Appendix D-4

Condition Assessment Priorities


LEGEND
Sewer MH
Pump Stations
No Evaluation
Severe
Major
Moderate
Minor
O&M
No Defect
Re-Evaluate
OCSD Trunk Sewers
GGSD Boundary
Parcels
0 335 670 1,340 2,010 Feet
1" = 700'
N
S
E
W
DETAIL A
DETAIL B
BOLSA AV
MCFADDEN AV
EDINGER AV
ORANGE AV
BALL RD
CERRITOS AV
Magnolia Purchase
Anaheim
Knott Interceptor
Hoover Western Sub-Trunk
Miller Holder Trunk
South Anaheim Interceptor
Newhope Placentia Trunk
Bolsa Ave Trunk
Cypress
Stanton
Westminster
Santa Ana
Orange
KATELLA AVE
ORANGEWOOD AV
CHAPMAN AV
GARDEN GROVE BLVD
TRASK AV
WESTMINSTER AV
WESTMINSTER BLVD
HAZARD AV
KNOTT ST
VALLEY VIEW ST
SPRINGDALE ST
WESTERN AV
BEACH BLVD
DALE ST
MAGNOLIA ST
BROOKHURST ST
EUCLID ST
NEWHOPE ST
HARBOR BLVD
FAIRVIEW ST
LEWIS ST
HASTER ST
WEST ST
ANAHEIM-BARBER CITY CHANNEL
BOLSA CHICA CHANNEL
WESTMINSTER CHANNEL
EAST GARDEN GROVE-WINTERSBURG CHANNEL
SANTA ANA RIVER CHANNEL

Garden Grove Sanitary District
Sewer System Management Plan

Appendix D-4

Condition Assessment Priorities

Date: April 2020

Appendix D-5

Equipment Inventory

Vehicles
3 – Combination trucks
1 – CCTV van
1 – Utility truck with crane
2 – Flatbed trucks
2 – Utility trucks
1 – 10-Wheeler dump truck
1 – Backhoe trailer
1 – Backhoe
1 – Heavy duty flatbed truck
1 – Heavy duty dump bed truck
1 – Dump trailer
1 – Towable air compressor
1 – Solar arrow board
1 – Solar message board
1 – Trailer mounted bypass pump

Vehicle Equipment
300 Feet of 6-inch dump hose for combination trucks
1 – 20-Foot leader hoses
1 – Tiger tail hose guide
2 – 5-Foot aluminum double flanged suction tubes
1 – 3-Foot aluminum double flanged suction tube
1 – Flex suction hose for combination trucks
9 – Suction tube clamps
1 – Lateral-cleaning hose and reel
2 – Emergency reflective triangles
2 – Fill hoses
5 – Hydrant wrenches
3 - Wash down guns
1 – Come along winch
25 – 30 Minute Flares
3 – Grease Guns
2 – 12 Foot Clams
1 – 8 Foot Clams

Sewer Maintenance Equipment
1 – SRECO CCTV push camera, monitor, and locator
1 – RIDGID “See Snake” CCTV push camera, monitor, and locator
1 – Envirosight pole camera with tablet
1 – Dell laptop for SCADA use
1 – Panasonic Toughbook laptop
1 – Gas-powered bypass pump
2 – Suction hoses for bypass pump
1 – Honda 2000I gas powered inverter generator
1 – Metal detector
1 – 5 Gallon portable air tank
1 – Roll of neoprene rubber for storm drain mats
1 – Manhole debris scoops
1 – 8-Foot clams
6 – 6-Foot aluminum extension poles for scrapers
1 – EZ Up canopy
Assorted rubber plugs for I/I prevention
1 – Upper manhole roller
1 – Sewer hose swage tool with assorted fittings
6 - Sewer hose traffic ramps
Assorted grit catchers
2– 15-Inch sand traps
4 – J-hook manhole pullers
4 – Chain hook large manhole pullers

Sewer Cleaning Equipment
16 – Standard sanitary nozzles in various shapes
2 – Stone Age Industries Warthog nozzles
1 – Lumberjack nozzle
3 – 3D Cleaning nozzles
1 – Chain knocker
2 – Root cutters
1 – Milling cutter
1 – Bulldog nozzle
3 – Teardrop grease bullet nozzles
2 – Dual radial nozzles
2 – Buzz bomb nozzles
1 – Rotating screw blade spinner nozzle
5 – Sreco Vortex nozzles
2 – Sand and sludge nozzle
2 – Storm aluminum nozzles
1 – Terminator nozzle
1 – Super Blockbuster penetrating nozzle
1 – Dagger nozzle
2 – Nozzles with pulling eye
1 – 4-Inch sewer cleaning ball
1 – 6-Inch porcupine
1 – 8-Inch porcupine
1 – 10-Inch porcupine
1 – 18-Inch proofing tool
Assorted skids in various sizes
Assorted skids, chains, and tools for chain knocker
Assorted skids, blades, and tools for root cutters

Safety Equipment
2 – Traffic safety signs
1 – DBI Sala tripod
2 – Fall prevention winches
2 – Lift winches
8 – Harnesses
2 – Triangle harness spreaders
12 – Hard hats
2 – Fall arrest lanyards
2 – Pass through anchor slings
2 – 15-Minute SCBA
1 – 30-Minute SCBA
3 – 15-Minute air tanks without adapters
2 – Electric blowers
1 – Alegro blower/hose unit
5 – Flexible blower duct hoses
1 – Saddle vent
1 – Manhole barricade
3 – Gas detectors
3 – 20 Foot gas detector extension tubes
1 – 3M respirator
1 – Chainsaw safety helmet
3 – LED rechargeable safety lamps
1 – Air Star lighting system
6 – Stemar Speed Shore hydraulic shoring Jacks
6 – Speed Shore shoring fluid – 8oz. bottles
1 – Speed Shore hydraulic shoring pump
1 – 10 Foot fiberglass step ladder
6 – Folding traffic barricades
20 – Sanitation traffic delineators
Assorted traffic signs

Power Tools

1 – Milwaukee rotary hammer drill
1 – Bosch angle grinder
1 – Ridgid ½-inch drill
1 – Milwaukee cordless sawzall
1 – Chicago Tool Company buffer
1 – Hilti rotary hammer drill
1 – Stihl leaf blower
1 – Milwaukee cordless no-hub coupling drill driver
1 – Mini Weld plastic welder

Construction Crew Equipment and Tools

1 – 60 pound pneumatic jackhammer
1 – 90 pound pneumatic jackhammer
1 – Clay spade pneumatic jackhammer/chipping gun
1 – Backfill tamper (powder-puff)
1 – Wacker soil compactor
2 – Compressor air hoses
1 – 6 to 10 Inch inflatable plug
1 – Tire pumps
1 – Inflation hoses for plugs
2 – 5 Foot extension poles for plugs
1 – Genie Lift heavy duty moving dolly
1 – 48 Inch level
1 – PVC cutters
1 – Ridgid chain pipe cutter
1 – Ridgid offset pipe cutter
1 – Wheelbarrow
1 – Jackhammer attachment for backhoe
1 – Small bucket for backhoe
1 – Transit
2 – Story poles
2 – Tile probes

Flow Monitoring Equipment
3 – Hach Sigma flow meters
8 – Qtrek flowmeters
6 – Telog PT 30 overflow meters
1 – Palm Pilot and cables for communication with Telog meters
1 – Insertion/extraction tool with extension pole
1 – 6-Inch flow meter mounting band
4 – 8-Inch flow meter mounting bands
2 – 10-Inch flow meter mounting bands
2 – 12-Inch flow meter mounting bands
2 – 15-Inch flow meter mounting bands
2 – 18-Inch flow meter mounting bands
2 – Adjustable flow meter mounting bands
Assorted tools, chargers, and adapters for flow monitoring equipment

Sewer Pipe (Stick = 5 Foot Section)
3 Sticks- 4” vitrified clay sewer pipe – bell and spigot
1 Stick – 6” vitrified clay sewer pipe – bell and spigot
10 Sticks – 8” vitrified clay sewer pipe – bell and spigot
Assorted lengths of vitrified clay, ABS, PVC, and ductile iron sewer pipe

Sewer Pipe Fittings
7 – 6” x 4” vitrified clay wye
5 – 4” x 4” vitrified clay wye
6 – 6” x 6” vitrified clay wye
1 – 8” x 4” vitrified clay wye
9 – 8” x 6” vitrified clay wye
3 – 8” x 8” vitrified clay wye
1 – 10” x 4” vitrified clay wye
8 – 4” vitrified clay 1/8 bends
6 – 4” vitrified clay 90
4 – 4” vitrified clay 1/8 bends
2 – 8” vitrified clay 1/8 bends
3 – 4” vitrified clay ¼ bends
3 – 6” vitrified clay 1/4 bends
8 – 4” stopper caps
5 – 8” stopper caps
4 – 6” stopper caps
Assorted ABS fittings

Compression Fittings
2 – 4” saddle wye
8 – 4” clay to 4" clay coupling with metal shield
5 – 4” clay to 4” clay coupling – no shield
3 – 6” clay to 6” clay coupling with metal shield
4 – 6” clay to 6” clay coupling without shield
15 – 8” clay to 8” clay coupling with metal shield
2 – 10” clay to 10” clay coupling with metal shield
1 – 6” plastic/cast iron to 6” clay coupling
2 – 8” plastic/cast iron to 8” clay coupling
3 – 10” plastic/cast iron to 10” clay coupling
9 – 4” cap
3 – 6” cap

Manhole Rings and Covers
92 – 24” x 6” manhole ring and cover
6 – 24” x 4” manhole ring and cover
11 – 6” x 24” storm drain manhole ring and cover
6 – 5” x 24” manhole ring and cover
1 – 36” manhole covers
4 – Cleanout ring and covers
1 – Cleanout covers
1 – 4” concrete grade rings
1 – 6” concrete grade rings
2 – Preformed manhole base, shafting, and cone

Chemicals and Compounds
21 – Golden Bell lift station degreaser – 5 gallon container
19– Golden Bell Tackle degreaser – 5 gallon container
4 – Case of RamNek joint sealant compound
1 – Golden Bell Sewer Clean 350 – 5 gallon container
15 – 1 gallon bottles of Hydroclean Bio Oxidant Solution
36 – 32 oz. Ecoline Gel Bac Plus drain fly repellant
8 – 1 gallon bottle State Chemical Prime Zyme grease pre digester
24 – 32 oz. bottle Ecoline Super Kleen Degreaser

Lift Station Equipment
1 – Spare pump for Tiffany lift station
1 – Spare pump for Belgrave lift station
1 – Spare pump for Partridge lift station
2 – Bypass pump clamps for Tiffany/Belgrave lift stations
1 – Bypass pump clamps for Partridge lift station

Misc. Equipment
1 – KSB single phase pump from Partridge lift station
2 – Submersible trash pumps from Harbor lift station
Pumps, motors, and equipment from renovation of Tiffany and Belgrave lift stations
1 – Ridgid See Snake analog monitor
Pearpoint CCTV equipment from CCTV truck retrofit

Appendix E-1

Design Criteria for Sewer Facilities

GARDEN GROVE SANITARY DISTRICT

Design Criteria
for
Sewer Facilities

GARDEN GROVE SANITARY DISTRICT
Garden Grove, California

2015

13802 NEWHOPE STREET
GARDEN GROVE, CALIFORNIA 92843
(714) 741-5395

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LIST OF STANDARD PLANS

1. STANDARD REQUIREMENTS

The design and construction of all sanitary sewer system facilities to be operated and maintained by the Garden Grove Sanitary District (GGSD or District) shall be in accordance with these Design Criteria, and the latest edition of the following:

- The Garden Grove Sanitary District Standard Plans, latest edition (GGSDSP)
- The City of Garden Grove Public Works Department Standard Plans, latest edition (GGPWSP)
- Standard Specifications for Public Works Construction (Greenbook),
- Garden Grove Sanitary District's Sewer System Management Plan,
- Statewide General Waste Discharge Requirements issued by the State Water Resources Control Board (Order No. 2006-0003)
- Requirements of the jurisdictional agencies where the work shall be performed
- Cal-OSHA requirements

2. CALCULATIONS REQUIRED

Substantiating engineering calculations for design flows; pipe size; pump, motor, generator, wet well size and appurtenant equipment selection; structural design, and bedding/backfill designs shall accompany plan submittals to the District. All calculations shall be sealed and signed by a California registered professional engineer.

Where flow from a new development or redevelopment is added to an existing sewer, and where the new development or redevelopment is in an area of questionable sewer capacity, the existing sewer shall be flow monitored by a qualified company acceptable to GGSD at the owner's cost for a minimum period of two weeks to verify the existing minimum, average, and peak dry weather flows. Two copies of the report shall be submitted to GGSD in the District's required format. The District will determine the adequacy of capacity in all the facilities that will convey the subject flow.

3. SIZE

Gravity Sewers

The minimum size gravity sewer shall be 8-inches in diameter. The Garden Grove Sanitary District may accept 6-inch diameter sewer lines if they must be used to provide adequate velocity. Sewer pipes shall not be constructed in a common trench with another utility. Adequate horizontal and vertical clearance shall be maintained in accordance with the State of California Department of Health Services "Criteria for the Separation of Water Mains and Sanitary Sewers", summarized on GGPWSP B-760, B-761, B-762, and B-763.

Force Mains

The size of sewer force mains shall be determined during the design phase of the project based upon a comparative study of the construction cost and pumping costs for several alternative sizes. In no case shall a force main be less than 4 inches in diameter. The capacity of the force main shall be the design peak flow from the pump station. The minimum design velocity for a force main shall be 3.0 fps, and maximum allowed 5.0 fps.

The discharge shall be into a manhole with a smooth flow transition to a gravity sewer. The force main terminal manhole shall be PVC lined.

All force mains shall have a tape attached to the pipe, identifying it as a sewer pipe.

