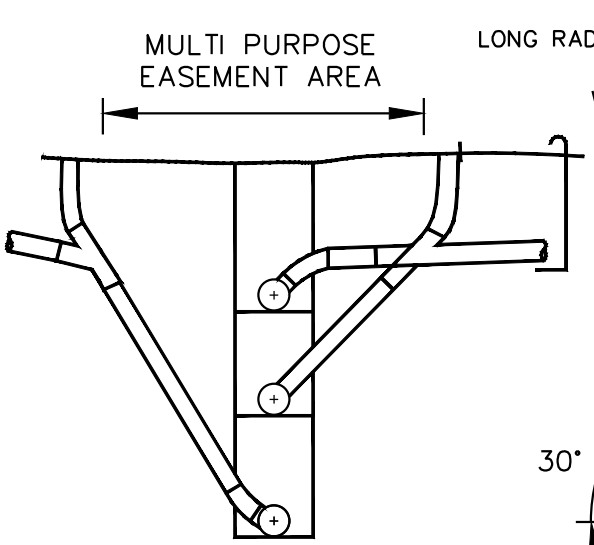
SCALE: NOT TO SCALE

Drawing No. SS-08

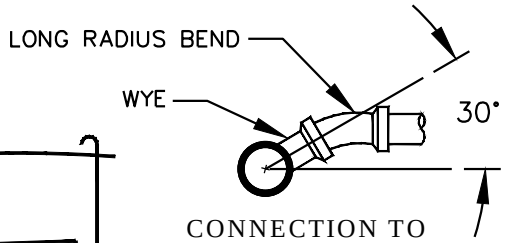
NOTES:

1. IN ROCK CONDITION EXCAVATE TRENCH 3 FT. BEYOND END OF PIPE. BACKFILL WITH NATIVE MATERIAL WITH ALL ROCKS OVER 3 IN. REMOVED (SEE SHADED AREA).
2. EXTEND SEWER SERVICE PAST ALL MULTI-PURPOSE UTILITY EASEMENTS.
3. STATE DEPARTMENT OF HEALTH SERVICES CRITERIA FOR SEPARATION OF WATER MAINS AND SANITARY SEWERS SHALL APPLY.
4. ALL SERVICES AND CLEANOUTS SHALL BE INSTALLED WITH A MECHANICAL PLUG AND A G05 TYPE TRAFFIC BOX. CAP TO BE WITHIN 6" TO 12" OF THE BOX LID.
5. ONLY LONG RADIUS BENDS SHALL BE USED ON SERVICE CONNECTIONS.
6. ALL SEWER SERVICE WYES SHALL ONLY BE INSTALLED AT 30° ABOVE HORIZONTAL [2 (TWO) OR 10 (TEN) O'CLOCK.]
7. 1/2" REBAR WITH 12" HOOK ON BOTTOM. PLACE TO SAME DEPTH AS SERVICE FL. PAINT GREEN & EXPOSE TOP 18". BEND REBAR OVER TO PROTECT SHARP END. (TYP.)

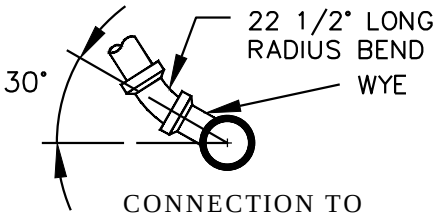
* WHEN USING PVC:
10' OF 6" C-900, OR STEEL, OR DIP SLEEVE.
WHEN USING VCP:
4" DIP CONNECTED TO 4" VCP.



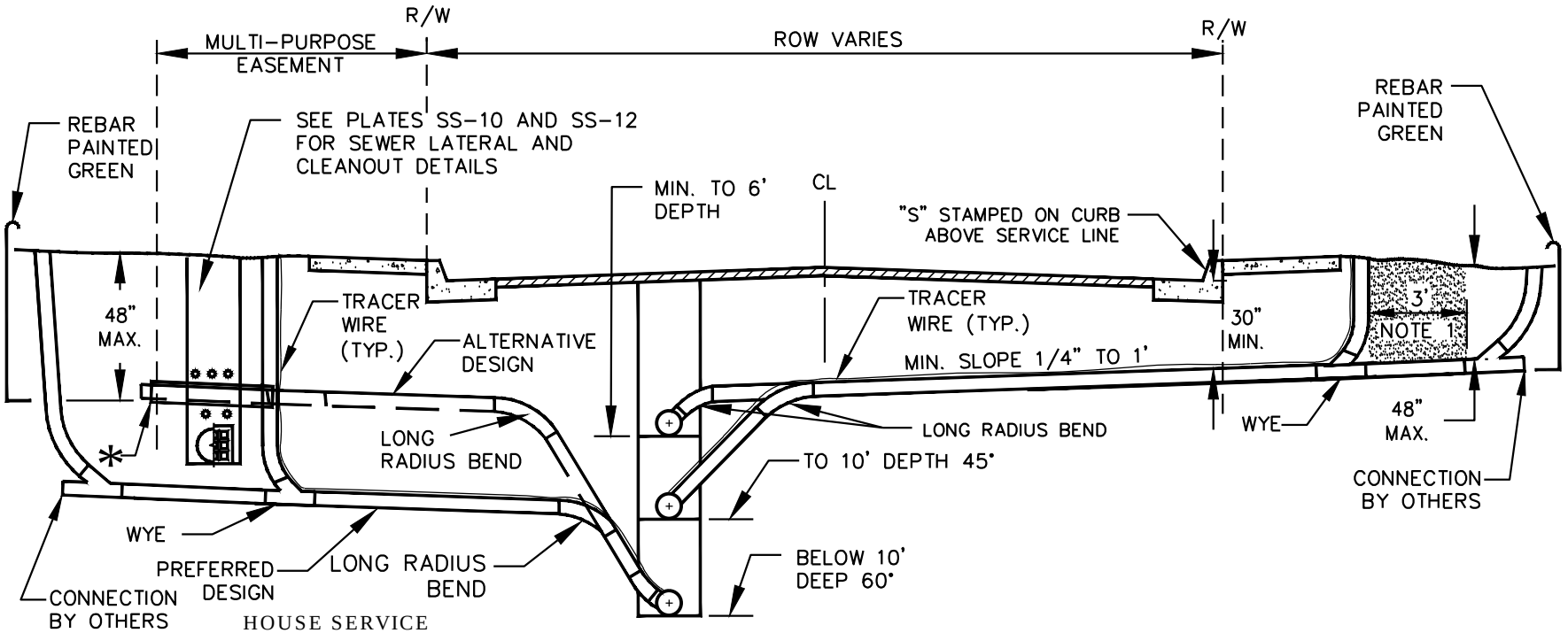
EASEMENT CONNECTIONS



CONNECTION TO
SHALLOW SEWER



CONNECTION TO
DEEP SEWER



HOUSE SERVICE
CONNECTIONS

STANDARD SEWER
SERVICE CONNECTIONS

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SS-10

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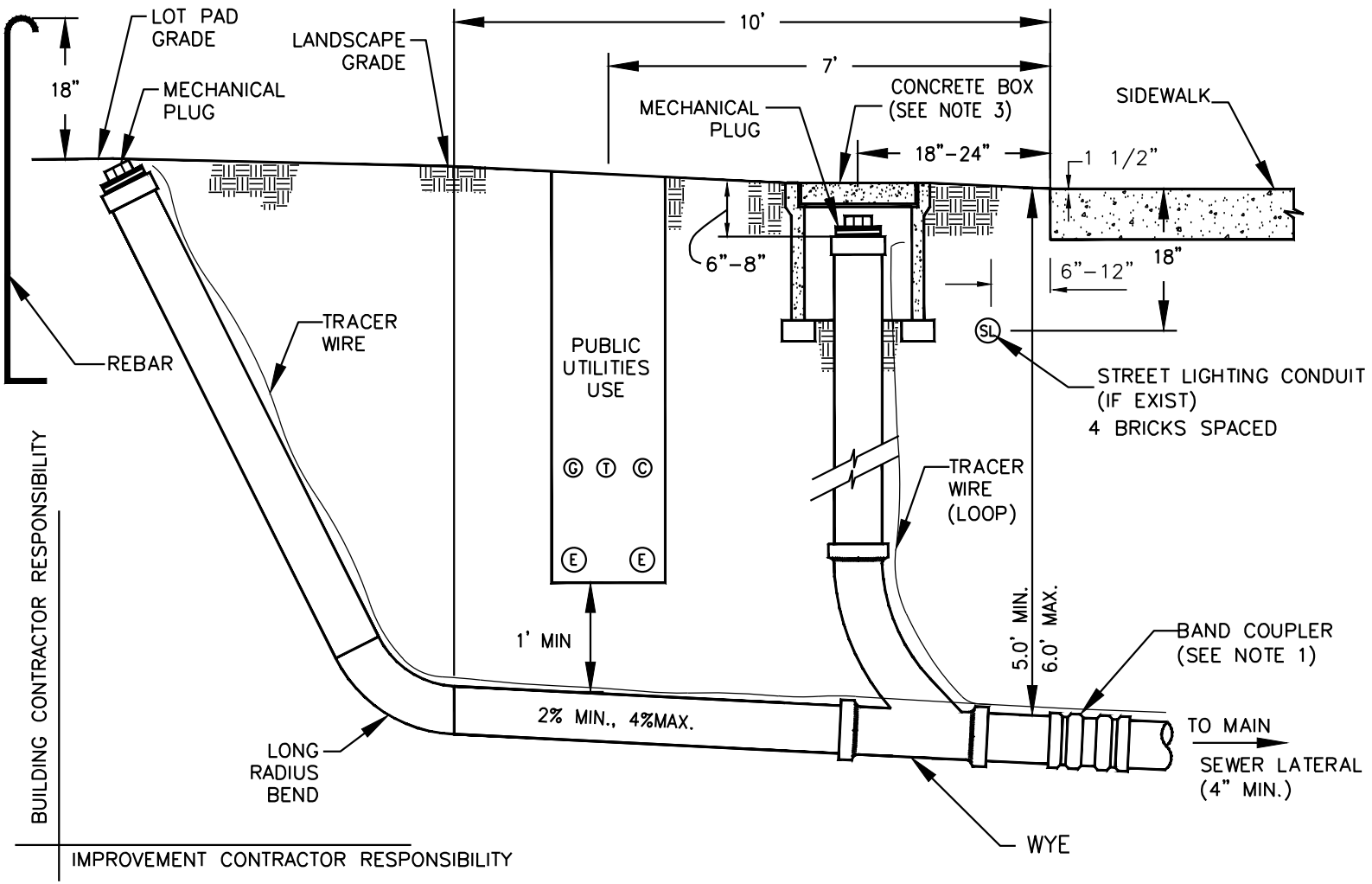


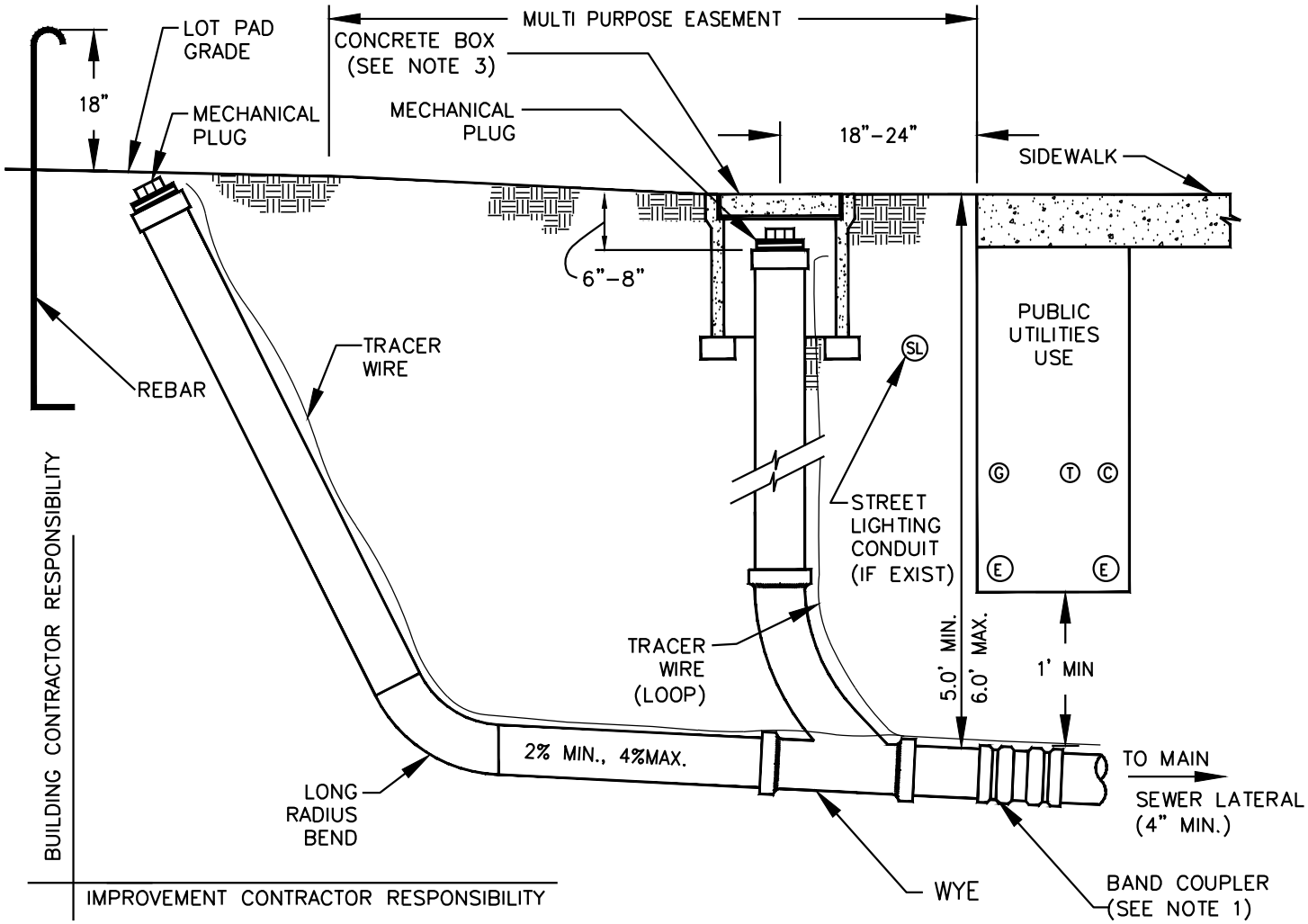
NOTES:

1. BAND COUPLER SHALL BE A FERNCO STAINLESS STEEL SHEAR COUPLER OR APPROVED EQUAL. BAND SHALL HAVE A MINIMUM OF 4 LOCKING BAND STRAPS.
2. CLEANOUT AND SERVICE MATERIALS SHALL BE ALL ABS OR ALL PVC. WYE AT PUBLIC MAIN SHALL BE SAME MATERIAL AS PUBLIC LINE.
3. CONCRETE BOX WITH METAL LID
   A) IN LANDSCAPED AREAS USE CHRISTY F08 WITH F08C LID MARKED "SEWER", 2" ABOVE LANDSCAPE GRADE
   B) AVOID PLACING CURB BOX IN DRIVEWAY.
   C) IF PLACED IN PAVED AREAS, USE CHRISTY G05 TRAFFIC BOX MARKED "SEWER", IF APPROVED BY CITY ENGINEER.
   D) ALTERNATE MAY BE USED UPON WRITTEN APPROVAL OF COUNTY ENGINEER ONLY.
   E) BOXES SHALL BE PROVIDED WITHOUT KNOCK-OUTS.
4. IN AREAS WHERE SIDEWALK IS NOT MONOLITHIC WITH CURB, THE CLEANOUT SHALL BE LOCATED WITHIN 18 IN. TO 24 IN. FROM BACK OF CURB OR BACK OF STORM DRAIN WHEN THERE IS A STORM DRAIN CONFLICT.
5. JOINT TRENCH SHALL BE A MINIMUM OF 1 FOOT ABOVE THE SANITARY SEWER LATERAL.
6. CLEANOUT MATERIALS SHALL BE SAME DIAMETER AS LATERAL.
7. THE USE OF THIS DETAIL WILL BE ALLOWED WITH PRIOR APPROVAL OF THE ENGINEER.