4. MINIMUM AND MAXIMUM SLOPE

All sewers shall be designed and constructed to provide a mean velocity of not less than two (2) feet per second (fps) when flowing at the estimated average dry weather flow as calculated using Manning's formula with an "n" value of 0.013. Subject to the velocity limitations contained in this subsection, the slope shall be the maximum possible. Drop manholes shall not be used to reduce slopes to the minimum allowed.

The maximum allowable slope shall be the slope which generates a maximum flow velocity of 6 fps at the peak dry weather flow rate in vitrified clay pipe (VCP), and 5 fps in polyvinyl chloride pipe (PVC) as calculated using Manning's equation with an "n" value of 0.013.

The minimum slope on 6-inch sewer shall be 1% where the tributary area consists of less than 20 dwelling units (d.u.) or its flow equivalent.

Sewer pipes shall have a constant slope between the upstream and downstream manhole of each reach. Any reach of sewer containing sags of any amount shall be removed and reconstructed at the design slope at no cost to the Garden Grove Sanitary District. The total cost of inspection, administration, and retesting of improperly installed sewers shall be borne by the contractor. The Garden Grove Sanitary District shall not accept any sewer that does not meet these requirements. There shall be no exception to the proper slope requirement.

5. DESIGN FLOW CRITERIA

The average dry weather flow (Q_{adw}) rates for sewers shall be calculated using the unit flow factors contained in Table 1 and the tributary land uses. Where appropriate, and when required by the Garden Grove Sanitary District, the unit flow factors shall be evaluated by the design engineer based upon the specific land uses and densities proposed for new development or redevelopment.

Table 1
Unit Flow Factors

Land Use Designation	Land Uses	Unit Flow Factor	Units
R-1	Low Density Residential	1,450	GPD/AC
R-2	Medium Density Residential	2,750	GPD/AC
R-3	High Density Residential	3,000	GPD/AC
C-1	Neighborhood Commercial	1,500	GPD/AC
C-2	Community Commercial	1,500	GPD/AC
M-1	Light Industrial	2,000	GPD/AC
O-P	Office/Professional	1,500	GPD/AC
O-S	Open Space	10	GPD/AC
PUD	Planned Unit Development	1,000	GPD/AC
BCSP, CCSP, HCSP	Specific Plans	1,000	GPD/AC

The peak dry weather flow (Q_{pdw}) in cubic feet per second (cfs) shall be determined from Q_{adw} in cfs based upon the following equation:

$$Q_{pdw}=a\ Q_{adw}^{\ b}$$

Coefficients a and b shall be based upon a minimum of two weeks of flow monitoring where the tributary flow from a new development or redevelopment is added to an existing sewer. Where such information is not available, the following equation shall be used to determine the peak dry weather flow:

$$Q_{pdw}=2.0\ Q_{adw}^{\ 0.92}$$

The determination of the peak dry weather flow shall also consider other factors such as pumped flows and large sewer flow generators.

The peak wet weather flow (Q_{pww}) shall be based upon recorded historical information where available and applicable. Otherwise, the peak wet weather flow shall be calculated utilizing the following formula:

$$Q_{pww}=1.4\ Q_{pdw}$$

The peak dry weather flow rate in pipes 15-inches and smaller will be limited by the calculated depth to pipe diameter ratio of d/D = 0.5; and 18-inches and larger d/D = 0.62.

The pipe shall flow at a calculated depth to pipe diameter ratio of no more than 0.80 with the peak wet weather flow.

6. STANDARD LOCATION AND ALIGNMENT

In local residential and industrial streets, sewer pipes shall be located six (6) feet from the centerline of the street in the center of the driving lane. In major, primary, and secondary highways, the sewer pipes shall be located in the center of the driving lane nearest to the center of the street, but will **not** be located in the median strip or parking lanes. Any deviation from the standard location and alignment shall only be done with prior written approval of GGSD.

All-weather access roads capable of accommodating all required construction and maintenance equipment shall be provided for all sewers not located within a paved street.

In curved streets, gravity sewer mains shall be constructed in straight reaches between manholes. In no case shall the outside of the sewer main be closer than four feet to the closest curb face.

A maximum horizontal separation between sewer and domestic water mains shall be achieved by aligning the sewer on the opposite side of the street centerline from the domestic water main.

7. EASEMENTS

Permanent easements, where absolutely necessary, shall be a minimum of 30 feet in width and shall be shown on the plans. Temporary easements for construction only shall be shown on the plans including date of termination.

Where applicable, permanent public utility easements shall be recorded on the tract map, and granted to the Garden Grove Sanitary District. When applicable, separate easement documents for both permanent and temporary easements shall be prepared (on standard title company forms) and presented to the Garden Grove Sanitary District for acceptance and recording.

The District will accept sewers on private streets upon granting of a public utility easement to the District.

The District will not accept any easement for sewers if said easement cannot be accessed with a flush truck through its entire length.

Sewer easement shall be located entirely on one lot. Building set backs shall be minimum 20 feet from easement edges.

8. HORIZONTAL CURVES

Gravity sewer mains shall **not** be designed with horizontal curves.

9. STATIONING PROCEDURE

Centerline stations for sewers shall be shown on the plans. Sewer centerline stations shall be independent of street stationing. All manholes shall be numbered and the numbers noted on the plans (example: MH #1). Sewer stations shall start at 10+00.00 at the downstream point of connection and increase upstream to the last manhole on a sewer line. Intersecting sewer lines will be independently stationed from their downstream point of connection and increase upstream to the last manhole. Each line shall be independently labeled for identification as “Sewer Line A”, “Sewer Line B”, etc.

10. MINIMUM DEPTH

Minimum depth of cover from finish street grade to the top of sewer main pipe shall be seven (7) feet unless otherwise approved by the District Engineer.

Unless dictated otherwise by the elevation of an existing mainline sewer, house connections shall be installed so that there is a minimum of six (6) feet of cover from the top of the curb to the top of the pipe at the curb line. At the time of construction, stakes shall be provided for location and grade of each house connection.

11. SEWER PIPE MATERIAL

All gravity sewers shall be either extra strength VCP or SDR-26 PVC. Imperfections **shall not be allowed** in either type of pipe. Sewer service laterals shall be of the same material as the main line sewer-either extra strength VCP or SDR-26 PVC pipe.

All sewer force mains carrying domestic sewage and operating at pressures of less than 40 psi shall be PVC pipe meeting AWWA C-900 Class 200 pipe standards. All other force mains shall be 40 mil ceramic epoxy lined and properly coated ductile iron pipe.

All gravity sewers in industrially zoned areas or major commercial areas shall be extra strength VCP.

12. MANHOLES

12.1 Manhole Requirements

A manhole will be required at:

A. The upstream end of each line, change in grade or size, change in alignment, or intersection of two (2) or more sewers

B. At a lateral when it is the same size as the main line sewer

C. Along the sewer main at maximum distances of 300 feet for 6-inch sewers, 400 feet for 8-inch and larger sewers.

12.2 Manhole Type and Size

Manholes shall be precast reinforced concrete with eccentric cone in accordance with Garden Grove Sanitary District Standard Drawings S-100 through S-104. The summit manholes shall be precast reinforced concrete with concentric cone. Minimum diameter shall be 48 inches and larger sizes shall be required as shown in the following table:

Manhole Sizes

Sewer Main (inches)	Maximum Branch Size (inches)	Manhole Size (inches)	Frame and Cover (inches)
8-15	10	48	24
18-21	12	60	30
24-36	15	72	36

Extra Depth Requirements

Depth of Cover (feet)	Manhole Size (inches)
6 or less	48
6.5-12	48
12.5-16	60
16.5 and greater	72

All manholes shall be provided with at least all-weather vehicular access.

12.3 Manhole Covers

Manhole covers shall be cast iron in accordance with Garden Grove Sanitary District Standard Drawing S-103. The size shall be determined from the table in Section 12.2. Manhole covers shall have one (1) vent hole and one (1) pick hole.

Temporary covers may be necessary in new streets. In these cases, the manhole shaft shall be left six (6) inches, minimum, below subgrade. A heavy metal plate acceptable to the District Engineer shall be provided to cover the manhole opening. Cleats shall be provided in at least four (4) points for the underside of the temporary cover to prevent the temporary cover from moving. These cleats shall extend a minimum of 3 inches from the cover plate and shall be welded to the plate.

Plywood shall be cut to the shape and size of the manhole base and placed in the base before the temporary cover is placed on the shaft. At the completion of final paving, each manhole shall be raised to final grade by the installation of grade rings, as necessary, and the installation of the permanent frame and cover assembly. Plywood shall be removed from the manhole when the permanent frame and cover assembly is installed.

12.4 Manhole Linings and Coatings

The following manholes will be lined with PVC:

A. If the sewer has a slope of 5% or greater, all the manholes on the sewer

B. Where there is a change in slope, from steep to flat, of 3% or greater, the manhole at the grade change and the next manhole upstream

C. All force main terminal manholes

E. As required by the District Engineer

The approved PVC liners are Ameron T-Lock liner and Koroseal Lok-Rib by B. F. Goodrich. Refer to Orange County Sanitation District Standard Drawing S-065 for PVC liner details.

All other manholes shall be lined with Sancon 100 or approved equal.

Outer surfaces of precast and cast-in-place manholes and structures shall be given two coats of bituminous dampproofing applied at a rate in accordance with manufacturer's instructions. In no case shall the total bituminous coating be less than 16 mil dry film thickness.

12.5 Manhole Warning Signs

The entrance to every new manhole shall be fitted with a plastic warning sign, located 12 inches below the top of the manhole frame, with the inscription "CAUTION – VENTILATE BEFORE ENTERING" in letters no smaller than ½-inch in height. The sign shall be attached to the concrete with four Type 316 stainless steel screws and anchors. Signs shall be manufactured by W.H. Brady Company; Seton Nameplate Corporation, or approved equal.

13. CLEAN-OUTS

Use of clean-outs as shown in the Garden Grove Sanitary District Drawing S-105 shall be limited to the following instances unless approved otherwise by the District Engineer.

A. At the upstream end of short sections of sewer, less than 250 feet which will be extended within three months.

B. All sewer laterals at the property owner's side of the property line.

C. Special instances such as on a sewer lateral to a single family residential lot where the dwelling unit is set back more than 100 feet from the property line, where there is a large slope up to the building pad from the property line and a grade change in the

lateral is necessary, or where the sewer lateral enters the rear of the lot from a public right-of-way.

D. On a lateral where the overflow level of the lowest wastewater fixture in the building is below the rim elevation of the uphill sewer manhole on the main line. In this situation the rim elevation of the clean-out installed at the property line shall be at least 6-inches below the overflow elevation of the lowest wastewater fixture on the lateral. A backflow prevention device is required on the lateral.

14. SEPARATION BETWEEN SEWER AND WATER AND RECYCLED WATER LINES

Horizontal and vertical separation between sewer mains and water and reclaimed water lines will be provided in accordance with the State Water Resources Control Board "Criteria for Separation of Water mains and Sanitary Sewers" and GGSD Standard Drawing No. S-118.

15. HOUSE LATERALS

Sewer laterals shall be constructed to the property line from the main line and there shall be a separate lateral for each individually owned building.

Sewer laterals shall have a minimum 4-inch diameter. Apartment and condominium developments shall have at least one (1) 6-inch, or one (1) 8-inch lateral to serve each building in the development which contains more than one dwelling unit.

Laterals shall have a minimum slope of 2%.

Laterals shall be located at the center of each lot and shall be constructed perpendicular or radial to the property line. If the developer must install a sewer lateral at a location other than in the center of a lot due to unavoidable interference, the improvement plans shall indicate the centerline station of the lateral on the sewer and show the distance from a property corner. In no case shall a sewer lateral be located within 12 feet of a property corner. Refer to Section 13 and Standard Plan S-105 for cleanouts on laterals.

Permanent visible monuments shall be set to indicate the locations of all sewer laterals. A 1½-inch high "S" shall be chiseled in face of curb where the lateral crosses under the curb or on the edge of alleys without curbs. The method used shall be indicated on the plans. A licensed Civil Engineer or Land Surveyor shall verify locations of set monuments.

The sewer laterals from the main to the building, and inside the buildings are governed by the Uniform Plumbing Code and enforced by the City of Garden Grove Building Official.

The sewer house laterals between the main sewer line and the property line are owned by the property owner, and **NOT** by the Garden Grove Sanitary District.

16. PRIVATE SEWER SYSTEMS

All plans submitted for review and approval for commercial/industrial developments and residential developments with private sewer systems shall show the plans, profiles, and details of private onsite sewer systems. The private sewer systems shall be planned,

designed, and constructed to the same standards as the Garden Grove Sanitary District's public sewer system.

Sewer pump stations on private property shall be designed, administered, and inspected by the Garden Grove Sanitary District or its designated representative. The private property owner shall be responsible for all costs associated with such design, administration, and inspection.

Each site shall be reviewed on an individual basis at the time plans are submitted. As a condition of service, the Garden Grove Sanitary District shall require the property owner to enter into an agreement with the District acknowledging that the onsite facilities are private and shall be properly maintained according to industry standards and the State Water Resources Control Board's General Waste Discharge Requirements 2006-0003. The property owner shall further agree to hold the District and the City of Garden Grove harmless from any claims on the design, maintenance and operation of the private onsite systems. The property owner shall prepare an Overflow Emergency Response Plan and a Preventative Maintenance Plan as required by Order No. 2006-0003.

All onsite sewer collection systems for commercial/industrial developments shall be private and shall be owned, operated and maintained by the property owner up to the District's sewer line in a public street. A cleanout or manhole shall be installed at the owner's side of the property line in accordance with District Standard Plans S-105 or S-100 through S-104. Each building onsite shall have an individual sewer lateral with a monitoring manhole. Monitoring manholes shall be installed in accordance with District criteria. All laterals from a building shall be connected to the main lateral upstream of the monitoring manhole for that building. No lateral connections are to be made downstream of the monitoring manhole.