STANDARD
SEWER LATERAL & CLEANOUT

SCALE: NOT TO SCALE

SS-12



NOTES:

1. BAND COUPLER SHALL BE A FERNCO STAINLESS STEEL SHEAR COUPLER OR APPROVED EQUAL. BAND SHALL HAVE A MINIMUM OF 4 LOCKING BAND STRAPS.
2. CLEANOUT AND SERVICE MATERIALS SHALL BE ALL ABS OR ALL PVC. WYE AT PUBLIC MAIN SHALL BE SAME MATERIAL AS PUBLIC LINE.
3. CONCRETE BOX WITH METAL LID
   A) IN LANDSCAPED AREAS USE CHRISTY F08 WITH F08C LID MARKED "SEWER", 2" ABOVE LANDSCAPE GRADE.
   B) AVOID PLACING CURB BOX IN DRIVEWAY.
   C) IF PLACED IN PAVED AREAS, USE CHRISTY G05 TRAFFIC BOX MARKED "SEWER", IF APPROVED BY CITY ENGINEER.
   D) ALTERNATE MAY BE USED UPON WRITTEN APPROVAL OF COUNTY ENGINEER ONLY.
   E) BOXES SHALL BE PROVIDED WITHOUT KNOCK-OUTS.
4. IN AREAS WHERE SIDEWALK IS NOT MONOLITHIC WITH CURB, THE CLEANOUT SHALL BE LOCATED WITHIN 18 IN. TO 24 IN. FROM BACK OF CURB OR BACK OF STORM DRAIN WHEN THERE IS A STORM DRAIN CONFLICT.
5. JOINT TRENCH SHALL BE A MINIMUM OF 1 FOOT ABOVE THE SANITARY SEWER LATERAL.
6. CLEANOUT MATERIALS SHALL BE SAME DIAMETER AS LATERAL.

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STANDARD
SEWER LATERAL & CLEANOUT
FOR JOINT TRENCH UNDER WALK

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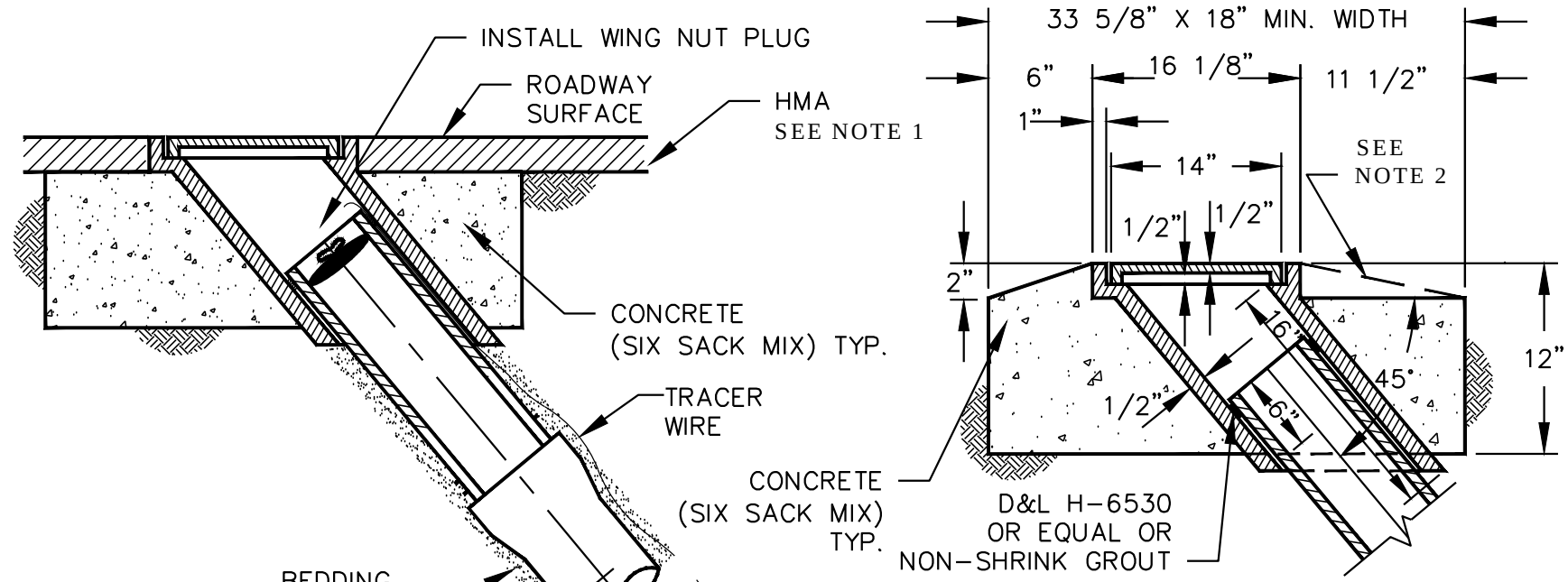
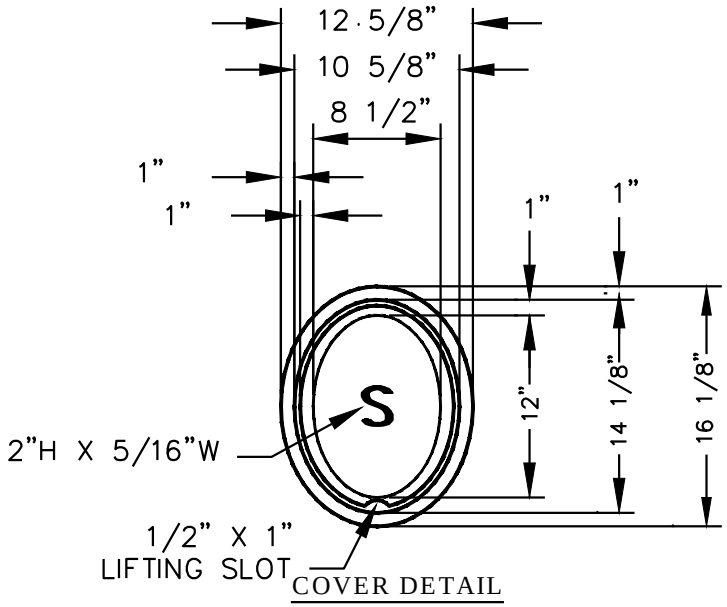


FLUSHING BRANCH



COVER DETAIL

NOTES:

1. WHEN IN ROADWAY LEAVE CONCRETE 2 IN. DOWN TO ALLOW FOR PAVING.
2. IN OTHER AREAS SLOPE CONCRETE AWAY FROM THE FLUSHING BRANCH AS SHOWN.
3. RAISE BOX TO FINAL GRADE AFTER PAVING.

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SEWER FLUSHING BRANCH STANDARD 45°

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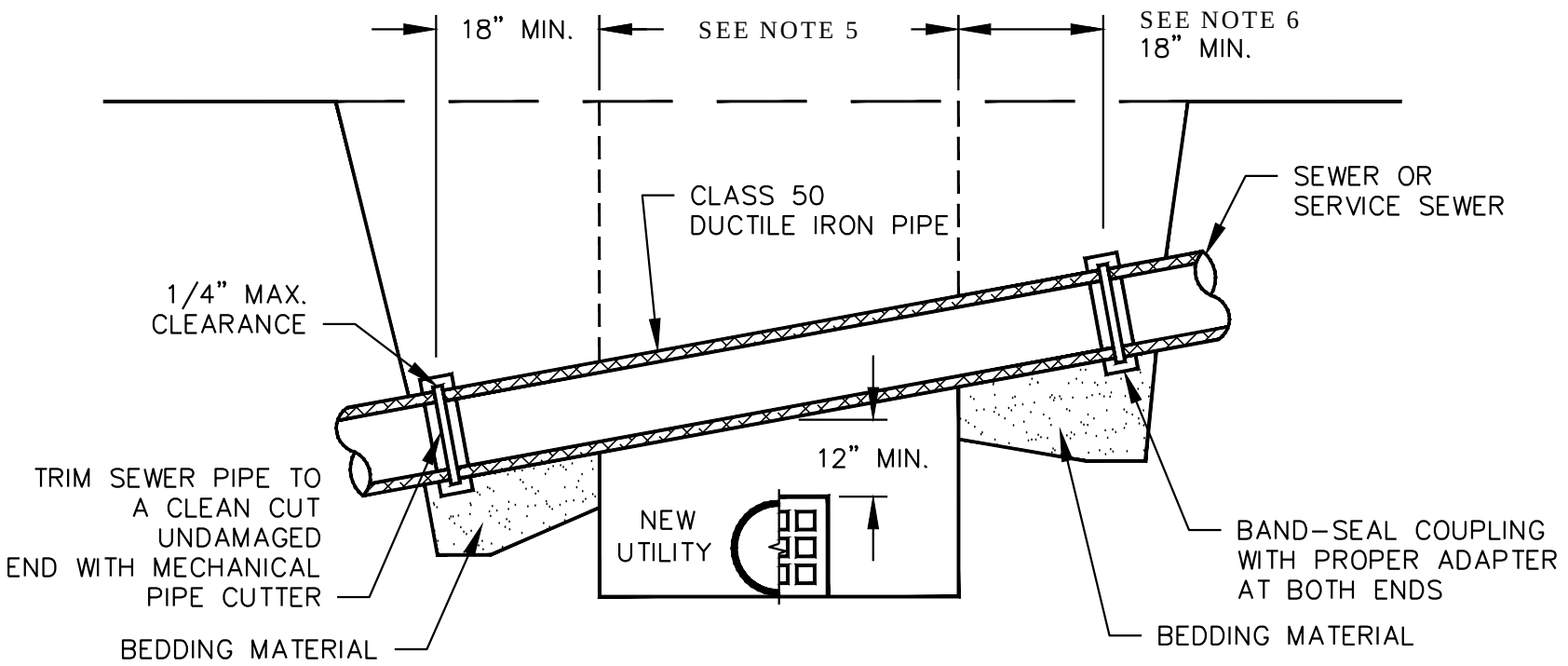

NOTES:

1. INSIDE DIAMETER OF DUCTILE IRON PIPE TO BE SAME AS THE PIPE TO WHICH IT CONNECTS.
2. REPLACE WITH DUCTILE IRON PIPE, AS PER THIS DETAIL, WHENEVER A NEW UTILITY IS CONSTRUCTED BENEATH THE SEWER PIPE.
3. USE DUCTILE IRON PIPE, AS PER THIS DETAIL WHENEVER A NEW SEWER PIPE IS CONSTRUCTED ABOVE AN EXISTING UTILITY OR WHENEVER CLEARANCE IS LESS THAN 12".
4. ALTERATION OF SEWER GRADES WILL BE PERMITTED ONLY AFTER WRITTEN PERMISSION HAS BEEN RECEIVED FROM THE ENGINEER.
5. WHENEVER THE SPAN, WHETHER CAUSED BY TRENCH WIDTH OR CROSSING ANGLE, OF THE DUCTILE IRON PIPE EXCEEDS 3 FT.-0 IN. PLACE BEDDING MATERIAL TO 6 IN. ABOVE THE DUCTILE IRON PIPE.
6. FOR CROSSINGS OF DOMESTIC WATER LINES, A MINIMUM OF 18 LF OF DIP SHALL BE USED AND CENTERED OVER CROSSING.
7. THIS DETAIL TO BE USED WHENEVER A SEWER LATERAL OR SEWER SERVICE CROSSES OVER ANY EXISTING OR PROPOSED UTILITY OR CULVERT AND WHEN A NEW UTILITY IS INSTALLED UNDER AN EXISTING SEWER.

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SEWER UTILITY CROSSING

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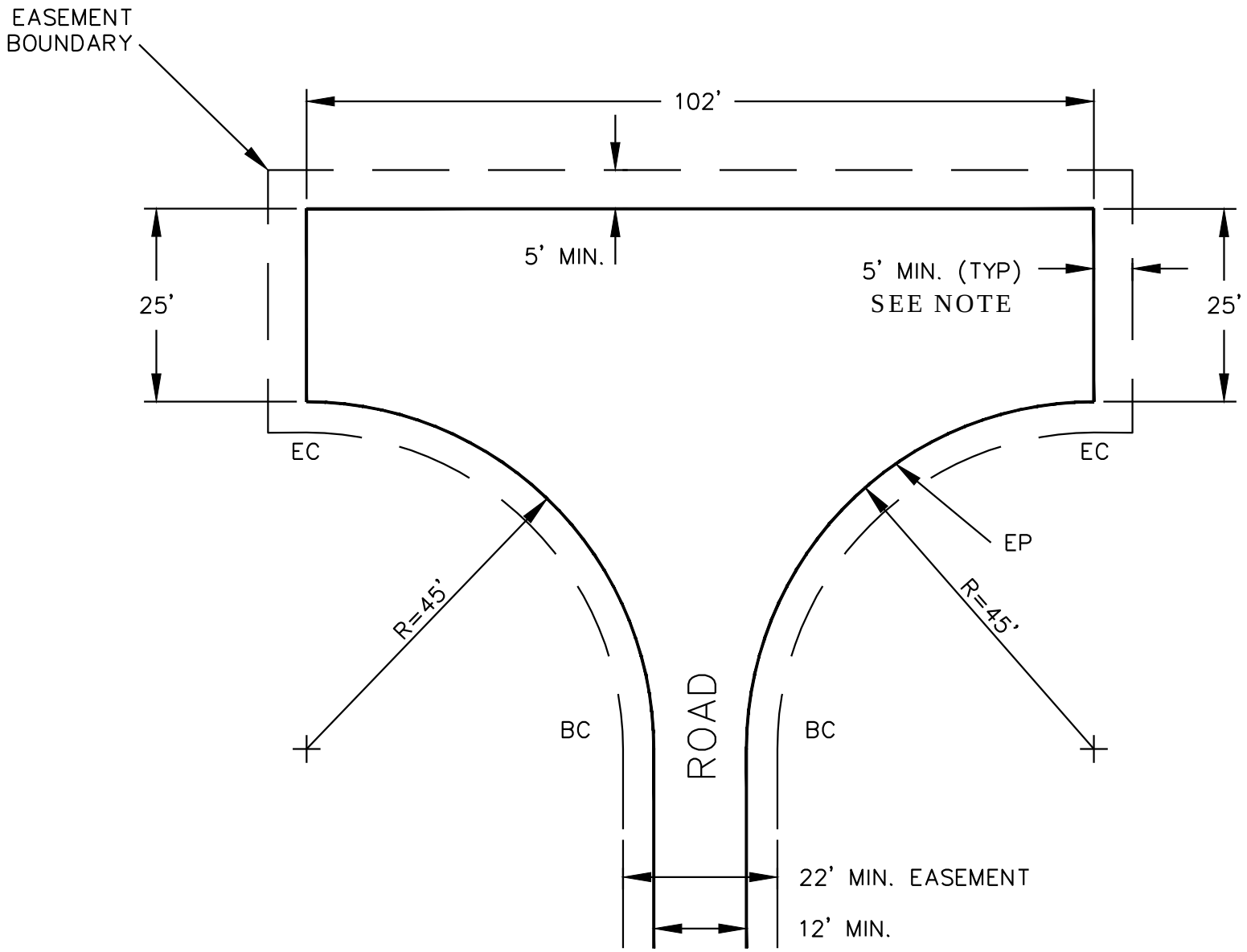


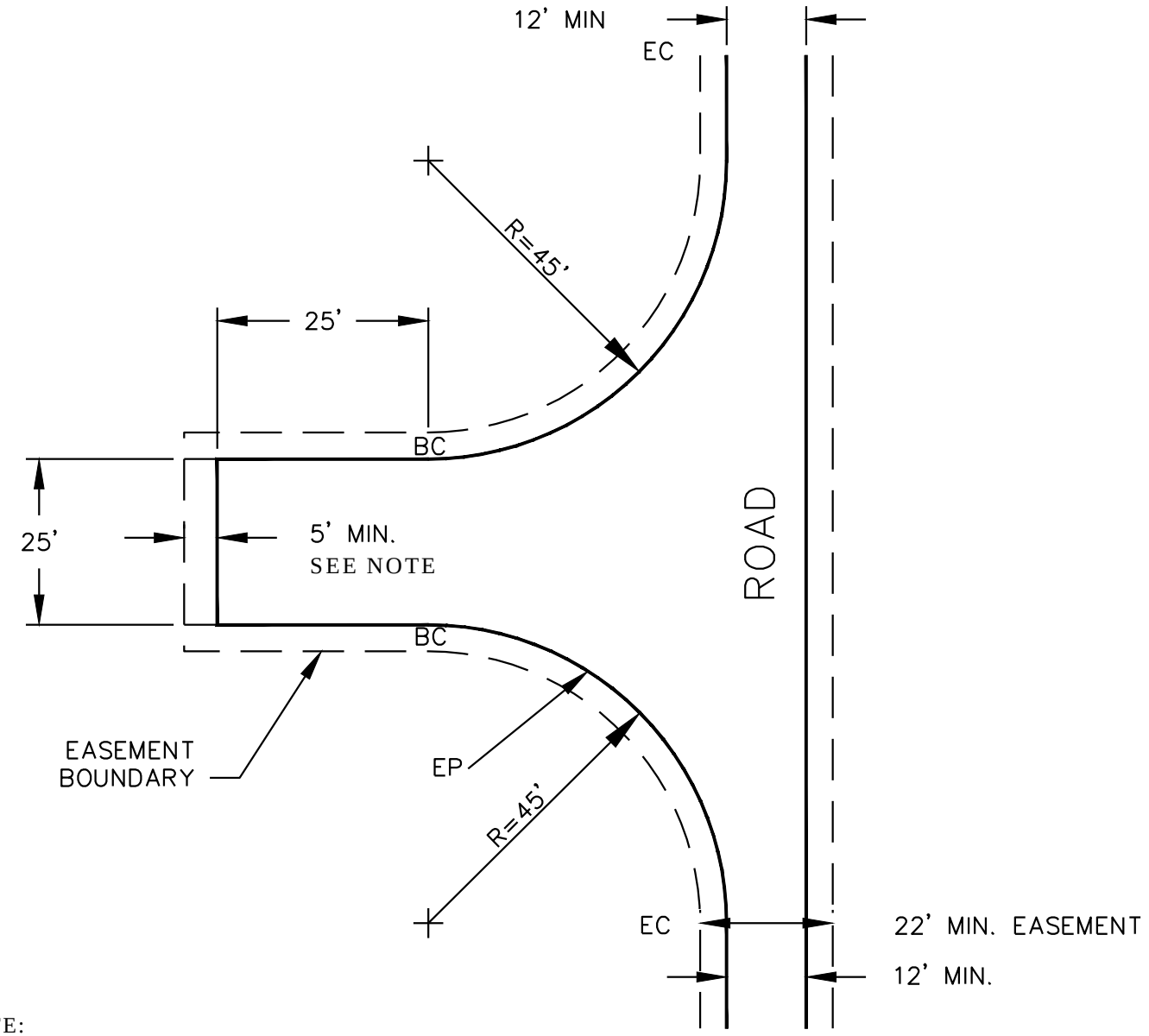
NOTE:

1. PROVIDE A 5' MINIMUM OVERHANG EASEMENT AREA

SEWER ACCESS ROAD
HAMMERHEAD FOR TRUCKS (OPTION 1)

SCALE: NOT TO SCALE

SS-16



NOTE:

1. PROVIDE A 5' MINIMUM OVERHANG EASEMENT AREA

SEWER ACCESS ROAD
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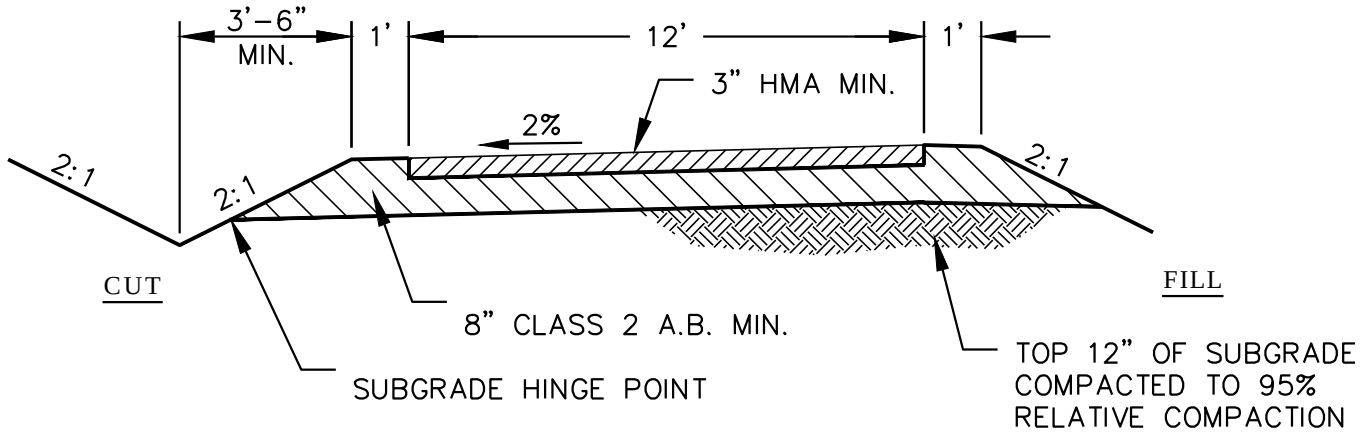

NOTES:

1. MAXIMUM LONGITUDINAL GRADE IS 12%.
2. DITCH FLOWLINE MUST BE A MINIMUM OF ONE FOOT BELOW SUBGRADE HINGE POINT. THE DITCH MAY BE REQUIRED TO BE LARGER DEPENDING ON THE DRAINAGE TO BE CONVEYED.
3. HMA PER ENCROACHMENT PERMIT REQUIREMENTS OR AS DIRECTED BY THE CITY.

SEWER ACCESS ROAD

SS-18

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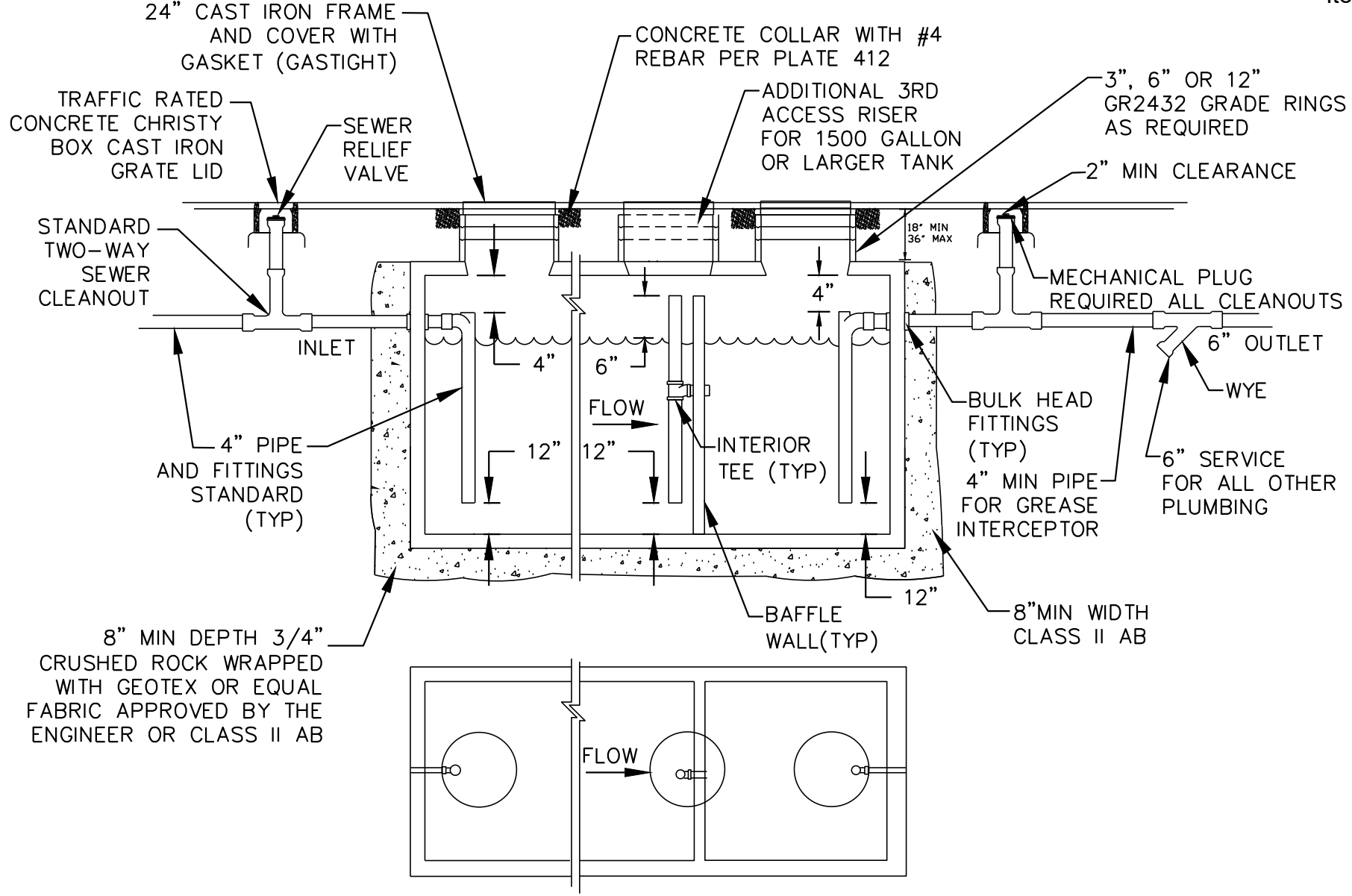

SEE PLATE SS-21 FOR SPECIAL NOTES

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GREASE INTERCEPTOR

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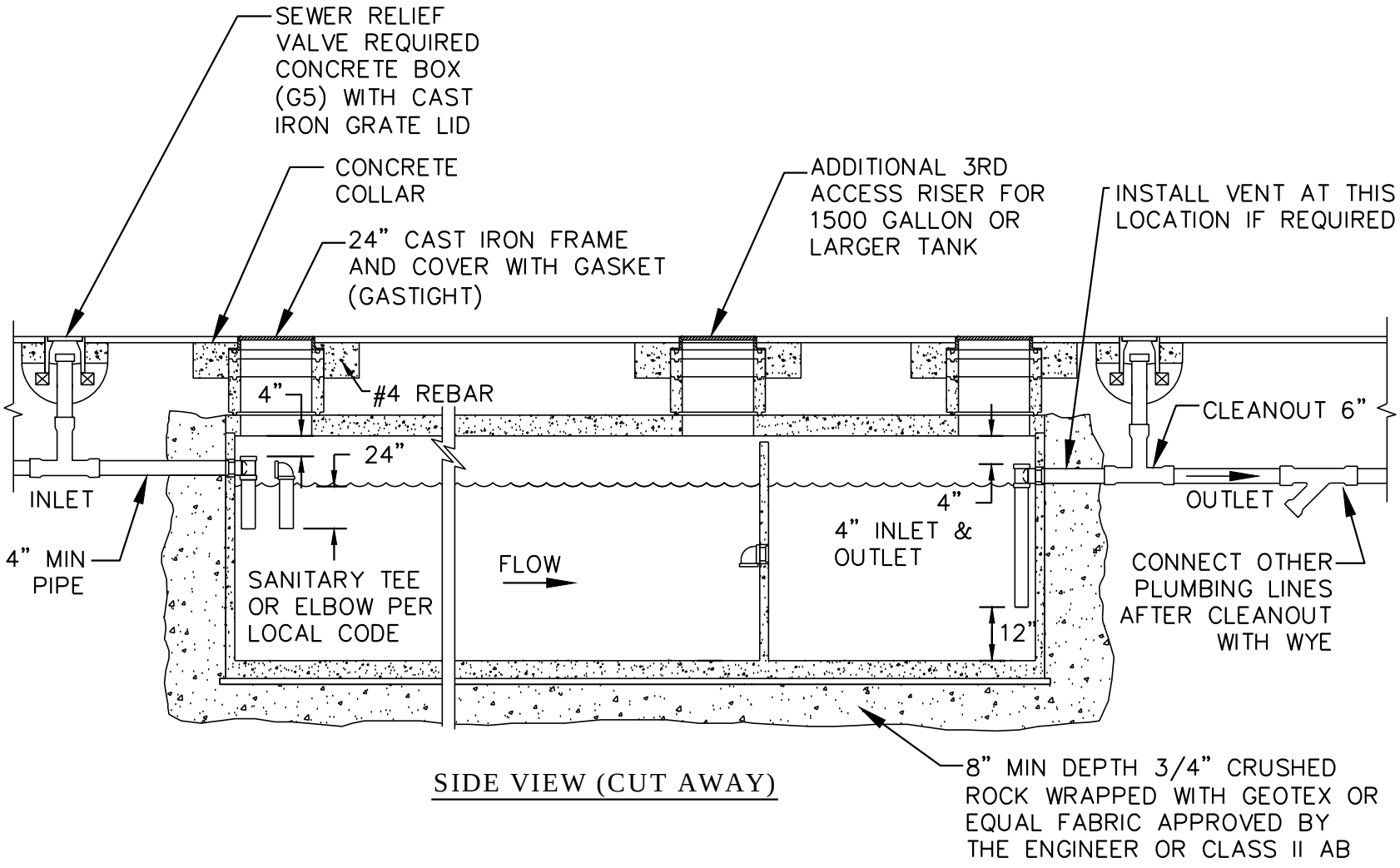
SS-19