17. SEWER PUMP STATIONS

17.1 General

All sewer pump stations conveying wastewater flows to the Garden Grove Sanitary District's collection system, including those from private systems, shall be designed, administered, and inspected by the Garden Grove Sanitary District, or its authorized representative.

The general criteria outlined herein shall apply to all sewer pump stations. The detailed design criteria for each sewer pump station will be established based upon the specific conditions of each installation on a case-by-case basis and documented in a preliminary design report. Sewer pump stations shall be designed according to the following criteria:

Small sewer pump stations, where the peak wet weather flow can be pumped with a maximum of two duty pumps of 1,500 gpm capacity, shall be the stainless steel slide-rail submersible type with a minimum of two recessed impeller or enclosed screw impeller centrifugal pumps, permanent standby generator/automatic transfer switch, and peak flow storage.

Larger sewer pump stations shall be wet well-dry well type with permanent standby generator/automatic transfer switch, and peak flow storage. The District Engineer may allow slide rail submersible pump stations if project conditions warrant it. Pumps shall be either the recessed impeller, or enclosed screw impeller type, as determined by the District Engineer.

17.2 Standards and Codes

Sewer pump station designs shall be based upon current codes and standards, including but not limited to:

- Statewide General Waste Discharge Requirements covered under Order No. 2006-0003 issued by the State Water Resources Control Board on May 2, 2006
- Hydraulic Institute Standards
- California Administrative Code, Title 8, Article 59-Electrical Safety Orders
- National Electrical Code
- NFPA 820 Fire Protection in Wastewater Treatment Plant and Collection System Facilities
- Uniform Building Code
- Uniform Plumbing Code
- Uniform Mechanical Code
- California Fire Code
- National Electrical Manufacturers Association (NEMA)
- American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE)
- Standard Specifications for Public Works Construction
- Standard Plans for Public Works Construction
- OSHA Construction Safety Orders
- American Water Works Association
- American Society for Testing Materials

17.3 Design Flows and Heads

The pump stations shall be designed with a firm pumping capacity equaling the greater of:

- Tributary peak wet weather flow
- Flow that will provide a minimum velocity of 3 fps in the force main.

The standby pump will have the same capacity as the largest pump in the pump station.

In selecting the number, capacity, and operating characteristics of the pumps, the minimum, average, peak dry weather and peak wet weather flows, as well as wet well size and operating band shall be considered. The selected design shall minimize pump cycling and odors.

The total dynamic head (the sum of static lift, velocity head, and frictional losses in the station piping/ valving and force main) shall be determined for all operating conditions, wet

well and discharge point water surface elevations, and a range of frictional coefficients (Hazen Williams C factor of 80 to 150).

Calculations documenting the determination of flows and head calculations shall be submitted along with pump curves and catalog information for the recommended pumps. Prior to final acceptance, the design engineer shall obtain written verification from the recommended pump manufacturers that the selected pumps shall perform throughout their operating range as designed at the published efficiencies free from cavitation, vibration, and premature failure.

17.4 Drivers

The pumps shall be driven by submersible or vertical dry pit immersible motors. All motors shall be Factory Mutual (FM) or Underwriters Laboratories, Inc. (UL) listed explosion proof type. Motors operated by variable frequency drives shall be inverter duty motors. Nameplate horsepower shall be at least 20 percent greater than the maximum brake horsepower needed within the operating range of the pump.

Variable frequency drives shall be provided with bypass contactors to operate the pumps at full speed.

Small pump stations may be designed with constant speed pumps. Larger pump stations may require the use of variable speed drives. The decision of the District Engineer of the Garden Grove Sanitary District shall be final as to the type of driver to be used.

17.5 Wet Well

The wet well shall be sized to

- Provide adequate submergence
- Provide adequate net positive suction head available (NPSHA)
- Prevent frequent pump cycling
- Provide emergency storage

Submergence provided shall prevent formation of vortices and air being drawn into the pump. It shall also prevent cavitation. The minimum submergence shall be at least one foot greater than that required by the pump manufacturer.

The net positive suction head available shall be calculated as:

$$NPSHA=2.24\ (P_a-P_v)-H_l\pm Z$$

Where

P_a= Atmospheric pressure (psia)

P_v= Vapor Pressure of liquid at the maximum expected temperature (use 0.59 psia)

H_l= Friction and minor losses between the wet well and the pump suction flange in feet of liquid

Z= Difference in elevation between the minimum wet well water level and pump datum, in feet. Use – when the pump datum is higher than the minimum wet well water level.

The minimum NPSHA shall be at least eight feet greater than the net positive suction head required (NPSHR) by the selected pump for the maximum expected flow through the pump.

The wet well shall be sized to provide the storage capacity which will preclude exceeding the following number of pump starts per hour:

Motor Horsepower	Maximum Starts per Hour	Minimum Cycling Time (Minutes)
Up to 20	6	10
25 to 50	4	15
60 to 75	3	20
100 and larger	2	30

Wet well bottom corners shall be sloped at 1:1 and slope to the suction pipe inlet to prevent the accumulation of debris on the wet well floor.

Influent pipe(s) shall not enter the wet well in a position which may cause pre-rotation of the flow into the pump suction, and turbulence in the wet well. The influent velocity into the wet well shall be no greater than three (3) feet per second.

For large pump stations, a partition wall(s) with sluice gates may be required to isolate a portion of the wet well for cleaning.

17.6 Emergency Storage

Emergency storage volume needed shall be evaluated for each pump station based upon the tributary area and expected ultimate wastewater flows. The minimum volume of emergency storage shall be 30 minutes of ultimate peak wet weather flow without surcharging the tributary collection system. The emergency storage volume may be provided in the wet well or in a separate adjacent PVC lined overflow structure.

Where possible, the invert of the overflow structure shall be higher than the low water elevation of the pump station wet well to allow gravity drainage of the stored sewage to the wet well. There shall be a minimum of two connecting pipes between the overflow structure and the wet well. The connecting pipes shall be equipped with flap gates on the wet well side. The floor of the overflow structure shall slope to the connecting pipes.

All overflow structures shall be equipped with an access hatch, and three 30-inch diameter maintenance access holes. A 2-1/2 inch hydrant water connection shall be provided near the overflow structure for use in periodic cleaning. The water supply to the hydrant water connection shall have a reduced pressure backflow preventer.

The higher of the maximum storage level and overflow level shall be set at least one foot (1-ft) lower than the top of the lowest manhole in the system, basement or p-trap of the plumbing fixture connected to the system.

17.7 Dry Well

The dry well shall meet the following criteria:

A. Pumps shall be placed to provide minimum clear space of 3'-6"

B. The lowest level of the pump station dry well shall have a sump pit with duplex explosion proof submersible pumps controlled by float switches. The sump pumps shall discharge to the wet well above the maximum water level.

C. Discharge piping and the force main shall be placed in the dry well along the common wall with the wet well. The flow meter shall be placed inside the dry well sufficiently downstream of the last pump discharge pipe. If there is not sufficient room, the flow meter shall be placed in a below grade vault adjacent to the pump station structure.

D. Catwalks or mezzanine levels shall be provided to access the flow meters, valves, and other portions of the equipment

17.8 Standby Equipment

All pump stations shall have standby equipment capable of handling the ultimate peak wet weather flow during a commercial power outage and/or with the largest unit out of service. This criterion shall apply to all essential electrical and mechanical equipment including pumps/motors, fans, air compressors and sump pumps.

There shall be a minimum of one **standby main sewage pump** equal in size to the largest duty main sewage pump in the station.

All pump stations shall have a **permanent standby generator** and an **automatic transfer switch** sized to start and operate all the sewage pumps needed for ultimate peak wet weather flow, sump pump, ventilation fans, lighting, instrumentation, controls, and telemetry, with voltage dip not to exceed 16% when starting any motor.

Generators shall be skid mounted, permanently anchored to the foundation, and housed in an acoustically insulated enclosure. Exhaust mufflers shall be super critical grade designed for noise level not to exceed the noise level allowed within each particular area.

Load banks sized for 80% of the generator capacity shall be provided. Load banks shall be mounted in the vicinity of the generator and protected with adequate enclosure suitable for the location as required by NEMA Standards.

Portable trailer mounted generators are acceptable only for locations where installation of a permanent skid-mounted generator is not feasible. When a portable trailer mounted generator is furnished, a power receptacle shall be permanently installed for quick connection.

Standby generators shall be furnished with battery chargers and block heaters.

The standby generator shall be a diesel or natural gas powered generator. The diesel fuel powered generators shall be equipped with a sub-base fuel tank sized for a minimum of 12

hours of continuous full load operation. Standby generators shall be units pre-approved by the South Coast Air Quality Management District.

17.9 Pumps

Pumps shall be the enclosed screw-centrifugal or recessed impeller type. Wet well-dry well pumps shall be suitable for operation when the dry well is flooded. Pumping capacity and head shall be considered in the selection of the type of pump for the wet well-dry well pump stations.

RECESSED IMPELLER CENTRIFUGAL PUMPS

Recessed impeller centrifugal pumps are designed to handle stringy materials and up to 25 times the amount of solids of conventional non-clog pumps. Some recessed impellers are labeled by pump manufacturers as torque-flow, bladeless and sphere flow. However, all of these pump models follow the general design of placing the impeller away from the fluid stream in order to pass stringy material without clogging the hydraulic passages.

The recommended minimum design criteria in the selection of recessed impeller centrifugal pumps are as follows:

a. Pump impeller shall be selected with the best possible efficiency at design point or at the operating range of the pump.

b. Maximum Speed

1750 rpm or shall not exceed the limitation as recommended by the Hydraulic Institute Standards for Centrifugal Pump application

c. Materials of Construction

- NiHard (minimum of 550 Brinnell hardness) or stainless steel Type 316 impeller with a removable wear plate of the same material as the impeller
- NiHard (minimum of 550 Brinnell hardness) or cast iron casing, as determined by the District Engineer.
- Stainless steel Type 316 shaft.
- Tandem mechanical shaft seal system for the motor with two totally independent seal assemblies and Tungsten-Carbide seal faces

d. Upper and Lower Bearings

Radial and thrust bearings, grease lubricated with minimum B-10 bearing life of 60,000 hours for the operating range of the pump.

e. Slide Away Coupling

Foot mounted discharge elbow and adaptor, base plate, upper and lower rail supports, lifting yoke, and cable. All metal to metal interfaces where movement may occur shall be non-sparking.

f. Electric Motor

- For wet well installation, motors shall be FM or UL listed, and be designed for Class I, Group D, Division 1 explosion proof.
- NEMA Design B, heavy duty, high efficiency, non-overloading, with a nameplate horsepower at least 20% greater than the maximum horsepower required over the entire operating range.
- Thermal overload protectors imbedded in the motor windings.
- Dual moisture or leak sensors on the sealing chamber.

- Motors shall be immersible capable of operating continuously in air without the use of sewage pumped for cooling if installed in a dry well.
- Motors in damp locations and dry pits shall have two cycles of solid baked epoxy vacuum impregnation.
- Motors shall be inverter duty if operated by variable frequency drives.

g. Painting and Coating

All non-stainless steel wetted surfaces in contact with wastewater shall be coated with coal tar epoxy enamel. Surface preparation shall be in accordance with SSPC-SP5, white metal blast cleaning. Prime coat to DFT=l.5 mils, Amercoat 71, Engard 422 or approved equal. Two or more coats, DFT=16 mils, Amercoat 78HB, Engard 464 or approved equal. Total system DFT=17.5 mils.

All non-stainless steel external surfaces exposed to corrosive environment shall be coated and painted by amine-cured epoxy. Surface preparation shall be in accordance with alkaline cleaned, SSPC-SP1. Prime coat and finish coat shall be three or more, DFT=16 mils. Amercoat 395, Engard 480 or approved equal.

SCREW-CENTRIFUGAL PUMPS

The recommended minimum design criteria in the selection of the screw-centrifugal pumps are as follows:

a. Pump impeller shall be selected with the best possible efficiency at design point or at the operating range of the pump.

b. Maximum Speed

- 1750 rpm for pumps with discharge nozzle diameter up to 12-inch,
- 1175 rpm for pumps with discharge nozzle diameter from 14 to 16-inch,
- Shall not exceed the speed limitation recommended by the Hydraulic Institute Standards for Centrifugal Pumps.

c. Materials of Construction

- Cast iron with Hi Chrome suction liner or 316 Stainless steel where available
- Stainless steel Type 316 impeller and shaft.
- Tandem mechanical shaft seal system for the motor with two totally independent seal assemblies and Tungsten-Carbide seal faces and silicone carbide lower seal
- Minimum B-10 bearing life of 60,000 hours for the operating range of the pump.

d. Electric Motor

- For wet well installation, motors shall be FM or UL listed, and be designed for Class I, Group D, Division 1 explosion proof.
- Thermal overload protectors imbedded in the motor windings.
- Dual moisture or leak sensors on the sealing chamber.
- Motors shall be NEMA Design B, heavy-duty, high efficiency with Class B or F insulation. Motors shall be non-overloading over the entire operating range, with a nameplate horsepower rating a minimum of 20

percent greater than the maximum horsepower required over the operating range.

- Motors located in a damp environment and in a dry pit shall have 2 cycles of solid baked epoxy vacuum impregnation.
- Motors shall be inverter duty if operated by variable frequency drives.
- Motors shall be immersible, capable of operating continuously in air without the use of sewage pumped for cooling if installed in a dry well.

e. Painting and Coating

All non-stainless steel wetted surfaces in contact with wastewater shall be coated with coal tar epoxy enamel. Surface preparation shall be in accordance with SSPC-SP5, white metal blast cleaning. Prime coat to DFT=1.5 mils, Amercoat 71, Engard 422 or approved equal. Two or more coats, DFT=16 rails, Amercoat 78HB, Engard 464 or approved equal. Total system DFT=17.5 mils.