SIDE VIEW (CUT AWAY)

SEE PLATE SS-21 FOR SPECIAL NOTES

SAND/OIL SEPARATOR

SCALE: NOT TO SCALE

SS-20

NOTES:

1. TWO RISERS ARE REQUIRED FOR ALL TANKS. ADDITIONAL RISER(S) REQUIRE CONCRETE COLLARS.
2. MANHOLE LIDS SHALL SAY "INTERCEPTOR" OR "GREASE INTERCEPTOR".
3. UTILITY BOXES LOCATED IN TRAFFIC AREAS SHALL CONFORM TO THE "IN PAVEMENT" DETAIL ON SS-22.
4. TRENCH EXCAVATION AND BACKFILL SHALL CONFORM TO U-06 & U-06.
5. CITY OF AUBURN SHALL APPROVE ALL GREASE INTERCEPTORS PRIOR TO INSTALLATION.
6. RISER DEPTH SHALL NOT EXCEED 36 INCHES.
7. REFER TO THE GREASE INTERCEPTOR SPECIFICATIONS HANDOUT FOR INSTALLATION AND INSPECTION OF INTERCEPTOR FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
8. TANKS SHALL BE PRE-CAST CONCRETE WITH WALLS AND THE BOTTOM SLAB MONOLITHICALLY POURED.
9. REINFORCING STEEL SHALL BE ASTM A615 GRADE 60, FY=60,000 PSI. DETAILS AND PLACEMENT SHALL BE IN ACCORDANCE WITH ACI 315 AND ACI 318.
10. PROTECT THE EXTERIOR SURFACES OF THE TANK WITH THE APPLICATION OF THORO-SEAL FOUNDATION COATING OR EQUIVALENT AS APPROVED BY THE ENGINEER.
11. TANKS SHALL BE VACUUM TESTED PRIOR TO BACKFILL AND INSPECTED BY ENVIRONMENTAL ENGINEERING.
12. NO WASTEWATER FROM TOILETS, BATHROOM FIXTURES, WASHING MACHINES OR MOP SINKS OUTSIDE THE KITCHEN AREA SHALL FLOW THROUGH GREASE INTERCEPTOR OR SAND/OIL SEPARATOR.
13. TANKS SHALL BE A MINIMUM OF 1500 GALLONS.
14. NO TANK SHALL BE LOCATED IN A DRIVE THRU, PARKING SPACE, OR FOOD DINING AREA.
15. WHEN TANKS ARE LOCATED IN LANDSCAPING THE LIDS SHALL HAVE A MINIMUM LOFT DIAMETER CLEARANCE WITH ONLY BARK, 3/8 INCH OR LESS GRAVEL OR GRASS.
16. TANKS IN LANDSCAPING SHALL USE AN ORENCO FIBERGLASS RISER WITH A 4 BOLT FIBERGLASS LID OR EQUAL.

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NOTES - GREASE INTERCEPTOR OR SAND/OIL SEPARATOR

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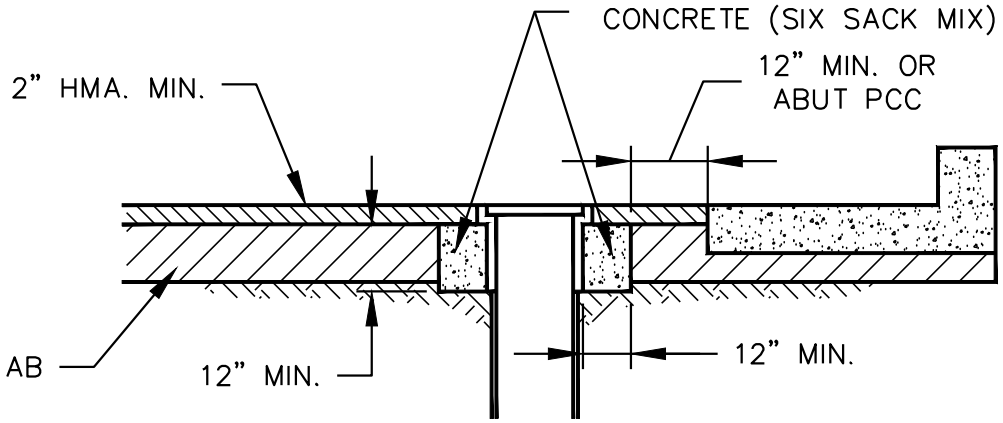
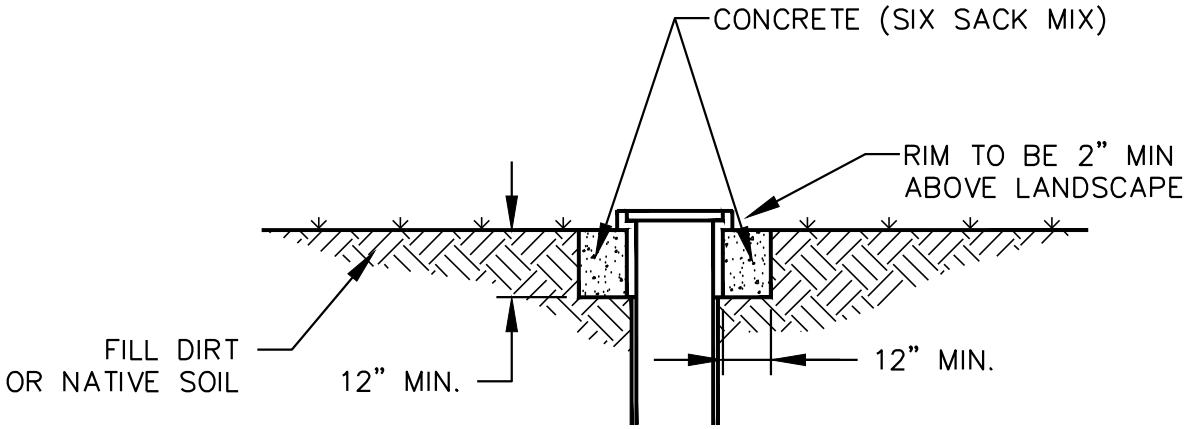


IN PAVEMENT



OUTSIDE PAVEMENT

NOTES:

1. TOP OF BOX IN PAVEMENT TO BE RECESSED BY 0.5 IN. WHEN ABOVE 2,000 FT. ELEVATION.
2. BOXES TO BE RAISED AFTER FINAL PAVING.
3. BOX AND LID SHALL BE RATED FOR APPROPRIATE TRAFFIC LOADS.
4. BOXES GREATER THAN 12" OUTER DIAMETER WILL REQUIRE APPROVAL OF THE ENGINEER PRIOR TO INSTALLATION.
5. ALL RECTANGULAR UTILITY BOXES SHALL BE LOCATED OUTSIDE OF THE PAVEMENT AND NOT WITHIN TWO FEET OF A ROAD SIDE DITCH UNLESS APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
6. LOCATE OUTSIDE OF VEHICLE WHEEL PATH.
7. BOXES LOCATED OUTSIDE PAVEMENT SHALL BE 2" MINIMUM ABOVE THE OUTSIDE PAVEMENT MATERIAL.
8. METAL LIDS ARE REQUIRED ON ALL BOXES LOCATED OUTSIDE PAVEMENT.

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UTILITY BOXES

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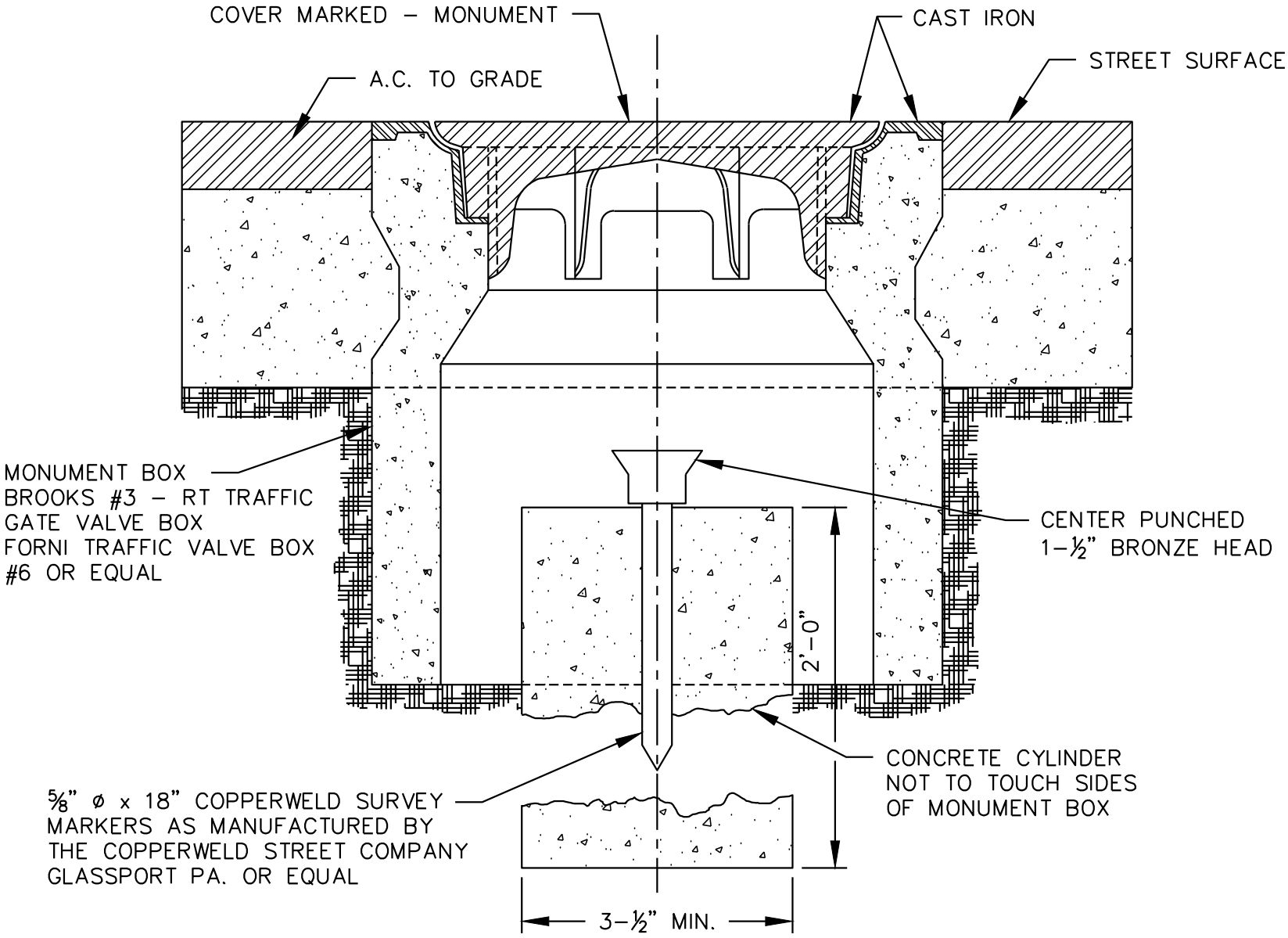
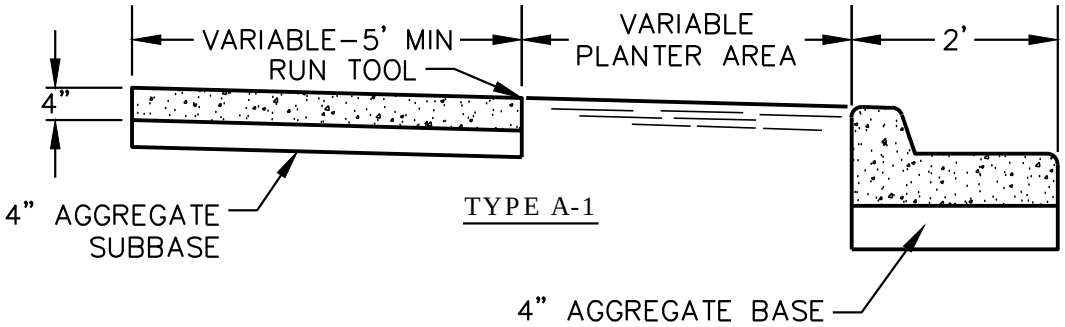
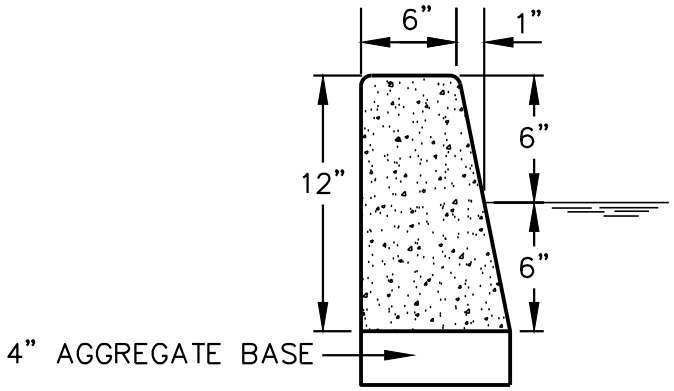