Non-stainless steel external surface exposed to corrosive environment shall be coated and painted by amine cured epoxy. Surface preparation shall be in accordance with alkaline cleaned, SSPC-SP1. Prime coat and finish coat shall be three or more, DFT=16 mils. Amercoat 395, Engard 480 or approved equal.

17.10 Valves and Gates

Pump stations are equipped with various types of valves to prevent backflow, to isolate the equipment from the system, to control hydraulic surges and to drain the piping system during scheduled repair and maintenance. Each valve type differs in construction, materials, and operation depending on the service and application. All valves shall be suitable for wastewater service.

All interior surfaces of valves in contact with wastewater shall be epoxy coated. All valves 10-inch diameter and larger shall be provided with motor operators. Manually operated valves located more than six feet above the operating floor shall be equipped with chain wheel operators, with the chain extended 36 inches above finish floor. Motor operated valves shall be provided with a manual hand wheel and manual push button station conveniently located below the valve, 5 feet above finished floor.

SLUICE GATES

Sluice gates shall be furnished with stainless steel frames and slides with embedded bronze seats, Type 316 stainless steel stem, and adjustable bronze bushed stem guides. Sluice gate manual operator shall have AWWA square nut; manual crank operator with floor stand and 2-speed gear reducer designed for opening time of not to exceed six minutes. Motor operator shall be provided when required by the District Engineer. Motor operated gates shall be designed for opening and closing times of one foot per minute.

Sluice gates shall be specified to be furnished with pattern wall thimbles to match the concrete thickness where the gate is to be installed.

Sluice gates shall be Rodney Hunt or approved equal.

ECCENTRIC PLUG VALVES

Non-lubricated eccentric plug valves shall be used as isolation valves. Valves shall have hard rubber (suitable for sewage service) resilient faced plugs and flanged ends. Valve seats and discs shall be stainless steel, Type 316. Bodies shall be semi-steel with raised seats. Valves shall be of the bolted bonnet design. Valve design shall allow repacking without removing the bonnet, and the packing shall be adjustable. All exposed nuts, bolts, springs, and washers shall be stainless steel, Type 316. Valves shall have permanently lubricated stainless steel bearings in the upper and lower plugstem journals.

Manual valves shall have a 2-inch square nut and lever actuator. Levers shall be field cut as required to be operable in their installed locations.

Eccentric plug valves may be used as pump control valve to alleviate hydraulic surges during normal starting and stopping of the pumps and as surge anticipators when required. These valves shall have hydraulic cylinder type operators with adjustable opening and closing times. Where the valve is used as a surge relief valve, emergency (upon failure of power supply) opening and closing times shall be specified.

Where space permits, all eccentric plug valves shall be installed with the shaft in the horizontal position. The orientation of the plug with respect to the fluid flow direction shall be as recommended by the manufacturer. The valve manufacturer's recommended installation instructions to prevent clogging of the valves during extended shutdown periods shall be strictly followed.

Valves shall have unobstructed port area of not less than 80-percent of total pipe area.

Eccentric plug valves shall be as manufactured by DeZurik Corporation, Keystone, Drum-Owens (Homestead), Milliken, or approved equal.

BALL VALVES

When required by the District Engineer, ball valves shall be used as pump control valves or for surge relief where flow characteristics require the valve trim that would match that of the ball valves.

Small diameter ball valves (3/4 inch to 2-1/2 inch diameter) shall be used as isolation shut off valves for potable or pump station water system.

All ball valves shall be in accordance with ANSI/AWWA C 507, with cast iron, ductile iron, cast steel, or stainless steel bodies, support legs or pads, flange ends, suitable for velocities up to 35 fps, temperatures up to 125 degrees F, and design pressures to 150, or 250 psi depending on the pressure range required by the system. The balls shall be cast iron, ductile iron, cast steel or stainless steel, shaft or trunion-mounted, with tight shut-off, single or double seat, and full bore. The valves shall be rubber, with stainless steel or monel shafts, and at least one thrust bearing. Except for stainless steel, ferrous surfaces of valves in contact with wastewater shall be minimum 16 mil epoxy-coated.

Ball valves shall be as manufactured by Jamesbury Corporation, Wm. Powell Company, or approved equal.

CHECK VALVES

Check valves shall be installed at each pump discharge piping to prevent backflow of wastewater which can cause severe damage to the pump impeller and shaft, and recirculation of flows back to the wet well in stations with multiple pumps. Valves shall comply with the requirements of AWWA C508.

Check valves shall be the outside lever and weight type swing check valves. They shall be installed in the horizontal position to prevent accumulation of solids downstream of the valve which can cause clogging of the valves.

Swing check valves shall have a flanged cover piece to provide access to the disc. The valve body, cover, and disk shall be cast iron conforming to ASTM A 126 Grade B. Disc facing shall be rubber conforming to ASTM D2000 2BG715. Seat ring and clapper arm shall be cast bronze conforming to ASTM B584 Alloy C 84400. Clapper arm shall be clamped to the hinge pin with stainless steel screws and jam nuts.

Ferrous surfaces of valves in contact with wastewater shall be minimum 16 mil epoxy coated.

Swing check valves shall be as manufactured by APCO (Valve and Primer Corp.), Kennedy, Crane Company, or approved equal.

SEWAGE SURGE RELIEF VALVES

The necessity for surge control devices shall be determined through a complete surge analysis of the pumping system. Although surge tanks are the most reliable means to alleviate damaging surges in the force mains, sewage surge relief valves may be required by the system. Where surge relief valves are required, the valve shall be installed in the discharge piping manifold and connected to the wet well. The valve shall be designed to open immediately when the system pressure exceeds the load setting of the counterweights and shall close slowly at an adjustable speed upon return of system pressure to normal.

The surge relief valve body shall be constructed of a heavy cast-iron or cast steel disc having rubber seating face; and corrosion resistant shaft and cushion chamber.

Sewage surge relief valves shall be as manufactured by APCO (Valve and Primer Corporation), Empire Specialty Co., Inc, or approved equal.

SEWAGE AIR RELEASE VALVES

Sewage air release valves shall **not** be used unless **absolutely necessary**. The design engineer shall endeavor to provide a system which rises continuously from the pump station to the discharge point. Where absolutely necessary, sewage air release valves shall be provided to vent accumulating air or gas during pumping operation or entrapped during initial operation. Air release valves shall be installed at high points of the piping systems. Entrapped air or gases can reduce pumping capacity of the pumping system or cause

corrosion of the piping system with gases containing hydrogen sulfide. The air or gas vent located at the pump station plant shall be discharged to the wet well.

The valves shall have long float stems and bodies to minimize clogging. Each valve shall be furnished with backwashing accessories to remove solids accumulated inside the valve. Water supply and connection shall be provided with appropriate reduced pressure backflow preventer near the valve for backwashing.

Sewage air release valves shall be as manufactured by APCO (Valve and Primer Corporation), Val-Matic (Valve Manufacturing Corporation), or approved equal.

REDUCED PRESSURE BACKFLOW PREVENTERS

Backflow preventers shall be installed where utility water or plant water is connected to the potable water supply to prevent contamination of the potable water system. The valves shall be designed to operate on the reduced pressure principle. The valve assembly shall consist of two spring loaded check valves, automatic differential pressure relief valve, drain valves and shut-off valves. The body materials shall be bronze for working pressure of not less than 150 psi, with bronze and stainless steel trim. Drain lines and air gaps shall be provided. All backflow preventers shall be registered with County Health Department and must be approved for use in the Garden Grove Sanitary District.

Backflow prevention valves shall be as manufactured by Cla-Val Company or Febco.

PUMP CONTROL VALVES

The pump control valves shall be installed in the pump discharge pipe to minimize hydraulic surges during normal starting, stopping and emergency stopping of the pump during power failure or emergency stopping caused by system failures.

The pump control valve shall be operated by hydraulic (oil) or pneumatic operator with a reserve accumulator system as back-up energy source to operate the valve during power failure. The pump control system shall be designed to start the pump against a closed valve. Once the pump has developed pressure, the pump control valve shall start to open until it reaches the maximum open position. Stopping sequence shall cause the pump control valve to close. Complete closure of the valve shall signal the pump to stop. Emergency power failure shall cause the pump control valve to close.

The normal opening, closing, and emergency closing times of the pump control valve shall be independently adjustable. Range of adjustment shall be determined based upon the results of surge analysis. Final settings of closing and opening times shall be verified during pump station start-up. Settings shall be included in the Operation and Maintenance Manual.

17.11 Magnetic Flow Meters

Each pump station shall be equipped with metering equipment to measure outlet flow and provide flow signal for recording, totalizing and control of other equipment. In addition, the flow meter shall be used for pump field performance test to measure capacity and efficiency. The meter shall be magnetic type suitable for wastewater service.

Magnetic flow meters shall be provided at the pump station discharge manifold capable of metering the full range of flow with an accuracy of ±1 percent of flow rate from 10 to 100 percent of scale. At a velocity below 1 foot per second, the accuracy shall be ±0.1 percent of the full scale. The meter shall be installed in the piping manifold with minimum straight approach of 4 and 2 diameters upstream and downstream respectively.

The size of the flow meter shall be selected to cover the entire velocity range expected.

The magnetic flow meter shall utilize characterized electromagnetic induction to produce a voltage linearly proportional to the average flow rate. The metering system shall consist of a sensor with field coils, transmitter and interconnecting cables to make a complete operating flow metering system. The meter shall be bipolar pulsed dc type with continuous automatic zeroing.

The sensor shall be flange tube with non-conductive liner. The tube shall be constructed of Type 316 stainless steel with carbon steel flanges AWWA Class D if the coils are external to the tube. The sensor rating shall be NEMA 4, and capable of withstanding accidental submergence in water to a depth of 30 feet for 48 hours. The meter shall include a positive zero feature for periods when the metering portion of the process pipe is not full.

Liner material shall be neoprene, except for liquids which may deposit non-conductive coatings, which shall have Teflon linings. The specific conductivity of the liquid shall not preclude meter operation.

Grounding electrodes shall be of the same material as the sensing electrodes and shall be furnished mounted on each end of all flanges.

Transmitters shall be provided for either local or remote indication as required for each particular project. Remote transmitters shall be NEMA-4X enclosures suitable for wall mounting. Transmitters shall produce a 4-20 ma-dc output signal into a minimum load of 800 ohms linear flow, and a scaled pulse for totalization. All electrical equipment furnished with the magnetic flow meter shall carry a UL label.

Magnetic flow meters shall be Tigermag manufactured by Sparling Instrument Co., Inc. or approved equal.

17.12 Piping and Support System

The pump station piping and supports system consists of the gravity sewer, pump suction and discharge piping, station water or utility water piping, potable water piping, air piping, sanitary drainage piping, fire protection, and sprinkler piping systems. Most of these piping systems are adequately specified by the applicable sections of the Uniform Plumbing Code, Fire Codes and the Standard Specifications for Public Works Construction.

This Section includes special requirements and recommended practices involving the design of piping and the support system.

A. Piping

1. Materials

Ductile iron pipe shall be used in pump station main piping, consisting of suction and discharge piping, discharge manifolds, force mains as specified in Section 11, and water piping 2-1/2 inch and larger. Ductile iron pipe shall be in accordance with SSPWC, and ANSI A21.5l (AWWA C151). All internal surfaces of ductile iron pipe and fittings for water service shall be cement mortar lined and sealed with bituminous coating in conformance with AWWA C104. Internal surfaces of ductile iron pipe for sewer service shall be lined with polyurethane or glass.

Unless otherwise specified, all joints of ductile iron pipe shall be 125-lb flange in conformance with ANSI B16.1, B16.2 and A21.10 (AWWA C110). Sleeve or mechanical grooved type couplings shall be provided at the suction and discharge piping of the pump, and between the magnetic flow meter and the isolation valves to allow removal of the equipment for maintenance.

All bolts shall be of Type 316 stainless steel with bronze nuts or cap screws of copper—copper silicon alloy, conforming to ASTM B 98, Alloy C 65100, designation H04, or alloy C 65500, designation H04. Where anaerobic conditions are anticipated, Type 304 stainless steel shall be used.

Mechanical-type couplings (grooved) shall be used between the valves, pumps, meters and the piping system for the above ground installation. Groove type couplings shall not be used for underground installation. Mechanical-type couplings shall be cast as manufactured by Victaulic, Gustin Bacon or approved equal.

Sleeve-type couplings shall be of fabricated steel with steel bolts and with sizes to fit outside diameter of the ductile iron pipe. The middle ring shall not be less than 1/4-inch in thickness and minimum of 5 to 7-inches long. The follower shall be single piece contoured mill section welded and cold-expanded as required for the middle rings. The coupling shall be equipped with a gasket to make the joint water-tight. The coupling shall be factory epoxy coated suitable for sewer service.

Sleeve couplings shall be installed in the piping systems subject to differential settlement as in the force main that connects the piping inside the pump station building to the yard piping. Two sets of sleeve couplings shall be installed with spacing as recommended by the coupling manufacturer.

Where sleeve couplings are installed in the piping system subject to thrust loads, the coupling shall be provided with restraining bolts. The bolts shall be designed in conformance with AWWA Design Manual M-11.

Sleeve-type couplings shall be as manufactured by Rockwell (Smith-Blair), or Dresser.