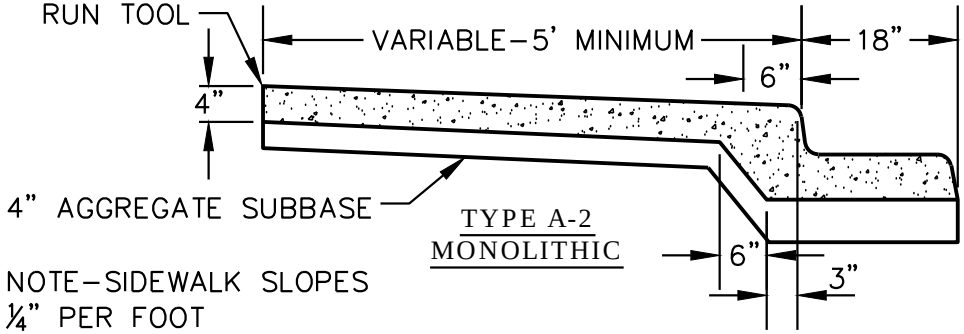
BOXED SURVEY MONUMENT

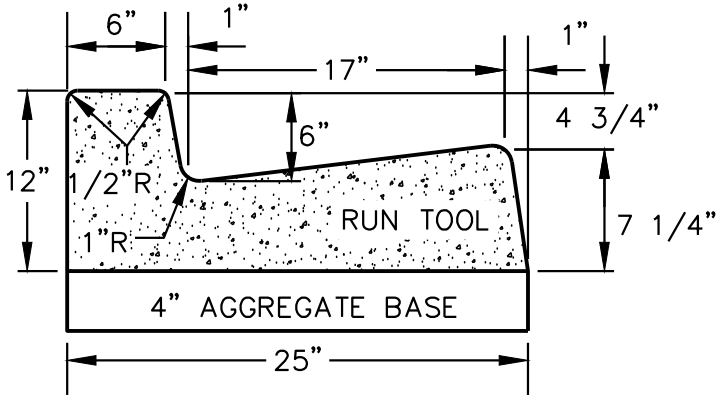
SCALE: NOT TO SCALE

ST-01









STD. CURB-GUTTER DETAIL

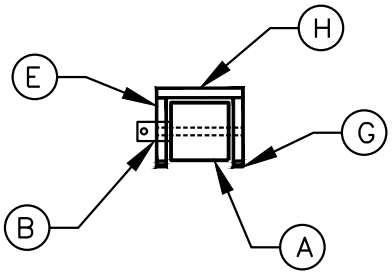
NOTES:

1. SIDEWALK SHALL BE GIVEN A TRANSVERSE SCORED TEXTURE BY DRAWING A BROOM OR BURLAP BELT ACROSS A STEEL TROWELLED FINISH. LINES SHALL BE PARALLEL AND AT RIGHT ANGLES TO THE DIRECTION OF TRAFFIC.
2. CURB–GUTTER SHALL BE GIVEN A TROWELLED FINISH. THE SURFACE SHALL FIRST BE GIVEN A FLOATED FINISH, AND A FINAL TROWELLING SHALL BE DONE WITH A STEEL TROWEL. THE FINISHED SURFACE SHALL BE FREE OF ALL TROWEL MARKS AND SHALL BE UNIFORM IN TEXTURE AND APPEARANCE, BROOM TEXTURE SHALL BE IN LONGITUDINAL DIRECTION. CURING COMPOUND TO BE APPLIED TO ALL SURFACES AFTER BROOM FINISHING.
3. SEE STANDARD DETAIL FOR EXPANSION JOINT DETAILS.

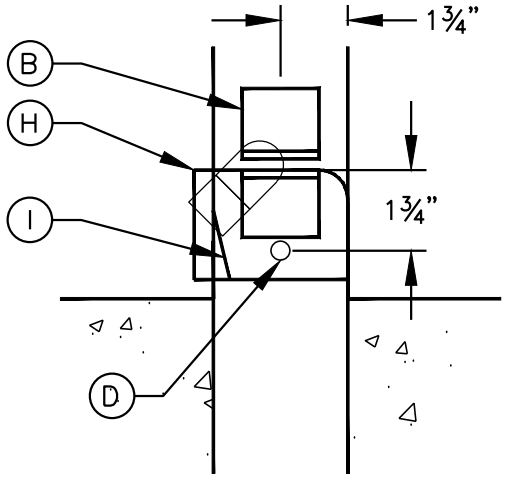
STANDARD DETAILS
CURB, GUTTER AND SIDEWALK

SCALE: NOT TO SCALE

ST-02



PLAN VIEW



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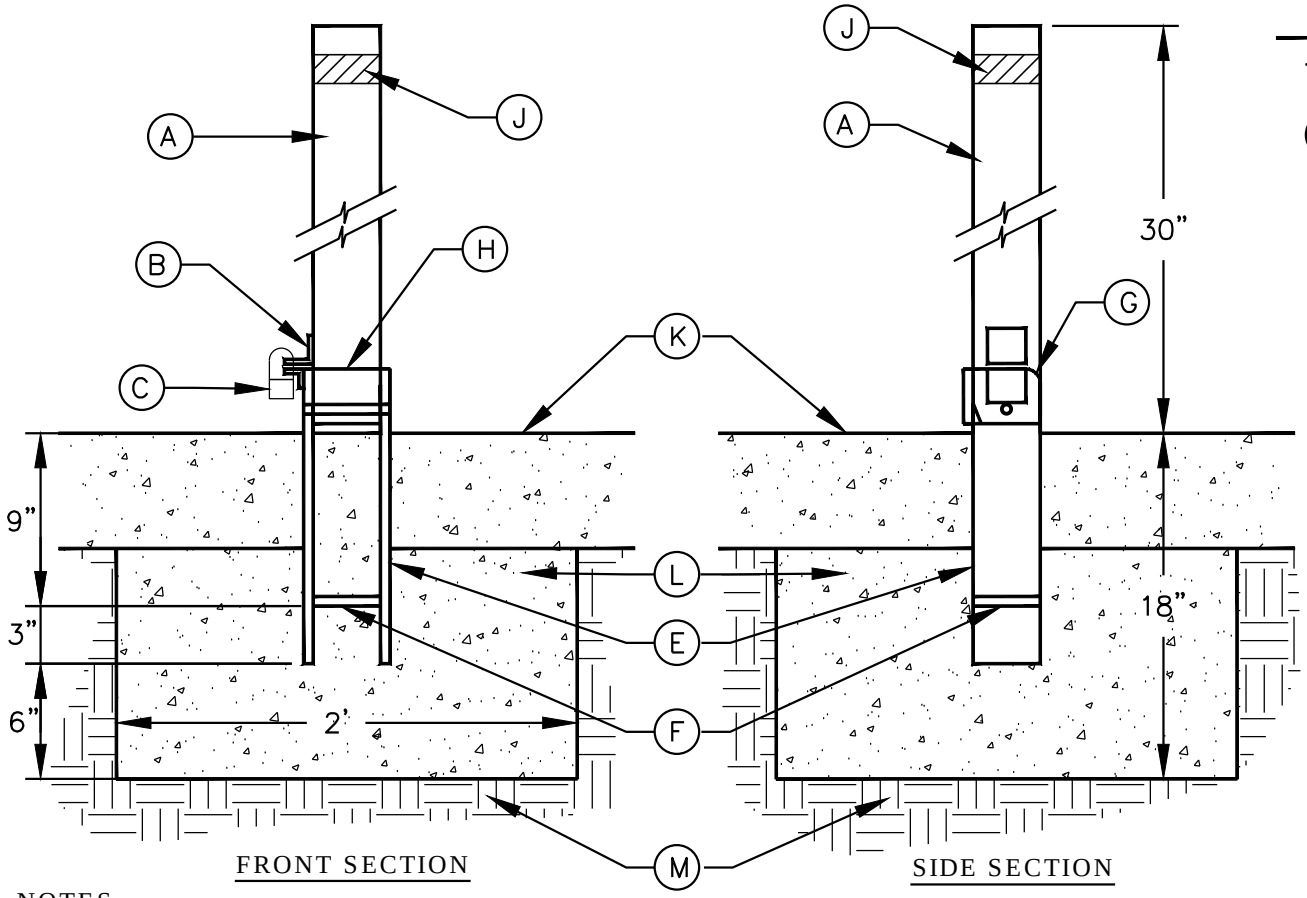

FRONT SECTION

SIDE SECTION

LEGEND:

A. 3½"O.D. ¼"WALL STEEL TUBE WITH CAP WELDED ON TOP, ¾"HOLES FOR SWIVEL ROD. EASE ALL EDGES OF STEEL TUBE.
B. 1½"X 1 ½"ANGLE IRON (2) WELDED TO TUBE AND BASE. PLACE ½"HOLE DRILLED ¼"FROM END OF ANGLE IRON ON TUBE
C. PADLOCK TO BE PROVIDED BY FIRE DEPARTMENT AND/OR ENVIRONMENTAL ENGINEERING
D. ⅝"DIA. STEEL SWIVEL ROD, WELD SWIVEL ROD TO SIDE PLATES.
E. ⅜"X 16"X 4"STEEL BASE PLATE WITH 1½"RADIUS CORNERS EASE ALL EDGES.
F. ⅜"STEEL BRACE FILET WELD BOTH SIDES TO BASE PLATES
G. 1½"RADIUS CORNERS, TYP.
H. 4"X 4"X ⅜"STEEL BACK PLATE WELDED TO BASE PLATE.
I. FISH MOUTH GRIND AT BOTTOM BACK CORNER OF TUBE.
J. PLACE 2"WHITE REFLECTIVE TAPE.
K. CONCRETE PAVING (OR HMA)
L. CONCRETE FOOTING
M. COMPACTED SUBGRADE

NOTES:

1. ALL TUBING SHALL BE BLACK STEEL PIPE.
2. ALL JOINTS SHALL BE WELDED IN ACCORDANCE WITH CA STATE STANDARD SPECIFICATIONS FOR WELDING STRUCTURAL STEEL AND GROUND SMOOTH.
3. ALL PARTS (EXCEPT PADLOCK) SHALL BE PAINTED WITH TWO COATS ZINC CHROMATE PRIMER AND TWO COATS EXTERIOR ENAMEL. COLOR: YELLOW
4. BOLLARD SHALL BE INSTALLED SUCH THAT IT LAYS FLAT WHEN FOLDED.
5. CONCRETE SHALL BE "MINOR CONCRETE".

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BOLLARD DETAILS

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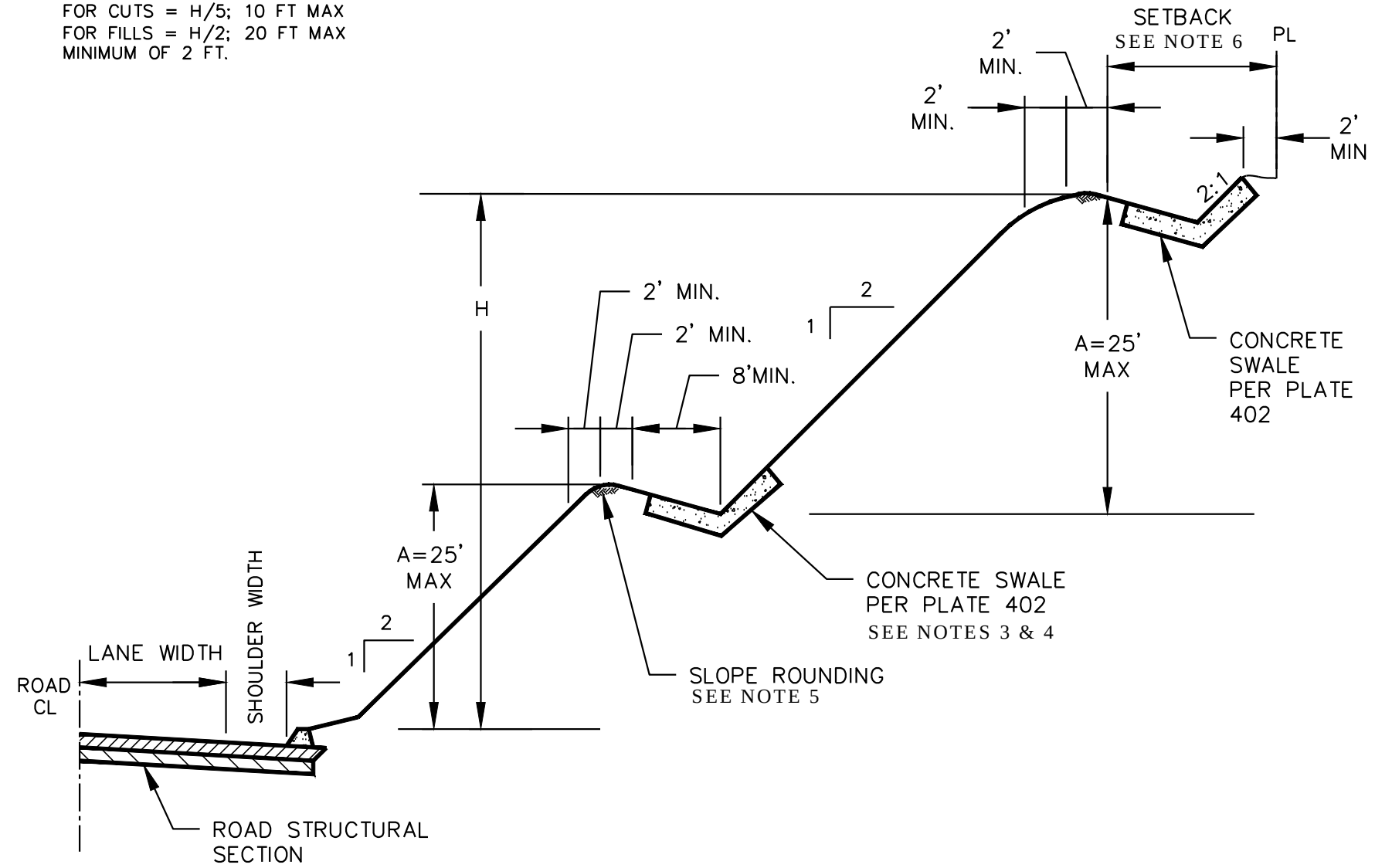
ST-20

NOTES:

1. FOR ALL CUT OR FILL SLOPES WHERE H (HEIGHT) IS GREATER THAN 30 FT., TERRACES SHALL BE CONSTRUCTED AS RECOMMENDED BY A GEOTECHNICAL ENGINEER. THIS PLATE SHALL BE USED AS A GUIDE. MORE RESTRICTIVE DIMENSIONS MAY BE NEEDED DEPENDING ON SITE SPECIFIC CRITERIA.
2. THE MAXIMUM HEIGHT (A) OF EACH SLOPE BETWEEN TERRACES SHALL BE 25 FT.
3. DRAINAGE SWALES ON TERRACES SHALL HAVE A MINIMUM LONGITUDINAL GRADE OF 4% AND A MAXIMUM OF 12% AND CAPACITY FOR A TEN YEAR STORM.
4. DOWN DRAINS OR DRAINAGE OUTLETS SHALL BE PROVIDED AT APPROXIMATELY 300 FT. INTERVALS ALONG DRAINAGE TERRACE.
5. UPPER PORTION OF ALL CUT/FILL SLOPES SHALL BE ROUNDED, THE 4 FT. MIN. ROUNDED LENGTH SHALL BE INCREASED WITH INCREASED SLOPE HEIGHT AS REQUIRED BY THE COUNTY ENGINEER.
6. SETBACK DISTANCE SHALL BE:
   FOR CUTS = H/5; 10 FT MAX
   FOR FILLS = H/2; 20 FT MAX
   MINIMUM OF 2 FT.



TERRACE DRAINAGE

FOR CUTS AND FILLS

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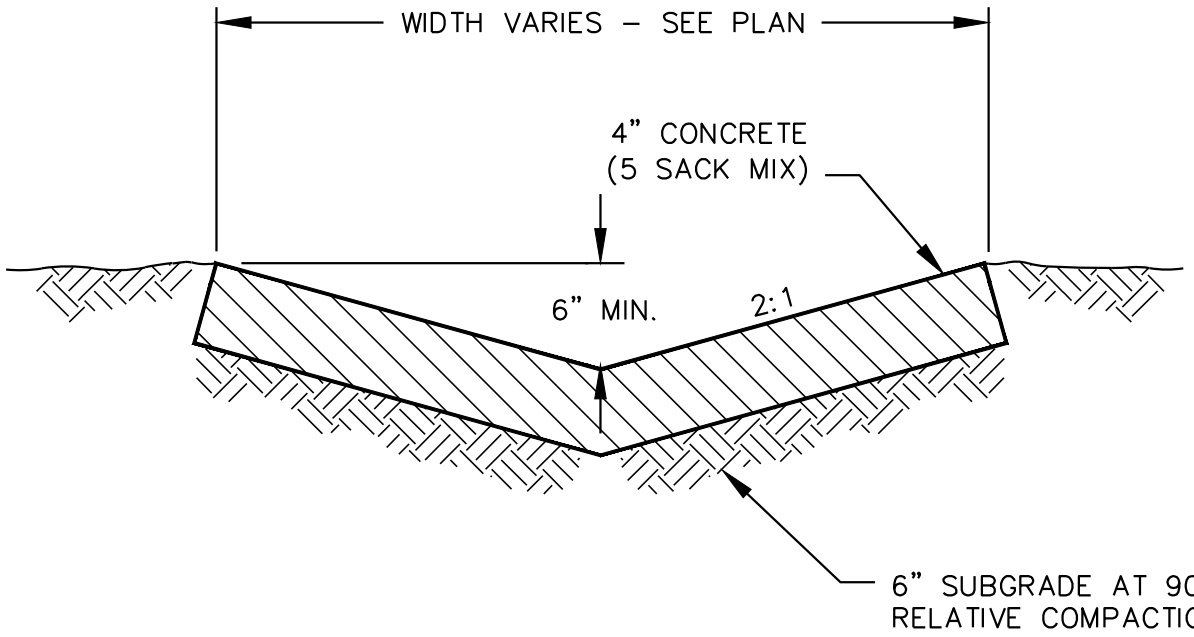

NOTE:

1. EXPANSION JOINTS AT 20 FT O.C.

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CONCRETE SWALE

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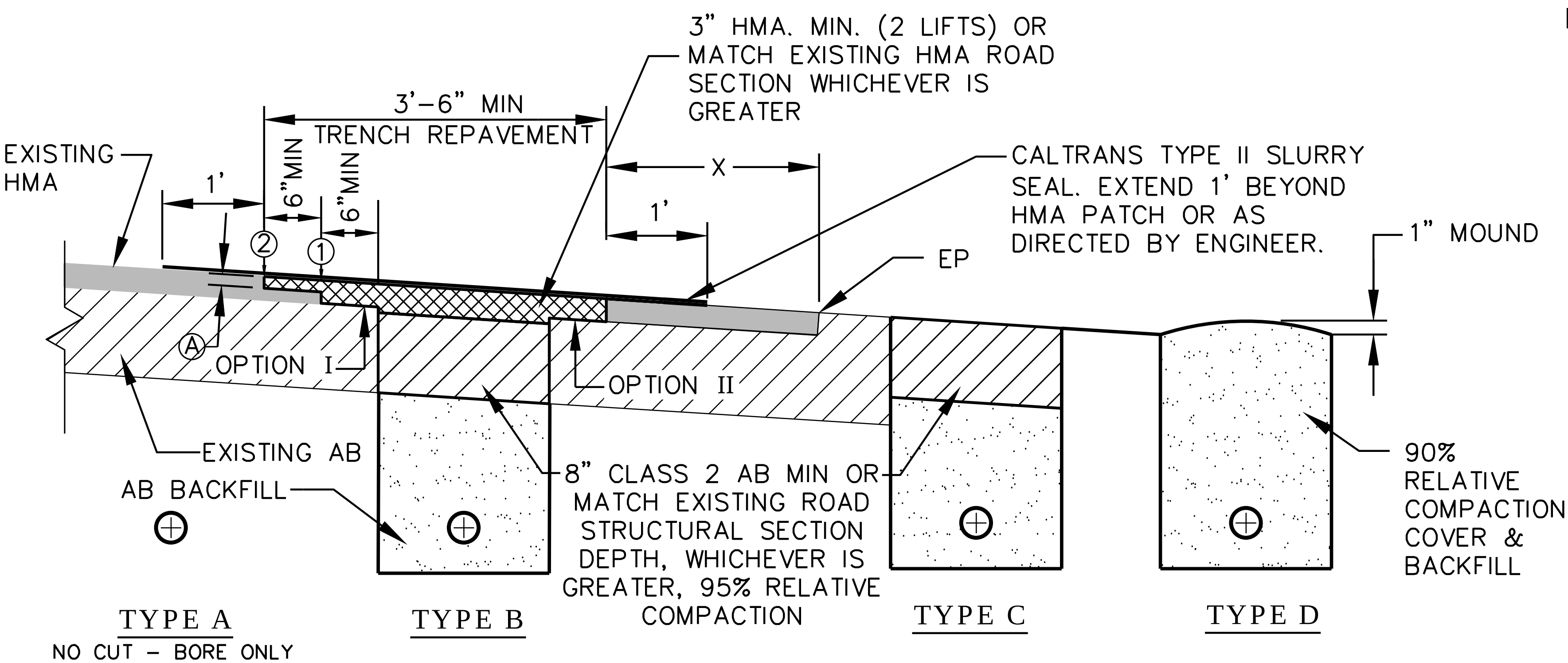

TYPE A: PAVEMENT LESS THAN 5 YRS OLD, SURFACE TREATMENT LESS THAN 3 YRS OLD, AND MAJOR THOROUGH-FARES WITH HIGH QUALITY RIDING SURFACES

1. BORING AND JACKING ONLY-NO PAVEMENT CUTTING UNLESS REQUESTED IN WRITING AND APPROVED IN WRITING BY THE DIRECTOR OF DPW.
2. RESTORATION SHALL BE AS DIRECTED BY THE ENGINEER AND MAY INCLUDE:
   A. COMPLETE ROAD OVERLAY AFTER TRENCHING 0.2 FT. MIN. THICKNESS OR AS SPECIFIED ON THE PERMIT.
   B. COMPLETE ROAD RECONSTRUCTION TO MATCH EXISTING.
3. ANY OTHER RESTORATION MUST BE REQUESTED IN WRITING AND APPROVED IN WRITING BY THE DIRECTOR OF PUBLIC WORKS.

TYPE B: PAVEMENT OLDER THAN 5 YEARS; OR SURFACE TREATMENT OLDER THAN 3 YRS

1. THE ENGINEER SHALL DETERMINE WHICH OPTION (I OR II) APPLIES.
2. IF USING OPTION I: TRENCH RESTORATION TO INCLUDE PLACEMENT OF NEW HMA USING OFFSET JOINT WITH MIN. 6" + 6" LAP EACH SIDE. GRIND DEPTH (A) TO BE 0.2' AT DISCRETION OF COUNTY WHERE EXISTING AC SECTION IS LESS THAN 3". NEW HMA SHALL BE PLACED IN TWO LIFTS. THE FIRST LIFT SHALL BE TO TOP OF OFFSET JOINT AT SAWCUT LINE 1 SECOND LIFT SHALL BE FULL WIDTH OF NEW AC TO GRIND LINE 2 . COUNTY MAY REQUIRE PLACEMENT OF GEOTEXTILE FABRIC BETWEEN TWO AC LIFTS WHERE EXTENSIVE SURFACE CRACKS ARE PRESENT OR IF POOR SOIL CONDITIONS EXIST.
3. IF X<3 FT. FOR ALL TRENCHES REPAVE TO E.P.
4. SLURRY SEAL OR OTHER ASPHALT MATERIAL AS DIRECTED BY THE ENGINEER, MINIMUM OF 2 FT. EITHER SIDE OF TRENCH LIMITS, IF X< 5 FT. SEAL TO E.P. A MINIMUM OF ONE FOOT BEYOND THE SAWCUT/GRIND LIMITS AND/OR LIMITS OF DISTURBANCE.
5. DAMAGE TO THE STRUCTURAL SECTION OR THE PAVEMENT SURFACE RESULTING FROM WORK UNDER THIS PERMIT SHALL BE RESTORED BY THE PERMITTEE TO EQUAL OR BETTER CONDITIONS AS DIRECTED BY THE COUNTY. EXTENSIVE DAMAGE MAY REQUIRE RESTORATION VIA CREATION OF A NEW STRUCTURAL SECTION.
6. IF OPEN GRADE OR OTHER SPECIALIZED HMA/SURFACE TREATMENT IS PRESENT, RESTORATION REQUIREMENTS WILL BE DETERMINED BY ENGINEER.
7. PAVEMENT REPAIR JOINTS SHALL BE LOCATED OUTSIDE OF VEHICLE WHEEL PATH.
8. WHERE GEOTEXTILE FABRIC IS PRESENT, RESTORATION REQUIREMENTS WILL BE DETERMINED BY ENGINEER.
9. SEE PLATES U-05, U-06 AND SD-11 FOR TRENCH, BACKFILL, AND COMPACTION REQUIREMENTS.

TYPE C: UNSURFACED ROAD SHOULDER OR OTHER AREAS SUBJECT TO TRAFFIC LOADS

TYPE D: OUTSIDE ROADWAY PRISM, NOT SUBJECT TO TRAFFIC

LONGITUDINAL TRENCH RESURFACING SECTIONS

2017

SCALE: NOT TO SCALE

U-01

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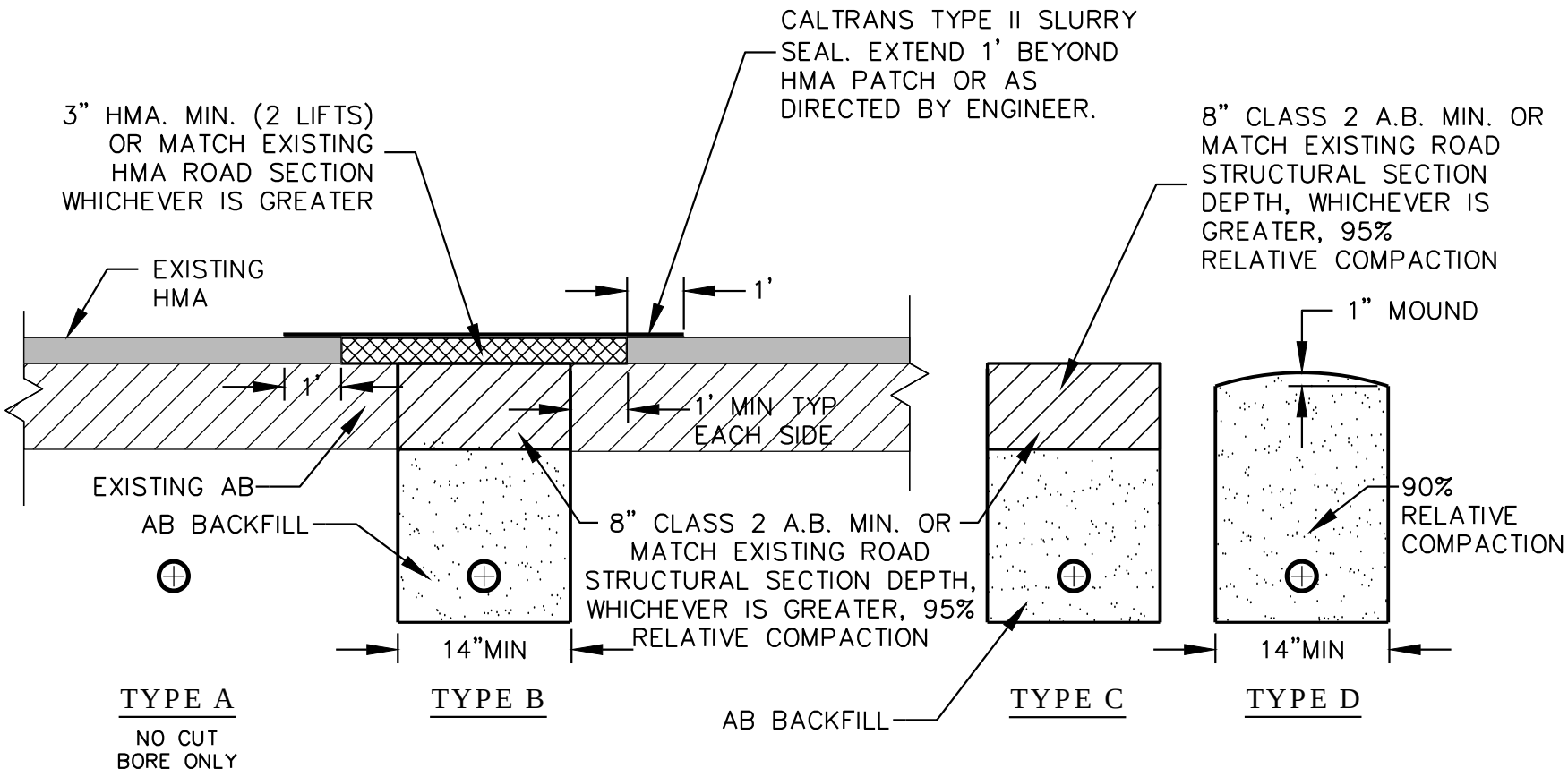
Jul 11, 2017 - 1:33pm



TYPE A: PAVEMENT SURFACES LESS THAN 5 YEARS OLD, SURFACE TREATMENTS LESS THAN 3 YEARS OLD, & MAJOR THOROUGHFARES WITH HIGH QUALITY RIDING SURFACES, BORING OR JACKING ONLY. NO PAVEMENT CUTTING PERMITTED.