2. Suction Pipe

The suction pipe shall meet the following requirements:

a. The suction pipe shall be sized to provide a minimum velocity of 3 feet per second, and a maximum velocity of 6 feet per second throughout the operational range of the pump.

b. The inlet velocity to the eye of the impeller shall meet the pump manufacturer's requirements. The largest suction inlet available shall be selected.

c. The suction pipe shall be flat, or slope up to the pump to eliminate the formation of air pockets. Reducers shall be the eccentric type, with flat top, matching the crown of the suction pipe.

d. There shall be a straight length of pipe of minimum 5 diameters before the suction elbow to provide uniform flow to the pump.

e. The inlet of the suction pipe shall be a long radius elbow with a flared bell. The inlet location shall be in accordance with the hydraulic institute standards. The velocity at the inlet to the suction bell shall be less than 2.5 feet per second.

f. The suction line isolation valve shall be full port eccentric plug valve located close to the wet well wall, allowing sufficient room for removal of the bolts and servicing of the valve.

g. A pressure gauge capable of measuring the entire range of pressures expected at the entrance to the pump shall be provided as close to the pump as possible. The gauge shall be installed on a ½ inch NPT pipe tap with a ball isolation valve and chem seal with snubber.

3. Discharge Pipe

The discharge pipe shall meet the following requirements:

a. Discharge pipes shall be sized for a minimum velocity of 3 feet per second and a maximum velocity of 6 feet per second.

b. The discharge nozzle for dry well installed pumps shall be directed towards the wet well and rotated 45 degrees from the suction line.

c. The discharge pipe shall be connected to the discharge header at an angle of 45 degrees.

d. A pressure gauge shall be installed on the discharge nozzle or as close to the pump as possible. The gauge shall be installed on a ½ inch NPT diameter pipe tap with a ball isolation valve and chem seal with snubber.

e. A 1-1/2 inch diameter pipe with a ball isolation valve shall be installed between the top of the pump casing and the wet well.

B. Pipe Support Systems

All piping systems, including connections to equipment, shall be designed with proper support to prevent undue deflection, vibration, and stresses on piping, equipment, and structures resulting from normal operation and seismic events. All supports and parts thereof shall conform to the requirements of ANSI/ASME B 31.1 except as specified herein.

Ductile iron pipe of any size shall have a minimum of 2 supports per straight length not to exceed 10 feet of unsupported span. One of the supports shall be located at the joint.

Where the piping system is subject to thrust as a result of hydraulic surge or actuation of a surge relief valve, a thrust support or a hydraulic shock suppressor shall be provided.

All pipe supports shall be galvanized after fabrication. Pipe supports shall have a minimum of 1-1/2 inch thick dry pack between the floor and the support base.

17.13 Ancillary Equipment

Each pump station shall be designed to provide the necessary ancillary equipment to support the operation and maintenance of the facility. This equipment is essential to the operation and maintenance of the system. Ancillary equipment or systems that are discussed herein are commonly required equipment or systems in a wet well-dry well pump station.

A. Hoisting Equipment

Most pump stations are located underground to provide adequate submergence for the pumps. Therefore, the substructure and superstructure need to be designed to allow for installation and removal of equipment. The provisions for access hatches, lifting hooks, hoisting systems, roll-up doors and other means to provide ease of maintenance shall be carefully investigated and designed as required.

For wet well-dry well type pump stations equipped with either vertical non-clog dry well pumps or submersible pumps mounted in the dry well, a traveling bridge crane shall be provided. The bridge crane shall be designed to have a travel and span capable of reaching the pumps, meters and valves. Where the valves are located in areas which are inaccessible to the crane, lifting eyes attached to the ceiling shall be provided directly above the valve or equipment. A floor access hatch shall be provided when required.

Bridge cranes shall have a manually or electrically operated hoist, trolley and end trucks, all designed to conform to all applicable codes, and OSHA safety requirements. Where possible, monorail hoists may be used in lieu of the traveling bridge cranes.

Where space permits, a hoisting system shall be designed to allow direct transfer of equipment from the dry well to a flat bed truck. Traffic into the pump station building shall be given special consideration and necessary turning radius shall be provided.

B. HVAC and Odor Control Systems

A typical pump station consists of the wet well, dry well or the pump room, motor room, electrical and control room, and ancillary equipment rooms. Each of these rooms requires different methods and degrees of heating, air conditioning and ventilation to provide the following conditions:

1. A safe and comfortable working environment for personnel;

2. To facilitate proper operation of equipment;

3. To minimize corrosion of equipment and building materials; and

4. To prevent accumulation of explosive and hazardous gases.

The heating, ventilating and air conditioning (HVAC) system and odor control systems shall be designed and controlled as one integrated system. Air distribution, building enclosures, wall penetrations, wind directions, building occupancies, and area classifications shall be carefully investigated. HVAC systems shall be designed in accordance with the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), State of California Energy Conservation Standards Title 24 and the NFPA 820 Fire Protection in Wastewater Treatment Plants.

Equipment conveying corrosives shall be of material that is corrosion resistant, such as fiberglass reinforced plastic (FRP) or stainless steel. If FRP ductwork is used, it shall have flame spread of less than 25, and a smoke propagation of less than 400, and be of fire resistant rating. Air containing flammable and explosive vapors or toxic gases shall not be recirculated.

Air conditioning may be required for pump stations with VFD's.

Depending upon classification, motors for supply and exhaust fans shall be explosion proof, totally enclosed fan cooled (TEFC) units.

C. Wet Well Ventilation

The pump station wet well receives and stores wastewater before it is pumped to the force main. Corrosive and hazardous gases are normally present in the wet well. These gases can become a safety hazard to operating personnel or can cause corrosion of building materials and equipment in the wet well. In order to minimize accumulation of gases inside the wet well, the wet well shall be flushed with fresh air by an adequately sized ventilation system.

Ventilation rates shall be in accordance with:

1. NFPA 820 Fire Protection in Wastewater Treatment Plants

2. Occupational Health and Safety Act (OSHA)

Pump station wet wells are classified into two types depending on their use;

1. Accessible Wet Well.

2. Sealed Wet Well.

ACCESSIBLE WET WELLS

Wet wells which require routine access for maintenance shall be provided with adequate fresh air ventilation in order to provide a safe environment for maintenance personnel, to prevent accumulation of explosive gases, and to minimize corrosion of equipment installed in the wet well. The internal surfaces of the wet well shall be lined with PVC for corrosion protection.

The following minimum ventilation criteria shall be used:

1. All accessible wet wells shall be provided with continuous ventilation of a minimum of 15 air changes per hour.

2. Where intermittent ventilation is required, the ventilation rate shall be at least 30 air changes per hour.

All electrical equipment and fans inside the accessible wet well shall be explosion-proof designed and manufactured for Class I, Division I, Group D. All other design criteria shall be in accordance with NFPA 820 Fire Protection in Wastewater Treatment Plants.

SEALED WET WELLS

Sealed wet wells shall be designed to be low maintenance. The internal surfaces of the wet well shall be lined with PVC for corrosion protection.

Sealed wet wells shall be provided with static vents to accommodate air displacement due to the rise and fall of the water level in the wet well. The vent shall have a minimum diameter of one-half the diameter of the incoming sewer. The vent pipe shall be connected to the nearest sewer maintenance hole where possible. Where the pump station is located away from any sensitive area, vent pipe could be extended above the roof line with a minimum of 15 feet from any window or fresh air inlet.

All electrical equipment inside the sealed wet well shall be classified in accordance with NFPA 820, Fire Protection in Wastewater Treatment and Collection System Facilities.

C. Odor Control

The need for odor control systems shall be evaluated for each project. Such evaluation shall be based on a life cycle cost of 20 years with major consideration of the power and chemical consumption, first cost, maintenance cost, reliability and efficiency of the system.

Wet well odor control shall consist of a water misting system. Activated carbon scrubbers, chemical scrubbers utilizing a chemical absorption process for removal of odors, or chemical or air injection systems may be necessary for odor control in other parts of a pump station.

For the chemical scrubbing systems, foul air from the plant process facility is introduced into the scrubber vessel with an atomized mist chemical solution containing sodium hypochlorite. Oxidation of odorous compounds occurs upon contact with the scrubbing mist, and is removed in the condensate. The scrubber shall be designed to remove a minimum of 99 percent of hydrogen sulfide in the foul stream. Acceptable chemical scrubber manufacturers are Calvert Environmental Co., San Diego, CA, and Quad Environmental Technologies, Corp., Highland Park, IL.

All odor control and ventilation equipment shall be suitable for continuous exposure to saturated hydrogen sulfide gas, sodium hypochlorite mist, sodium hydroxide mist and sulfuric acid. Electrical equipment shall have explosion proof enclosure designed for hazardous condition for Class 1, Division 1, locations.

For air pollution permits, consult South Coast Air Quality Management District.

D. Dry Well Ventilation

The pump station dry well is normally located adjacent to the wet well to house the pumps, valves, meters and other ancillary equipment.

The dry well and equipment rooms shall be designed for a ventilation rate of at least 15 air changes per hour or ventilation rate equivalent to cool internal heat load from the equipment whichever is greater or not greater than 60 air changes per hour. The sensible cooling ventilation rate shall be calculated as follows:

$$H = cfm \times 1.09 \times t$$

where:

H	-	Internal heat gain from equipment, Btu per hour
cfm	-	Air flow, cu ft per minute
t	-	Change in internal temperature, degree F. Use 10 degrees F for change in internal temperature as adequate for sensible cooling.

Where a pump station is equipped with variable frequency drives (VFD), the VFD shall be installed in an air conditioned room with 90 percent efficient outside air filters. VFD units are inherently sensitive to temperature, dust, moisture and other corrosive elements in the air. For constant speed pump stations, the motor control center (MCC) and control rooms shall be equipped with a ventilation fan and 90 percent efficient outside air filters. Pump and equipment room air inlets shall be provided with 30 percent efficient outside air filters. All air filters shall be provided with differential pressure gages to indicate when the filters are clogged, and flow detection devices connected to alarm signaling systems to indicate ventilation system failure.

E. Fire Protection System

Where required by NFPA or by the Fire Department, necessary fire protection systems shall be provided in required areas. For areas housing electrical equipment such as the motor control centers, computer rooms and control rooms, an approved type fire protection systems shall be provided.

F. Gas Detection System

Combustible gas detection equipment shall be provided in the wet well and dry well, and other areas where hazardous gas may be present, to record, activate alarms and/or to operate the ventilation system. The stationary gas detection system shall be capable of measuring concentrations of hydrogen sulfide, methane gas and/or petroleum vapor in the air.

The combustible gas sensor shall be DET-TRONICS Point Watch Infrared Hydrocarbon Gas Detector Model PIR9400 or approved equal. The sensor shall be mounted in the wet well such that it can be removable externally for maintenance and calibration. It shall be connected to the programmable logic controller (PLC). The PLC shall monitor the combustible gas sensor through the 4-20 mA signal which shall be proportional to combustible gas concentrations of zero to 100%. Two (2) PLC adjustable alarms shall be provided. 6% lower explosion level (LEL) shall indicate a warning, and 10% LEL shall indicate an alarm. Alarm beacons shall be installed in the dry well and the electrical room.

An entry control station shall be provided in a NEMA 4X stainless steel enclosure with vandal resistant hardware, and amber and green NEMA 4 vandal resistant pilot lights at or near each entry. They shall indicate a potentially dangerous condition in the pump station based on the loss of the ventilation system, combustible gas, loss of positive pressure in the electrical room, or loss of negative pressure in the dry well. Both lights shall be dark if there is a component or power failure. A lamp test switch shall be provided, which will activate all entry control system lights for ten seconds for testing.

G. Compressed Air System

For pump stations using surge tanks, air operated valves; pneumatic tools for maintenance purposes, and instrument air, a compressed air system shall be provided. The air system for pneumatic tools shall consist of a lubricated type air compressor, receivers, air dryers and necessary piping system. For an instrument air system, a dedicated non-lubricated type air compressor, receiver, dryer and necessary piping system shall be provided. Where the valve operators are designed as pump control valves with the option to have controlled closing during power failure, the air receivers shall be sized to store compressed air capable of stroking the air cylinders three (3) complete cycles between the specified operating pressures during power outages.

H. Hydraulic System

Pump stations equipped with hydraulic operated valves shall be provided with hydraulic systems. The hydraulic system shall be either a package system supplied

with each valve, or one complete package to operate multiple valves. The system shall consist of an oil reservoir, hydraulic pumps, control valves, hydraulic cylinders, limit switches and nitrogen gas-filled accumulators where the valves are required to operate during power outages. The valve opening and closing ranges shall be specified. Final field adjustments shall be made during pump station start-up.

I. Noise Control

The pump station shall be designed to meet the minimum noise level requirement of the Municipal Code of the local jurisdictional agency and the Occupational Safety and Health Administration (CAL/OSHA). All mechanical equipment and enclosures shall be acoustically treated to bring the noise level down to an acceptable limit. These attenuation devices may consist of exhaust mufflers, sound isolators or acoustical panels.

The pump stations shall be designed with noise levels not more than 5 dBA above the ambient noise level as measured at the property line of the nearest recipient (neighbor). A 24 hour noise level reading shall be measured at the pump station site as basis of the design.

In the absence of actual field measurements, the presumed ambient noise level shall be deemed to be the minimum ambient noise level for each zone as follows:

Sound Level "A" Decibels
(In this chart, daytime levels are to be used from 7:00 A.M. to 10:00 P.M. and nighttime levels from 10:00 P.M. to 7:00 A.M.)

Presumed Ambient Noise Level (dBA)

Zone	Day	Night
Residential	50	40
Public Facility, Commercial, Recreational	60	55
Industrial	65	65

At the boundary line between two zones, the presumed ambient noise level of the quieter zone shall be used.

J. Sump Pumps

A sump pit shall be provided in all underground structures such as dry wells, valve and electrical vaults. The sump pit shall be equipped with an adequately sized plus a standby unit, each having a minimum capacity of 50 gpm. Submersible sump pumps shall be used and controlled by a duplex type control, an automatic alternator and a float switch level control. The control system shall be designed to start the standby pump when the lead pump fails to start or when the water level continues to rise while the lead pump is operating. Both pumps are to stop at low water level.

Sump pump discharge pipe, fittings and valves shall be Schedule 80 PVC pipe, with minimum diameter of 2-inches. Each sump pump discharge pipe shall be provided with a swing check valve and isolation gate valve mounted above, both in the vertical

position. A common discharge manifold shall terminate inside the wet well with the wall penetration above the highest surcharge elevation of the wet well.

K. Spare Parts

Pump station electro-mechanical equipment shall be provided with spare parts necessary to ensure continuous operation. The recommended spare parts shall be determined by the project design engineer with assistance from the District Engineer. The following shall be the minimum list of spare parts:

1. One set of pump and motor bearings for each size and model of pump unit.
2. One set of pump seals for each size and model of pump unit.
3. One set of pump and casing wear rings for each size and model of pump unit.
4. One set of pump and motor for each size and model of pumping unit.
5. One dozen fuses for each size of fuse.
6. A printed circuit board for each size and model of the variable frequency drives.

The spare parts shall be delivered to the project site no later than two (2) months prior to pump station start up. Spare parts required during testing and start-up shall be provided by the contractor.

17.14 Electrical Equipment

Electrical systems in the pump station consist of the power supply, power transformers, motor control centers, electric motors, electric variable speed drives, electrical wires and conduits, lighting fixtures, and other associated interface with the instrumentation and control systems.

A. Power Supply

The standard power supply to the pump station shall be 480 volts.

B. Motor Control Centers (MCC)

All motor starters and disconnect switches shall be installed in NEMA 3R Motor Control Centers (MCC). MCC rooms shall be located away from hazardous gas or other corrosive environments. Mechanical ventilation equipment shall be provided to maintain air circulation. All fresh air inlets to the MCC rooms shall be provided with 90 percent efficient inlet filters.

Where environmental problems exist in the pump station location, such as the presence of dust, moisture from sea water, or corrosive gas, the MCC room shall be designed to have adequate ventilation and provided with air cleaning equipment such as de-humidifiers, filters or carbon absorbers.

The MCC circuit breaker handles must be provided with safety interlocks.

C. Electrical Cables and Conduits

All electrical cables and conduits shall be designed in accordance with the NEMA Area Classification as required by the service area. All electrical conduits shall be PVC coated galvanized rigid metallic conduits or Schedule 80 PVC. All conduits shall be sized for 100 year service. Spare conduits may be required. The minimum size conduit shall be 1-inch.

17.15 Instrumentation and Controls

The instrumentation and control system shall be designed to operate the pump station to match the flow characteristics of the service area. The control system shall consist of the wet well level control, flow metering equipment, pressure gages and switches, fire alarms and gas detection instruments.

A. Pump Control System

1. General

The pump control panel (PCP) provides manual or automatic control of the pumps, as well as visual indication of the pump station status and alarm conditions. The following status and alarm indicators are to be provided as a minimum:

Status	Alarms
Power ON Light	Wet Well HIGH LEVEL Alarm Light (from Ultrasonic)
Running Time Meter	Wet Well High High Level Alarm Light
Pump RUN	Pump FAIL Alarm Light
HAND-OFF-AUTO selector switch	Motor winding HIGH TEMP Alarm Light
Lights Test Pushbutton	Seal FAIL Alarm Light (for submersible pumps)
Seal Test Pushbutton (for submersible pumps)	FAIL RESET pushbutton
Flow Rate Indicator	
Wet Well Level Indicator	

Discharge Pressure Indicators

The pump(s) may be controlled either manually, or automatically, depending upon the position of the pump hand-off-auto selector switch. In the MANUAL mode, a pump is started by placing its hand-off-auto selector switch in the HAND position. In this mode, the pump will run continuously unless shut down by the “fail” interlocks.

In the AUTO mode, the pump is started and stopped by the wet well level, as measured by an ultrasonic level sensor. In the “Auto” mode, the pump will run until called to stop by wet well level, unless shut down by the “fail” interlocks.

In the AUTO mode, the pumps will alternate operation automatically after each pump down cycle. If the operating pump should fail, the next pump in the call sequence will start and operate each time the wet well level calls for a pump operation until the failed condition is cleared.

The pump controller shall be a solid state device, which provides operational set points, high level alarm, outputs to start and stop the pumps, and perform pump alternation. The controller shall be a U.S. Filter D153U triplex controller/alternator or approved equal.

A float switch is to be installed in the wet well to provide an emergency high level alarm and a back up pump control system for the station. The emergency high level is to be indicated on the pump control panel and through the dialer. In this condition, the pump will operate for an adjustable time (0-5 minutes after emergency high level initiation), as set by the operator, and then will shut down. If the wet well level again rises to the emergency high level, the cycle will be repeated. The station can run indefinitely in this mode if necessary.

A "pump fail" alarm (for each pump) will be indicated at the pump control panel and transmitted to the automatic dialer system should any of the following conditions occur:

- Pump motor winding high temperature detected by sensors in the motor winding.
- Motor overload detected by the overload relay.

Each of the above "fail" conditions will lock-out the pump from operation. To reset a pump, the operator must visit the station, determine the cause of failure, correct the condition, and depress the "fail reset" pushbutton on the pump control panel.

For submersible pumps, a motor seal failure will also be detected and alarmed but will not stop pump operation.

2. Constant Speed Pump Control System

The operating sequence is applicable for multiple pump units installed in a smaller wet well. The pump station will start in sequence, pumps start and stop in the reverse order.

This sequence is recommended for the following reasons:

a. To maintain uniform flow into the receiving system

b. To provide smaller wet well storage volume and less number of motor starts per hour;

c. To reduce sewer gas emission to the atmosphere by maintaining a constant water level in the wet well.

3. Variable Speed Drives.

Variable speed (matched-flow) pumps shall be used for the following conditions;

a. Where more uniform discharge to the receiving system is required;

b. Where there is not enough space in the pump station to accommodate installation of multiple smaller unit constant speed pumps;

c. Where the wet well volume is limited to satisfy maximum starts per hour;

d. Where sewer gas emissions to the atmosphere should be limited;

The variable speed drive pumps shall be controlled as follows:

a. When the wet well level reaches the first set level, the lead pump will start and ramp to a minimum preset speed. As the flow increases, the pump speed will increase in proportion to the increase in flow in order to maintain the level in the wet well until the pump has reached its maximum speed.

b. When the inflow to the wet well exceeds the maximum capacity of the lead pump, the control system will then start the lag pump. The lag pump will increase its speed while the lead pump will decrease its speed up to the point where the two pumps share the flow, both at the same speed. As the inflow increases, the two pumps will increase their speeds in proportion to the inflow until the pumps have reached the maximum pump design flow, in the case of two pump combination.

c. A drop in wet well level equivalent to a decrease in pump station inflow will signal the pumps to slow down until a preset speed is reached. Then the lag pump will stop, and the lead pump will increase its speed in proportion to the inflow.

d. Further drop in wet well level will signal the lead pump to slow down until the minimum level is reached, at which level, the lead pump will stop.

e. In the event that either the lead pump or the lag pump fails, the wet well level will rise and the standby pump will be started at the same time the failure alarm is activated. The standby pump will be provided with a variable speed drive.

For pump stations equipped with more than two variable speed pumps, the same operating sequence will be followed.

Under no conditions will a force main velocity of less than 3 feet per second shall be allowed.

The variable speed drives shall be provided with bypass contactors to operate the pump at full speed when the VFD is not available.

4. Float Level Switch

The float level switches shall be used to detect the low-low level cut-off and the high-high water level alarm, and as an auxiliary system in the event of failure of the ultrasonic level control systems. When the water level in the wet well reaches the high-high level, the control system (US Filter CBIT B300 single stage controller or approved equal) shall initiate a timed pump down using all pumps. The pump station shall be capable of operating indefinitely in this mode. The float switch shall be direct acting with a single pole mercury switch which activates when the longitudinal axis of the float is horizontal and de-actuates when the liquid level falls 1-inch below the actuation level. The switch shall be encapsulated in a chemical resistant polypropylene casing with a firmly bonded electrical cable protruding. The entire assembly shall be watertight and impact resistant designed and manufactured for Class 1 Division 1, Hazardous Conditions. Float switches shall be Roto-Float as manufactured by Anchor Scientific or approved equal.

Submersible dewatering sump pumps located in dry wells and valve structures shall be controlled by float switches. Float switches shall be designed and manufactured suitable for the area classification of the sump pit.

5. Ultrasonic Level Control

The pump station's primary level controller shall be the ultrasonic level sensor. The transducers shall be hermetically sealed, self cleaning with built-in temperature compensation 6^{o} beam angle, suitable for installation in a sewage pump station wet well.

Ultrasonic measuring systems shall be the Hydroranger with XPS-15 transducer as manufactured by Milltronics, or approved equal.

17.16 Supervisory Control and Data Acquisition (SCADA) System

To monitor and control the operation of the pump station remotely at a central station, SCADA system equipment shall be provided. The system shall consist of the Remote Telemetry Unit (RTU) located in the pump station connected to a computer at a designated central station. The signal to the central station shall be transmitted over spread spectrum radio.

The pump operation is initiated by a motor starter mounted in the Motor Control Center (MCC). The starter is controlled by a signal from the level sensor or push buttons or by local control automation, such as the remote telemetry unit.

The Central Computer System displays information such as graphics and tables; gathers historical data such as trends of pumping cycles, measurement of flows and pressures, equipment running time, number of pump starts per hour; and can remotely control the operation of the pump stations.

17.17 Pressure Gauges

In a wet well-dry well type pump station, pressure gauges shall be installed at the suction and discharge sides of each pump to measure the pump total dynamic head. The pressure gauges shall be at least 4-1/2 inches in diameter. Where seal flushing water is required, a pressure gauge and low pressure switch shall be provided to activate an alarm in case of loss of flushing water. A low flow alarm switch may be used in lieu of the pressure switch.

A pressure switch shall be provided between the pump and the check valve or pump control valve to activate an alarm in the event of failure of the valve to open or accidental closure of any isolation valve located at the pump discharge piping. A micro-switch attached to the valve shaft may be provided in lieu of the pressure switch.

All, pressure gauges and switches installed in a piping system carrying solids bearing fluids such as wastewater, sump pump discharge or chemical lines shall be provided with diaphragm seals and snubbers where pulsating flow is expected. The assembly shall be provided with an isolation ball valve for maintenance. Diaphragm seal material shall be compatible with the pressure and fluid being handled.

In a submersible pump station, a pressure gauge/switch shall be installed in the discharge pipe of each pump in the valve vault upstream of the check valve. The discharge pressures shall be indicated in the pump control panel.

17.18 Pump Station Facility

The pump station facility includes the pump station structure, buildings, electrical substation or transformer, access roads and other appurtenant equipment inside the property. The facility design shall incorporate access road and security. The architectural treatment shall blend with the surrounding area.

A. Building Design and Materials of Construction

The pump station usually consists of an underground concrete structure to house the wet well and the dry well. Where the pump station requires an above ground structure to house the electrical room, generator room, office area and maintenance shop, the above ground building shall be designed in accordance with the requirements of the Uniform Building Code and California Fire Code. In general, all buildings shall be cast-in-place concrete or masonry block wall construction.

Wet Well and Dry Well. The wet well and dry well shall be reinforced cast-in-place concrete with wall thickness to withstand the earth and seismic loads, and shall be heavy enough to resist floatation without earth skin friction resisting the outside surfaces when the wet well is empty.

The size and configuration of the wet well shall be designed in accordance with Section 17.5. The bottom of the wet well shall be sloped to at least 15 degrees and corners grouted to prevent accumulation of solids during operation.

The dry well shall be designed to provide the following:

1. Minimum of 42-inch clear working clearance between pumps and piping;
2. Access doors, stairways and landing;
3. Access opening for equipment installation, maintenance and removal;
4. Hoisting equipment or lifting hooks;
5. Adequate ventilation
6 Fire protection equipment where required.

17.19 Force Mains

The minimum diameter for a force main shall be 4 inches. The capacity of the force main shall be the design peak flow from the pump station. The minimum design velocity for a force main shall be 3.0 fps, and maximum allowed 5.0 fps for PVC and 6.0 fps for DIP.

Force mains shall continuously rise from the pump station to the terminal manhole to eliminate the need for air and vacuum release valves.

For new pump stations with phased development of the tributary area, dual force mains may be required. The District Engineer shall select the number of force mains that will be installed at each pump station.

17.20 Access Roads

Pump stations shall be designed with access roads for construction, operation and maintenance of the equipment. The roads shall have turning radii suitable for the size of vehicle, or heavy hoisting equipment necessary for installation, removal or delivery of equipment or supplies into the station. Pavement sections shall be able to support the load of the heaviest anticipated equipment to be used in the station. Where monorail hoists or traveling cranes are required, adequate headroom clearance shall be provided or loading docks can be used to limit the height of the building.

17.21 Flood Control

The pump stations shall be designed with pad elevation one foot above the expected value100-year flood elevation or the elevations indicated on the Flood Insurance Rate Maps in areas where detailed studies have been conducted, whichever is higher. Where available and current, information contained in the Orange County Public Facilities and Resources Department documents can be used to determine the expected value 100-year flood elevation.

All hydrologic and hydraulic calculations and design shall be in accordance with the standards of the jurisdictional flood control agency standards.

17.22 Grading and Area Drainage

The site drainage shall be designed to prevent standing water or the erosive effects of storm runoff. Pavement areas shall have a positive drain of up to 3%. Flow lines shall have a minimum of 1% slope. Underground structures shall not be constructed in partially cut and partially fill. Where this condition exists, the site shall be over-excavated and re-stabilized. The pump station shall be designed not to float where high groundwater exists.