TYPE B: PAVEMENT GREATER THAN 5 YEARS OLD

TYPE C: UNSURFACED ROAD SHOULDER OR OTHER AREAS SUBJECT TO TRAFFIC LOADS

TYPE D: OUTSIDE ROADWAY, NOT SUBJECT TO TRAFFIC LOADS

NOTES:
1. SEE PLATES U-05, U-06 AND SD-11 FOR APPLICABLE TRENCH, BACKFILL, AND COMPACTION REQUIREMENTS.
2. WHERE OPEN-GRADE OR OTHER SPECIALIZED HMA/SURFACE TREATMENT IS PRESENT, RESTORATION REQUIREMENTS WILL BE DETERMINED BY ENGINEER.
3. WHERE GEOTEXTILE FABRIC IS PRESENT, RESTORATION REQUIREMENTS WILL BE DETERMINED BY ENGINEER.

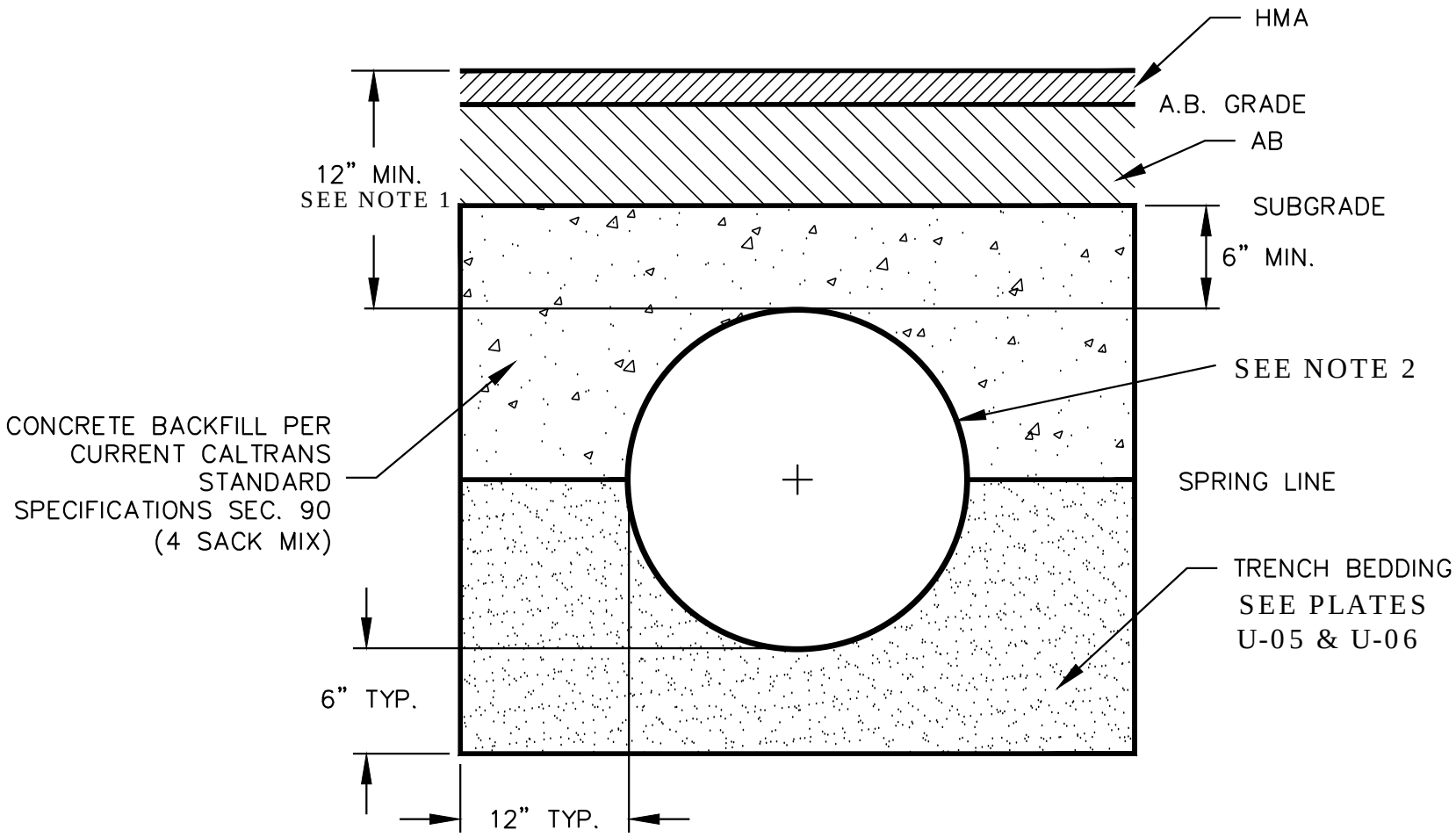
TRANSVERSE TRENCH RESURFACING SECTIONS

SCALE: NOT TO SCALE

U-02

CONCRETE CAP FOR PIPES

HAVING LESS THAN MINIMUM COVER

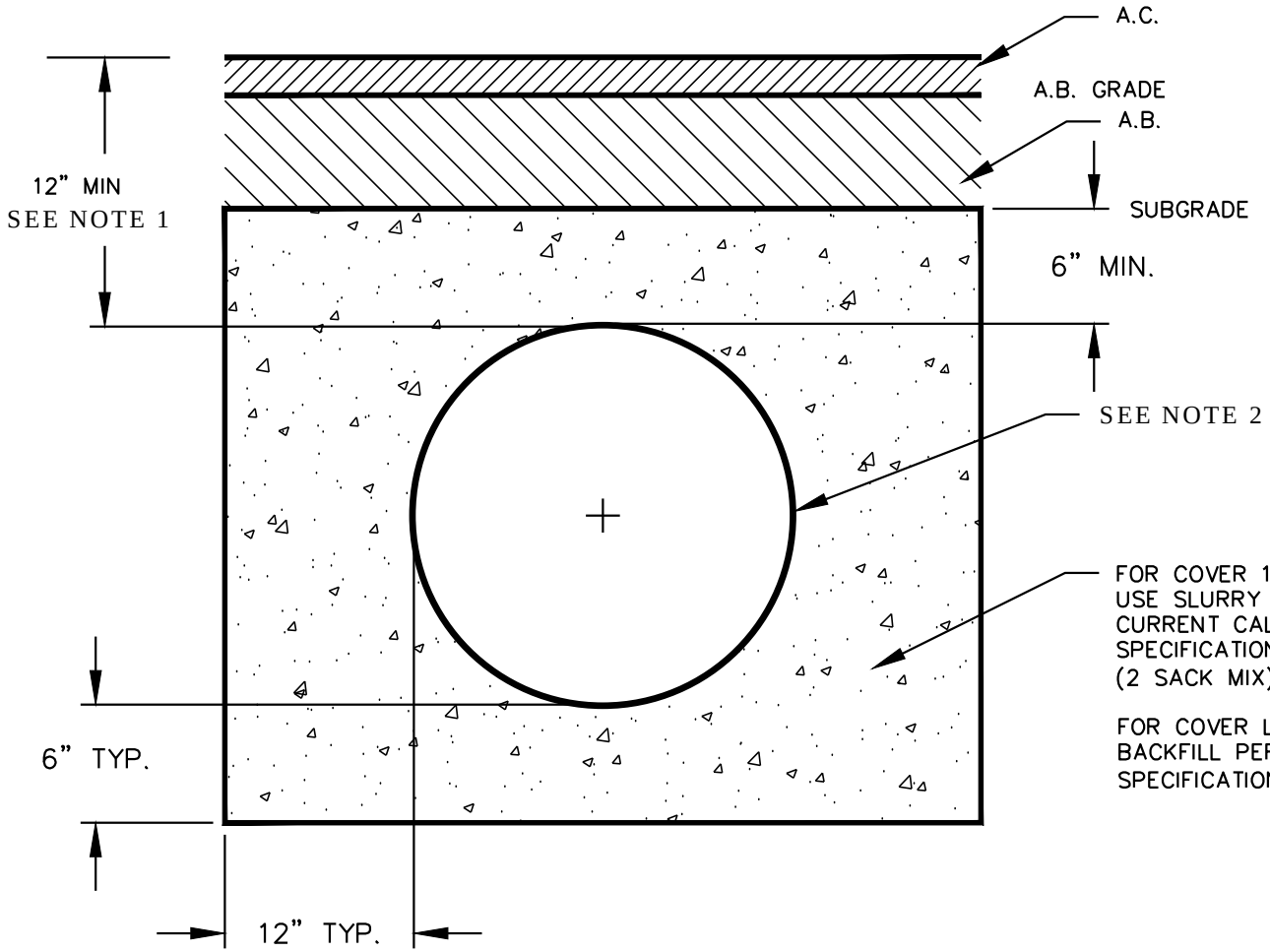


NOTES:

1. PROVIDE MINIMUM COVER TO ACCOMMODATE STRUCTURAL SECTION REQUIRED PER THE COUNTY.
2. IF CONCRETE BONDING TO PIPE IS A CONCERN, WRAP ENTIRE PIPE WITH MINIMUM 10 MIL POLYETHYLENE SHEETING TO PREVENT BONDING.
3. CONCRETE CAP SHALL NOT BE ALLOWED WITHIN 5' OF A FLEX JOINT IN A SEWER PIPELINE.

SCALE: NOT TO SCALE

U-03



FOR COVER 12" OR GREATER, USE SLURRY CEMENT BACKFILL PER CURRENT CALTRANS STANDARD SPECIFICATIONS SEC. 19-3.02D (2 SACK MIX) OR COMPACTABLE CONCRETE.

FOR COVER LESS THAN 12", USE CONCRETE BACKFILL PER CURRENT CALTRANS STANDARD SPECIFICATIONS SEC. 90 (4 SACK MIX).

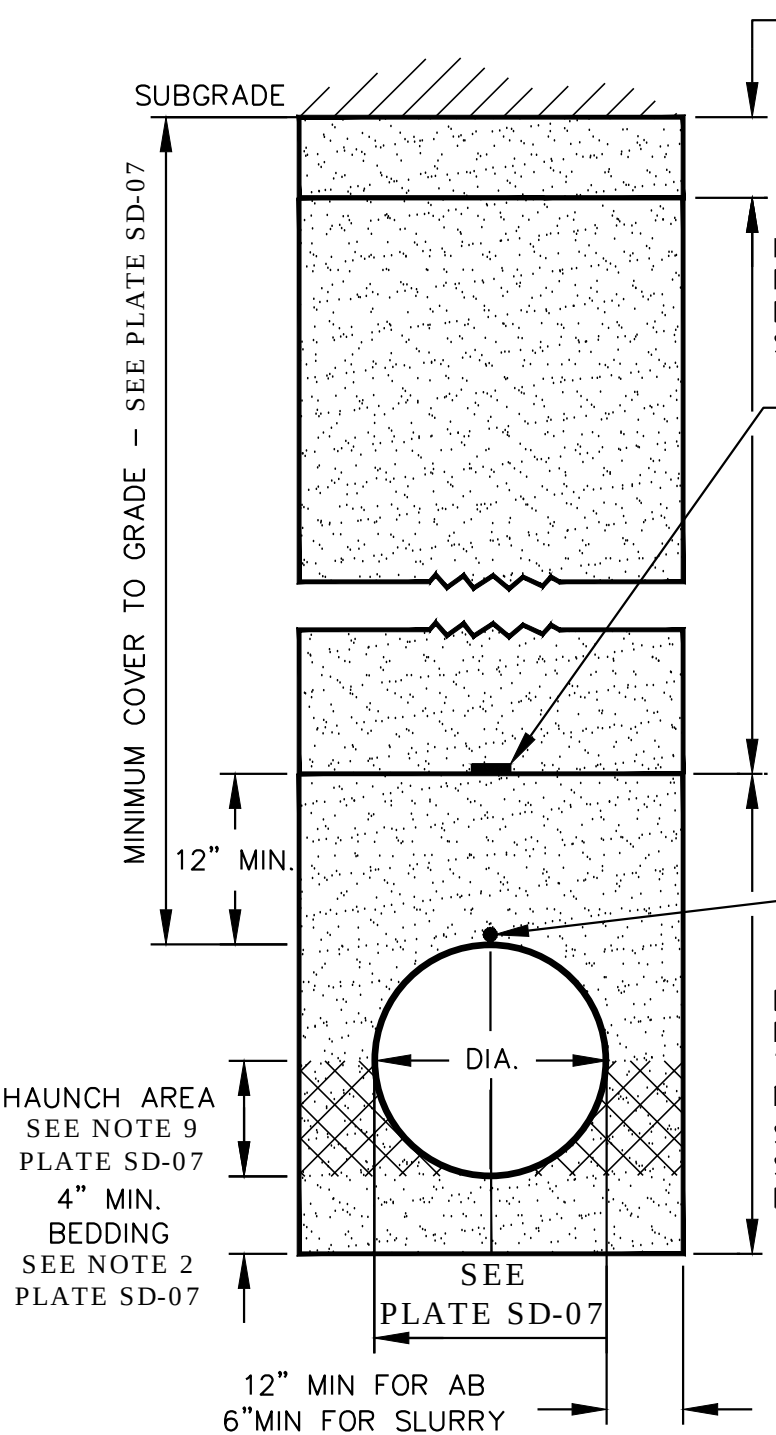
NOTES:

1. PROVIDE MINIMUM COVER SUCH THAT FULL DESIGN A.C. LAYER PROVIDED AND AT LEAST 0.20 FT. OF A.B. TO ALLOW FOR GROUNDWATER FLOW OVER PIPE (i.e. TO PREVENT HYDROSTATIC PRESSURE BUILD-UP UNDER PAVEMENT).
2. IF CONCRETE BONDING TO PIPE IS A CONCERN, WRAP ENTIRE PIPE WITH MINIMUM 10 MIL PLASTIC TO PREVENT BONDING.
3. CONCRETE ENCASEMENT SHALL NOT BE ALLOWED WITHIN 5' OF A FLEX JOINT IN A SEWER PIPELINE.

CONCRETE ENCASEMENT FOR PIPES

SCALE: NOT TO SCALE

U-04



ROAD RESTORATION REQUIREMENTS PER PLATES U-01 & U-02 OR AS SHOWN ON APPROVED PLANS.
SEE PLATE SD-07 FOR NOTES.

INTERMEDIATE BACKFILL SHALL CONSIST OF MATERIAL PLACED FROM 1.0 FOOT ABOVE THE PIPE TO SUBGRADE. ALL INTERMEDIATE BACKFILL SHALL BE FREE OF DEBRIS AND ORGANIC MATTER, AND SHALL BE FREE OF ANY ROCKS OVER 3.0 INCHES IN DIAMETER

LOCATOR TAPE, AS APPROVED BY THE ENGINEER, WILL BE PLACED ABOVE THE PIPE ONCE THE PIPE AND TRENCH BEDDING AND INITIAL BACKFILL HAVE BEEN PLACED. AN AMERICAN PUBLIC WORKS ASSOCIATION (APWA) DETECTABLE LOCATOR TAPE OR "ALARM TAPE" (2 INCHES MINIMUM WIDTH) SHALL BE POSITIONED CONTINUOUSLY AT A MINIMUM OF 1 FOOT ABOVE THE TOP OF ALL TYPES OF GRAVITY AND PRESSURE SEWER PIPE, INCLUDING SERVICE SEWERS. FOR FORCE MAINS OR LOW PRESSURE SEWER PIPE, BOTH A LOCATING WIRE AND THE LOCATOR TAPE ARE REQUIRED. THE LOCATOR WIRE, NO. 10, DIRECT BURIAL, INSULATED COPPER CABLE, SHALL BE TAPED CONTINUOUSLY TO THE TOP OF THE PIPE AND ACCESSIBLE AT ALL MANHOLES AND VALVE BOXES. A CONTINUITY TEST SHALL BE PERFORMED BEFORE PROJECT ACCEPTANCE.