17.23 Soils Report

A geotechnical investigation shall be conducted to determine the underground soils conditions. The Soils report shall show the foundation design criteria, corrosiveness of soils and ground water, groundwater elevations if it exists, and possible hazardous materials underground. Cleaning of such materials shall be addressed in the construction contract, or can be awarded to a separate hazardous materials contractor as determined by the District Engineer.

17.24 Surveying

The control bench marks shall be referenced from the County of Orange records. Where existing survey and reference plans are available, field check existing data with the current datum and adjust all elevations to current datum where required.. The location of the pump station shall be tied to a nearby street and to an existing property line. Basis of survey bearings and control shall be given if the local coordinate are established.

17.25 Security

The pump station site shall be provided with an 8 foot high chain link fence or masonry block wall fence, as directed by the District Engineer. The fence or wall shall be designed in accordance with applicable American Public Works Association Standards. The entrance gate shall be secured with a padlock. Where the pump station has a superstructure housing the motor control center and the generator, the building shall be equipped with intrusion alarms. Where there is no superstructure, the NEMA 3R enclosure housing the motor control center shall be equipped with an intrusion alarm. The alarms shall be connected to a horn mounted in the building, a red beacon light mounted outside the building or above the NEMA 3R enclosure, and remoted via telemetry to the main control system.

17.26 Water Supply System

The pump station water supply system shall be provided for pump seal water system, irrigation system, rest rooms and housekeeping hose downs. A backflow preventer shall be installed in the pipeline connecting the hose bibs, seal water and irrigation system. Seal water systems shall utilize air gap tanks, and not be directly connected to the water supply system. All piping shall be designed in conformance with the Uniform Plumbing Code.

17.27 Landscaping and Irrigation System

Plants selected shall be drought resistant and approved by the District Engineer. Irrigation system equipment shall utilize water saving kits that are controlled by automatic timers.

17.28 Construction

The pump station shall be constructed in conformance with the specifications and drawings. The pump station construction shall be administered and inspected by the Garden Grove Sanitary District, or its designated representative.

A. Shop Drawing Submittal and Shop Drawing Review

The Technical Specifications shall specify the requirements for shop drawing submittal and review process.

Once the project is awarded, shop drawing submittals shall be reviewed and accepted. The shop drawing review is one way to check compliance with the specifications. It also serves as a mechanism to get from the contractor the equipment as specified. Where a substitution to specified equipment is proposed to the construction project Design Engineer for review, the design project engineer shall be consulted.

B. Equipment Installation and Testing

The equipment installation and testing shall be specified in each equipment specification. Normally, the equipment shall be specified to be installed by the Contractor under the supervision of a certified factory representative. After installation, the Contractor shall conduct trial operation of the equipment, and make the necessary adjustments as required. When the equipment becomes operational, the Contractor shall test the equipment in the presence of the District's representative. The test shall include a performance test, simulating the manual and automatic operation, and checking of other components in compliance with the specifications. The test shall also include verification of all alarm functions. A continuous test using the actual process material shall be conducted without any breakdown prior to final acceptance.

C. Operation and Maintenance Manuals

The Operation and Maintenance Manual shall be prepared by the construction contractor based upon the plans and specifications, and assistance from equipment manufacturers, to clearly describe how the pump station shall operate under normal and emergency conditions, and how it should be maintained.

Final payment shall not be made to the Contractor until the Operation and Maintenance Manual is approved by the District Engineer.

D. Operator Training

Each pump station has unique operational requirements and some have equipment that requires familiarization by the station operators. The Contractor shall provide

training, through respective authorized equipment representatives, to the station operators as specified in the Contract Documents.

18. INSPECTION AND TESTING OF GRAVITY SEWERS

18.01 CCTV Inspection

The Contractor shall perform Closed Circuit Television inspection (CCTV) of all gravity sewers to determine alignment, grade and damaged or defective pipe in place; after the pipe has been installed, backfilled and compacted to grade, tested for leakage, manholes raised to grade, but prior to final resurfacing, from manhole to manhole. CCTV inspection shall be recorded on DVD, and recording procedures shall conform to the requirements of Standard Specifications for Public Works Construction Section 500-1.1.5, Television Inspection, except that the maximum speed shall be 15 feet per minute. The recording shall continuously display the following on-screen data: contract number, project name, date, time, distance (in feet) from the insertion manhole, and manhole identification codes.

Two copies of the recording shall be submitted to the District for approval within two days of the CCTV inspection. CCTV recording shall be performed first with the pipe dry, and then immediately following clean water flowing in the pipe to clearly indicate vertical misalignments, sags or other defects. Should CCTV inspection indicate any faulty installation of the pipe, repairs or replacement shall be made at the Contractor's expense by a method approved by the District. Repaired and or replaced pipe and/or segments shall be retested and reinspected through CCTV at no additional cost to the District, until final acceptance is granted. Any sag greater than 0.25 inch in 100 feet of pipe reach shall be considered excessive, and the pipe shall be removed and reinstalled to proper grade.

18.02 Gravity Pipe Leakage Tests

All gravity sewer pipes and service laterals shall be tested for exfiltration and/or infiltration and deflection. All leakage tests shall be in conformance with Standard Specifications for Public Works Construction (SSPWC), "GREENBOOK" Section 306-1.4.1. Water exfiltration test shall be in conformance with SSPWC Section 306-1-4.2. Air pressure test shall be in conformance with SSPWC 306-1.4.4. All testing shall be performed in the presence of the District Inspector.

18.03 Manhole Leakage Tests

1. Leakage tests shall be made and observed by the District Inspector on each manhole. The test shall be the exfiltration test made as described below:

2. After the manhole has been assembled in place, all lifting holes and those exterior joints within 6 feet of the ground surface shall be filled and pointed with an approved non-shrinking mortar and the lining joints completed. The test shall be made prior to placing the shelf and invert. If the groundwater table has been allowed to rise above the bottom of the manhole, it shall be lowered for the duration of the test. All pipes and other openings into the manhole shall be suitably plugged and the plugs braced to prevent blow out.

3. The manhole shall then be filled with water to the top of the cone section. If the excavation has not been backfilled and observation indicates no visible leakage, that is, no water visibly moving down the surface of the manhole, the manhole may be considered to be satisfactorily water-tight. If the test, as described above is unsatisfactory as determined by the District Inspector, or if the manhole excavation has been backfilled, the test shall be continued. A period of time may be permitted if the Contractor so wishes, to allow for absorption. At the end of this period, the manhole shall be refilled at the top of the cone, if necessary and the measuring time of at least 8 hours begun. At the end of the test period, the manhole shall be refilled to the top of the cone, measuring the volume of water added. This amount shall be extrapolated to a 24-hour rate and the leakage determined on the basis of depth. The leakage for each manhole shall not exceed 1 gallon per vertical foot for a 24-hour period. If the manhole fails this requirement, but the leakage does not exceed 3 gallons per vertical foot per day, repairs by approved methods may be made as directed by the District to bring the leakage within the allowable rate of 1 gallon per foot per day. Leakage due to a defective section or joint or exceeding the 3 gallon per vertical foot per day shall be the cause for the rejection of the manhole. It shall be the Contractor's responsibility to uncover the manhole as necessary and to disassemble, reconstruct or replace it as directed by the District Engineer. The manhole shall then be retested and, if satisfactory, interior joints shall be filled and pointed.

4. No adjustment in the leakage allowance will be made for unknown causes such as leaking plugs, absorptions, etc., i.e., it will be assumed that all loss of water during the test is a result of leaks through the joints or through the concrete. Furthermore, the Contractor shall take all steps necessary to assure the District Inspector that the water table is below the bottom of the manhole throughout the test.

5. If the groundwater table is above the highest joint in the manhole, and if there is no leakage into the manhole as determined by the Engineer, such a test can be used to evaluate the water-tightness of the manhole. However, if the District Engineer is not satisfied, the Contractor shall lower the water table and carry out the test as described herein before.

18.04 Pipe Slope

All gravity sewer pipe shall be laid to the line and grade shown on the plans and per Section 306.1.2 of "GREENBOOK," with a maximum allowable tolerance of 0.125 inch at the invert. The Contractor shall continuously check the grade of the pipe being installed through the use of laser line.

19. STANDARD SEWER NOTES

The following notes must appear on the plans under Standard Sewer Notes.

A. The sewer Contractor shall have a copy of the Project Plans and Specifications, as well as the Garden Grove Sanitary District Design Criteria for Sewer Facilities on the job site.

B. The Contractor shall obtain a City and/or County permit for work done on public right-of-way.

C. The Garden Grove Sanitary District Office shall be called for inspection five (5) working days before start of work at (714) 741-5566.

D. A pre-construction conference shall be held 48 hours before starting construction work.

E. The Contractor shall expose all join points to the existing sewer system for verification of location and elevation before construction.

F. Stations shown as 1+00.00 are sewer stations and are independent of all other stations.

G. All laterals shall be staked by a surveyor before trenching and a complete set of cut sheets shall be supplied to the Contractor and the District Inspector.

H. The District will inspect and test the sewer collection system and lateral sewers to the property clean-out. Privately owned sewer laterals from the property line clean-out will be inspected and tested by an approved contractor subject to the City of Garden Grove Building Department approval.

J. All sewer lines shall be balled in the presence of the District Inspector before completion of all leakage tests.

K. Pipeline leakage tests shall be made in the presence of the District Inspector, only after backfill has been completed, compaction tests on backfill have been made, and the backfill has been accepted by the District Inspector.

L. All sewer main lines shall be inspected using a closed circuit television system. Two recordings shall be made of the inspection on a DVD disk in accordance with the Garden Grove Sanitary District Specifications for Video Inspection of Sewer Lines. One recording shall inspect the system constructed with no flow, and one shall conduct the inspection 15 minutes after flowing water in the sewer.

M. The Contractor shall provide the Garden Grove Sanitary District with an as-built set of job prints with tie-down measurements for all laterals and manholes.

N. Before final acceptance, the developer's engineer signing the plans shall furnish the Garden Grove Sanitary District with a set of as-built mylars of the sewer plan.

O. Curbs, or pavement surfaces in alleys where sewer laterals exist shall be inscribed with an "S" indicating locations of all sewer laterals.

P. Curbs shall be inscribed with ties for all manhole locations.

Add the following notes to plans having <u>on-site</u> work which will be dedicated to the District:

Q. Trench backfill, on all sewer lines to be dedicated to the District, shall be compacted to a minimum of 90% relative density as determined by the five-layer test method (California 216G). Tests will be required every 300-feet of trench or as determined

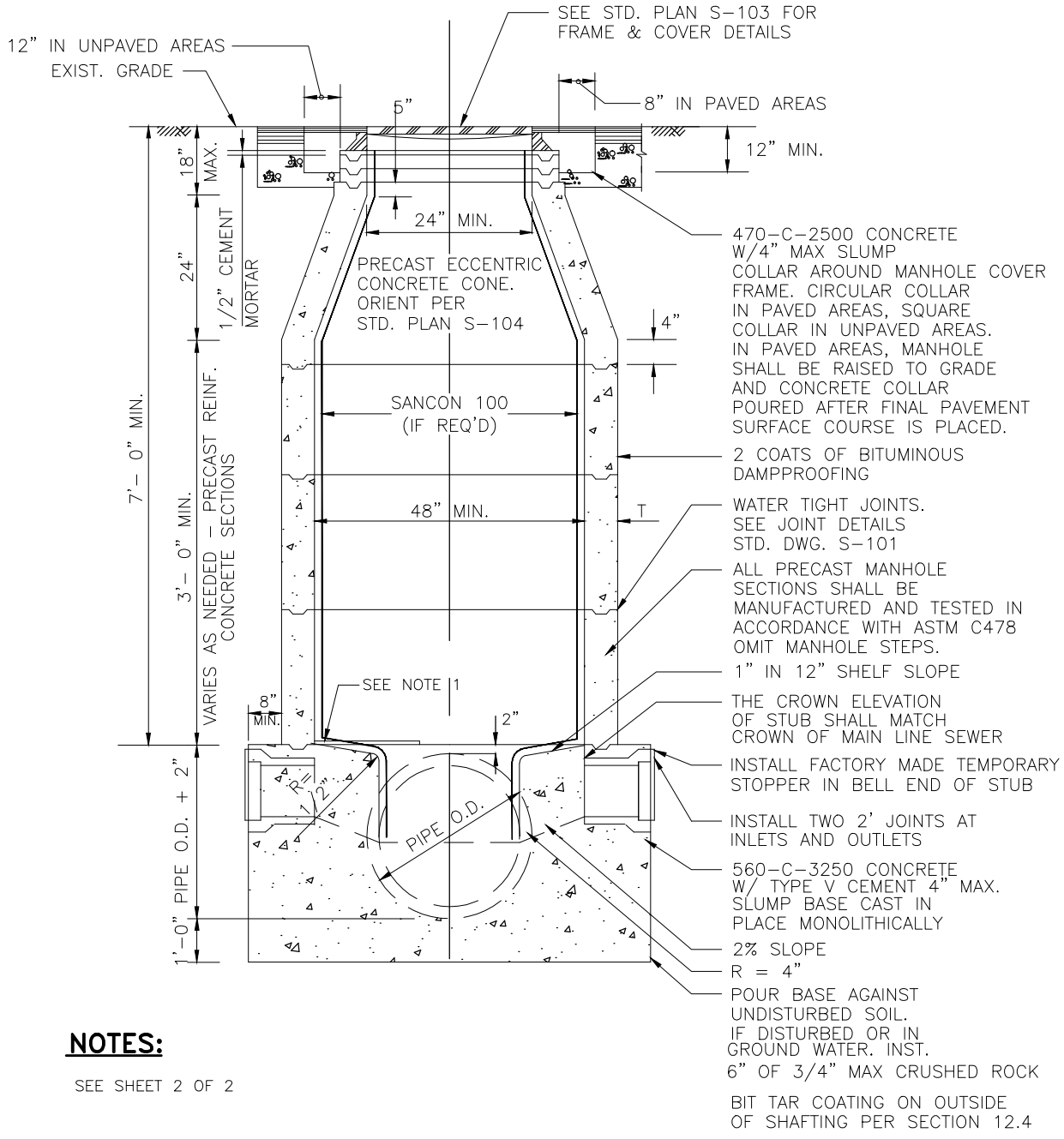
by the District Inspector. The developer shall submit written results of compaction testing to the District before acceptance. If in dedicated street or future street, compaction will be as required by governmental agency having jurisdiction, but no less than 90 percent relative compaction.