LOCATOR WIRE REQUIRED ON ALL PIPING.
SEE NOTES ON PLATE SS-01.

BEDDING AND INITIAL BACKFILL SHALL CONSIST OF MATERIAL PLACED FROM THE BOTTOM OF THE TRENCH TO 1 FOOT ABOVE THE TOP OF PIPE OR AS REQUIRED BY THE UTILITY OWNER. THIS MATERIAL SHALL HAVE A MINIMUM SAND EQUIVALENT OF 25 AND SHALL PASS THE $\frac{3}{4}$" 15 AGGREGATE GRADING REQUIREMENTS SHOWN BELOW. ALL EXCEPTIONS SHALL BE APPROVED BY THE ENGINEER.

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TRENCH EXCAVATION AND BACKFILL

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U-05

NOTES:

1. UNLESS OTHERWISE APPROVED, MINIMUM COVERAGE FROM TOP OF PIPE TO FINISH GRADE SHALL BE AS FOLLOWS:

SEWER	36 IN.
WATER	30 IN.
CULVERTS	18 IN.
STORM DRAINS	18 IN.
OTHER UTILITIES	30 IN.

2. IN WET OR ROCKY MATERIAL, THE DEPTH OF TRENCH BEDDING SHALL BE INCREASED TO THE LARGER OF EITHER 6 IN. OR 1/4 DIA.

3. FOR CULVERTS/STORM DRAINS, THE MINIMUM DISTANCE BETWEEN THE SIDE OF THE TRENCH AND THE SIDE OF THE PIPE SHALL BE 12 IN.

4. MINIMUM COMPACTION REQUIREMENTS (SEE SECTION XX-XX OF THE CITY GENERAL SPECS).

   A. WITHIN ROADWAY PRISM-

   BEDDING/INITIAL BACKFILL

SUBGRADE	95%
INTERMEDIATE BACKFILL	92%

   B. OUTSIDE ROADWAY PRISM-

BEDDING/INITAL BACKFILL	90%
INTERMEDIATE BACKFILL	90%

5. IN AREAS WITH MINIMUM COVER, INTERMEDIATE BACKFILL SHALL BE CLASS 2 AGGREGATE BASE.

6. IN AREAS OF NATURAL VEGETATION OR LANDSCAPING, REMOVE TOP 12 IN. OF MATERIAL, STOCKPILE & REPLACE IN A MOUND PER PLATE U-01, TYPE D AND PLATE U-02, TYPE D.

7. ALL LANDSCAPING CONDUITS WITHIN THE ROADWAY PRISM AND/OR TRAFFIC AREAS MUST HAVE MINIMUM OF 30 INCHES COVER. MINIMUM COVER WITHIN COUNTY R/W BUT OUTSIDE THE ROADWAY AND TRAFFIC AREAS SHALL BE AS FOLLOWS:

LOW VOLTAGE ELECTRICAL CONDUITS	24 IN. MIN
PRESSURIZED WATERLINES	24 IN. MIN
NONPRESSURIZED (DISCHARGED) LATERALS	12 IN. MIN

8. COMPACTION TESTING WITHIN THE PIPE ZONE (BOTTOM OF TRENCH TO 12 IN. ABOVE CONDUIT(S)) SHALL BE PERFORMED BY TESTING LAB AS APPROVED BY THE COUNTY OR DONE BY THE COUNTY AND REIMBURSED BY THE APPLICABLE DEVELOPER OR UTILITY COMPANY.

9. SHOVEL SLICE BEDDING MATERIAL UNIFORMLY UNDER PIPE IN HAUNCH AREA. SHOVEL SLICING SHALL BE COMPLETED BEFORE THE BEDDING IS BROUGHT UP TO THE PIPE SPRINGLINE AND PREFERABLY WHEN IT IS NO HIGHER THAN THE QUARTER POINT OF THE PIPE.

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TRENCH EXCAVATION AND BACKFILL - NOTES

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U-06

Appendix F

Standard Operating Procedures for SSOs

STANDARD OPERATING PROCEDURE	
FIELD: WW Collection System	**SOP No:** 0-5
TITLE: Emergency Spill and cleanup	**No. of Pages:** 4

1. Scope and Applicability
   1.1. This procedure applies to emergency spill cleanup (e.g., manhole surcharging, lift station overflow).
2. Summary of Method
   2.1. Receive work order. Assess the nature of the spill. Notify the Project Manager. Secure the site and resolve the overflow. Notify the appropriate agencies. Remediate the area. Document the activities.
3. Health and Safety
   3.1. Hazards
      3.1.1. Chemical
      3.1.2. Health
      3.1.3. Electrical
      3.1.4. Trip
      3.1.5. Pinch
      3.1.6. Strain
      3.1.7. Lift
   3.2. Safety Equipment
      3.2.1. Leather Gloves
      3.2.2. Disposable Rubber Gloves
      3.2.3. Steel Toe Work Boots/Shoes (boots recommended)
      3.2.4. Company Supplied Uniform
      3.2.5. Reflective Traffic Vest
      3.2.6. Safety Glasses
   3.3. Review all Pre-Job Hazard Briefs (PJHB) and Standard Operating Procedures (SOP) for the emergency spill cleanup before the cleanup.
4. Personnel Qualifications
   4.1. This procedure must be performed by competent personnel under the supervision of Chief Plant Operator.
   4.2. A minimum of two people are required to operate the vactor. One must be a properly licensed driver for the vactor truck.
5. Equipment and Supplies
   5.1. Basic tool kit
   5.2. Vactor truck with operator

STANDARD OPERATING PROCEDURE	
FIELD: WW Collection System	**SOP No:** 0-5
TITLE: Emergency Spill and cleanup	**No. of Pages:** 4

5.3. Lime

5.4. Cones and barricades

6. Procedure

6.1. The call notifying there is a problem will come to our administration office during working hours and through the answering service during off-hours.

6.2. The first response crew to the scene will assess the overflow severity and notify the Chief Plant Operator or Project Manager of any potential hazards.

6.3. The Chief Plant Operator or Project Manager will obtain the following information regarding the overflow:

6.3.1. Location and time.

6.3.2. Nature of problem.

6.3.3. Determination of actual overflow.

6.3.4. Estimated time the overflow began and ended.

6.3.5. If an overflow has occurred, whether wastewater entered a wash.

6.3.6. Location of the wash.

6.3.7. Proposed remediation procedures.

6.4. The response crew will follow all PJHBs and SOPs for wastewater overflows and make the required calculations as to the amount of the overflow.

6.5. The crew will secure the site and resolve the overflow (e.g., reset the pump in the case of a lift station overflow, clear the blockage with the vactor in the case of a manhole surcharging).

6.6. Place all traffic control and hazard control devices in place (see OSHA regulations). Make any notifications required.

Notification and Reporting

6.7. Within 24 hours the Project Manager will notify the Public Works Manager of the overflow. If the preliminary determination is that the overflow is greater than 1,000 gallons, then the California Regional Water Quality Board will also be contracted within 24 hours.

Mr. Mengil Deane Public Works Manager City of Auburn Public Works Department 1225 Lincoln Way Auburn, CA 95603 (530)-823-4211 ext. 145 email: mdeane@auburn.ca.gov	CA Regional Water Quality Control Board Central Valley (5S) 11020 Sun Center Drive Rancho Cordova, CA 95670 phone: (916) 464-4623 email: jcass@waterboards.ca.gov

STANDARD OPERATING PROCEDURE	
FIELD: WW Collection System	**SOP No:** 0-5
TITLE: Emergency Spill and cleanup	**No. of Pages:** 4

6.8. The Project Manager, or designated representative, will make the final determination as to whether there is a potential health hazard, and if other agencies should be notified. In the event the Project Manager, or designated representative, cannot be quickly reached, the Chief Plant Operator will make this determination.

6.9. The Project Manager, or designated representative, is responsible for complying with the RWQCB and the DPW overflow notification requirements.

6.10. Only the Project Manager, or designated representative, is authorized to contact the Department of Public Works (DPW) and the Regional Water Quality Control Board (RWQCB).

6.11. Written notification to the RWQCB will be via the Monthly Operations Report for spills less than 1,000 gallons. For spills greater than 1,000 gallons the RWQCB will receive a written notice specifically for the overflow. The DPW will be notified in writing of all overflows. In all cases the documentation will include at minimum information on the times, the cause and the amount of the overflow, the method of remediation, and the location.

Remediation Procedures

6.12. When a wastewater overflow has been identified, the following remediation procedures will be followed:

6.12.1. The initial response crew should make an immediate determination as to whether a potential health hazard exists and, if appropriate, secure the affected area.

6.12.2. A determination should be made through field observations that the amount of the calculated overflow agrees with the evidence available in the field. The Chief Plant Operator and response crews must make “Field Observations” and enter these observations on the overflow report form. Should these Field Observations indicate a larger overflow amount may have occurred than the calculated overflow amount, the Chief Plant Operator should use his judgment in determining the amount that is reported and posted. The Chief Plant Operator should discuss his findings with the Project Manager prior to posting and reporting. It is the intent of this instruction to assure that the overflow amount posted and reported is as close as is practical to the overflow amount that actually did occur.

6.12.3. All visible debris that is practical to remove should be removed from the site.

6.12.4. Areas where sludge or liquid have pooled should be pumped back into sewer or vacuumed using the vactor.

6.12.5. The site should be raked and limed to neutralize residual sludge or sewage affects.

6.12.6. The area should be barricaded and signed to prevent unauthorized entry until the site is determined to be safe.

STANDARD OPERATING PROCEDURE	
FIELD: WW Collection System	**SOP No:** 0-5
TITLE: Emergency Spill and cleanup	**No. of Pages:** 4

6.12.7. The Chief Plant Operator should document on the appropriate Service Request (Work Order) the extent of the cleanup completed and note whether repeat visits for additional lime applications are needed.

6.12.8. The Chief Plant Operator should ensure that the Project Manager has notified the DPW, and if required the RWQCB, (during normal duty hours). Telephone notification is required with a backup written report.

6.12.9. The Chief Plant Operator should ensure that the overflow location is entered into the GIS database.

6.12.10. The Chief Plant Operator should identify repeat locations and develop a plan to eliminate further overflows at these repeat locations.

6.12.11. These Remediation Procedures as well as Notification Procedures may be changed as circumstances or RWQCB regulations dictate. Supervisory personnel will notify crew members of changes through regular on-the-job training sessions.

7. Notes

7.1. Hearing protection must be worn by anyone working near the vactor.

7.2. Vacuum the debris associated with the blockage to prevent re-blockage.

7.3. The vactor truck can dump loads of sludge into a drying bed designated by the wastewater Operators.

Reporting SSO – SOP

(Revised 5/29/13)

1. With in 2 hours of confirming there is an SSO and determining the category of the spill, you must call:
    a. **California Emergency Agency** (Calema) formally known as **Office of Emergency** (OES) at 1-800-852-7550. Give an assessment and the determined category of the spill (see categories on page 2). Calema will issue a control number which will be needed for **RWQCB** and applied to all SSO documents.
    b. Victor Vasquez with the **RWQCB** at 916-464-4623. If Victor Vasquez does not answer, leave a message regarding the SSO category along with the **Calema** control number and all details of the SSO.
    c. If the SSO is classified as Category 1 and reached a waterway, make all calls listed above in addition to calling the **Health Department** at (530) 745-2300 and the **Department of Fish & Game** at (916)358-1310.
2. Prepare a memo for the City of Auburn with the category and assessment of the SSO. Email a copy of the letter for review to the Jacobs Compliance and Review Team. After the Jacobs Compliance and Review team approves the memo; attach a copy of the client response form to the letter and deliver to City Hall ASAP. The City of Auburn must respond to the RWQCB with in 5 working days of the SSO.
3. Within 3 days; file a SSO report at the CWIQS website with all the SSO information. Record the CWIQS ID number and certification number to the associated client response number or any work order in the Nexgenam database.

Spill Category

Category 1: 1,000 gallons or more; or if any amount of SSO has reached a storm drain and or waterway (samples must be taken).

Category 2: Less than 1,000 gallons and SSO is contained to land.

Required Lab Test for Category 1

Gather 1 sample and perform test from up stream of the SSO and 1 downstream.

- Total Coliform (fecal outside 6 hr. time)
- PH
- EC
- Ammonia
- CL2
- DO
- NTU

Appendix G

Audit Form

Auditor: _____
Date completed: _____

SSMP Element	Purpose	Performance Indicators	Completed (circle one)	Notes
Goals	Set Priorities for City	Goals are listed in Section 1	Y / N	
Organization	Documentation of Chain of Command	Continually Update chain of command as changes occur	Y / N	
Legal Authority	Ensure Ordinances are Upheld Protecting Integrity of System	City of Auburn Municipal Code	Y / N	
Operations and Maintenance Program	Reduce & Eliminate SSOs through PM, CM and Emergency Response	Total number and volume of SSOs Total amount recovered Total Length of pipe CCTV'ed Total length of pipe hydrocleaned Total length of pipe root sawed	Y / N	

Auditor: _____
Date completed: _____

SSMP Element	Purpose	Performance Indicators	Completed (circle one)	Notes
Design and Construction Standards	Ensures Infrastructure Is Designed, Installed and Tested Properly	Review new technologies and materials for collection systems assets as necessary	Y / N	
Overflow Emergency Response Plan (OERP)	Provide timely and effective response to SSO emergencies and comply with regulatory reporting requirements	Average response time from arrival to SSO stoppage and cleanup Percent of total SSO volume contained or returned to sewer	Y / N	
Fats, Oils, & Grease (FOG) Control	Minimize blockages and overflows due to FOG	Number of SSOs due to FOG	Y / N	
Monitoring, Measurement, & Program Modifications	Evaluate effectiveness of SSMP, keep SSMP up-todate, and identify necessary changes to SSMP Elements	Prepare and update performance results in Elements 4, 6 & 7.	Y / N	
Program Audits	Measures SSMP Effectiveness and Necessary Changes	Date of completion of last audit	Y / N	

Auditor: _____
Date completed: _____

SSMP Element	Purpose	Performance Indicators	Completed (circle one)	Notes
Communication Plan	Communication With the Public and Satellite Agencies on SSMP Performance	Update City website	Y / N	

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