Appendix E-2

Standard Drawings

CITY OF GARDEN GROVE
PUBLIC WORKS STANDARD PLANS

SERIES S-100 SEWER



NOTES:

SEE SHEET 2 OF 2

Garden Grove Sanitary District

MANHOLE DETAILS

Approved _____ Date 12-8-15

City Engineer R.C.E. 52125 Exp.12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

S-100

SHEET 1 OF 2

MANHOLE DETAILS NOTES:

1. PLACE TWO HALF MOON SHAPED TEMPORARY PLYWOOD COVERS (5/8" THICK MINIMUM) IN BOTTOM OF MANHOLE AFTER SHAFTS HAVE BEEN SET TO KEEP DEBRIS FROM ENTERING SEWER.
2. FOR DROP MANHOLE SEE STD. PLAN. S-103.
3. FOR MANHOLES LOCATED OUTSIDE PAVED AREAS, THE FRAME AND COVER SHALL BE SET A MINIMUM OF 0.1 FT. ABOVE FINISH GRADE IN SHOULDER AREAS, UNPAVED ROADS OR LANDSCAPING AREAS, AND 18" IN UNFINISHED AREAS.
4. ALL INLETS AND OUTLETS SHALL BE SUPPORTED WITH CONCRETE SUPPORTS PRIOR TO POURING MANHOLE BASE.
5. MANHOLE LOCATIONS SHALL BE MARKED ON CURB FACE.
6. WALL THICKNESS (T) SHALL BE MINIMUM 5" FOR 48" MANHOLES, 6" FOR 60" MANHOLES, 7" FOR 72" MANHOLES.
7. SIDES OF BASE SHALL BE EITHER FORMED OR POURED AGAINST VERTICAL SMOOTH EARTH.
8. WHEN DEPTH OF MANHOLE EXCEEDS 15 FEET FROM TOP OF PIPE TO FINISH GRADE, MANHOLE SHAFT SHALL BE INCREASED TO 60 INCH DIAMETER.
9. A PLASTIC SIGN SHALL BE ATTACHED 12 INCHES BELOW THE TOP OF MANHOLE FRAME WITH INSCRIPTION:

   CAUTION
   PERMIT REQUIRED CONFINED SPACE
   VENTILATE BEFORE ENTERING

   IN LETTERS NO SMALLER THAN ½ INCH IN HEIGHT. ATTACH SIGN TO MANHOLE WALL WITH A MINIMUM OF 4 TYPE 316 STAINLESS STEEL SCREWS AND ANCHORS.
10. DIAMETER OF MANHOLE PER SIZE OF SEWER LINE.

SEWER MAIN (INCHES)	MAXIMUM BRANCH SIZE (INCHES)	MANHOLE SIZE (INCHES)	FRAME AND COVER (INCHES)
8-15	10	48	24
18-21	12	60	30
24-36	15	72	36

Garden Grove Sanitary District

MANHOLE DETAILS

Approved _____ Date 12-8-15

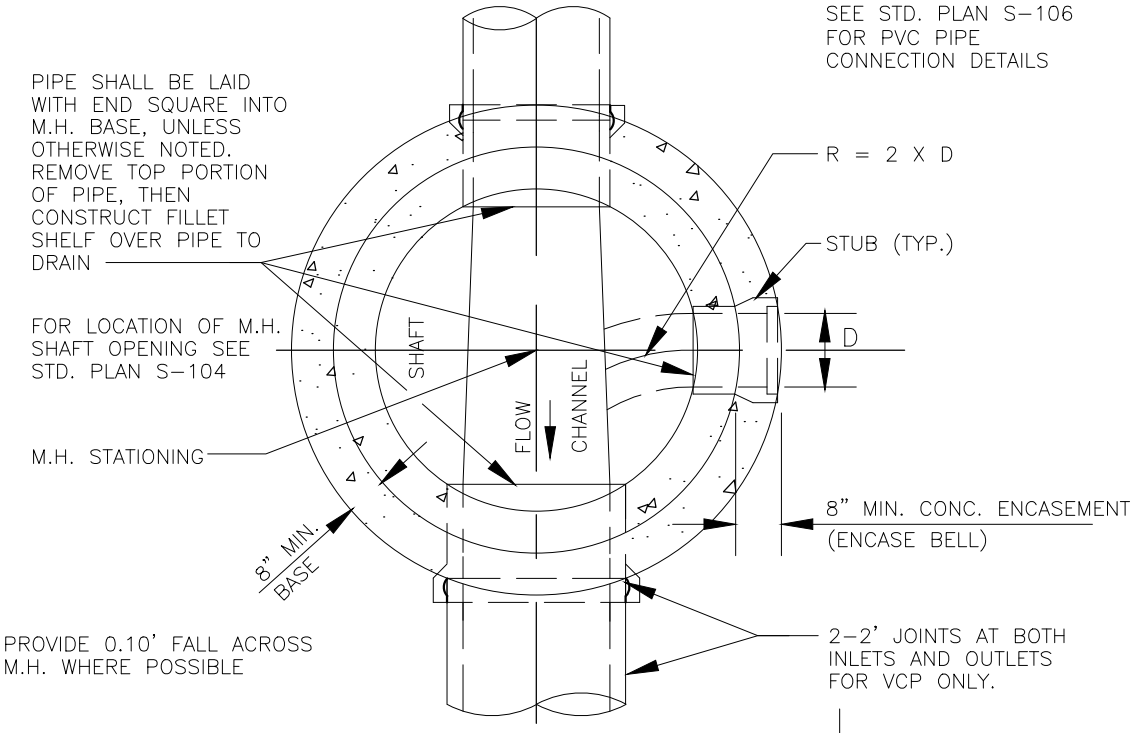
City Engineer R.C.E. 52125 Exp.12-31-16

REVISIONS	BY	DATE

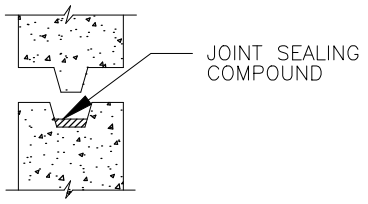
STD. PLAN NUMBER

S-100

SHEET 2 OF 2

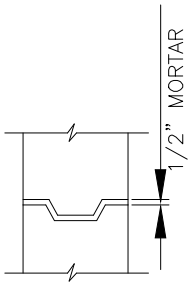


PLAN



PLASTIC JOINT

REQ. IN GROUNDWATER



MORTAR JOINT

NOTES:

1. MORTAR JOINTS – SUFFICIENT MORTAR SHALL BE APPLIED ACROSS ENTIRE FACE OF JOINT SO THAT WHEN PRECAST UNITS ARE PLACED ON TOP OF ONE ANOTHER, THE MORTAR WILL SQUEEZE OUT BOTH THE INSIDE AND OUTSIDE WALL FACES. JOINTS SHALL BE "POINTED UP" AFTER SETTING PRECAST UNITS EXCLUDING GRADE RINGS.
2. PLASTIC JOINTS – PERFORMED COLD-APPLIED READY-TO-USE PLASTIC JOINT SEALING COMPOUND SHALL BE QUICK-SEAL AS SUPPLIED BY QUIKSET UTILITY VAULTS OR APPROVED EQUAL MUST BE USED WHEN GROUND WATER IS ENCOUNTERED.

Garden Grove Sanitary District

CONCRETE BASE AND JOINT DETAILS

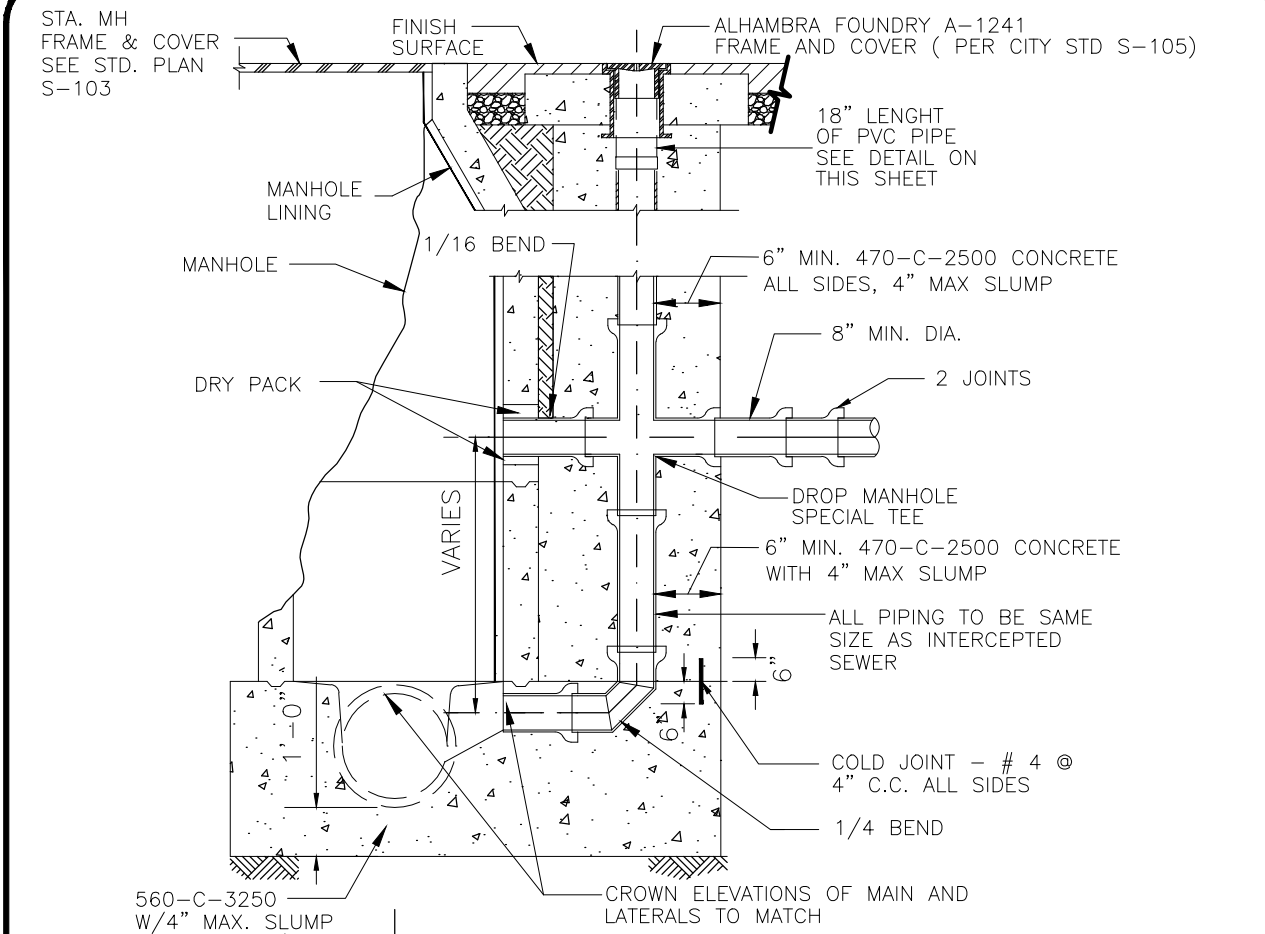
Approved _____ Date 12-8-15

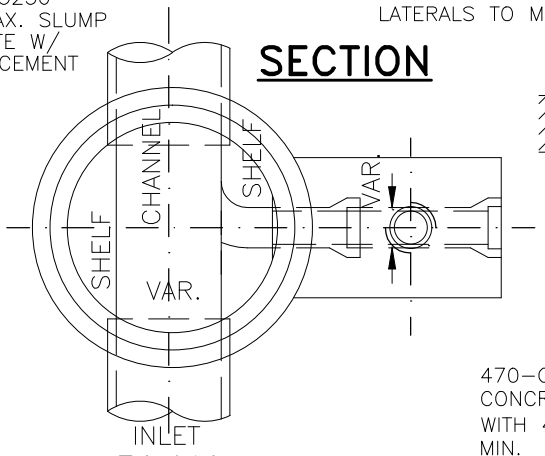
City Engineer R.C.E. 52125 Exp.12-31-16

REVISIONS	BY	DATE

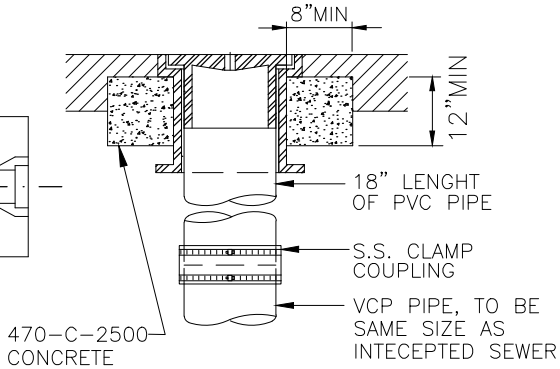
STD. PLAN NUMBER

S-101





PLAN



DETAIL

NOTES:

1. DROP MANHOLE TO BE USED FOR SPECIAL SITUATIONS ONLY, AND SHALL NOT BE CONSTRUCTED WITHOUT APPROVAL BY GGSD.
2. ALL NEW OPENINGS CONSTRUCTED INTO MANHOLE SHALL BE DONE BY CORE DRILLING.

Garden Grove Sanitary District

SEWER DROP MANHOLE WITH CLEANOUT

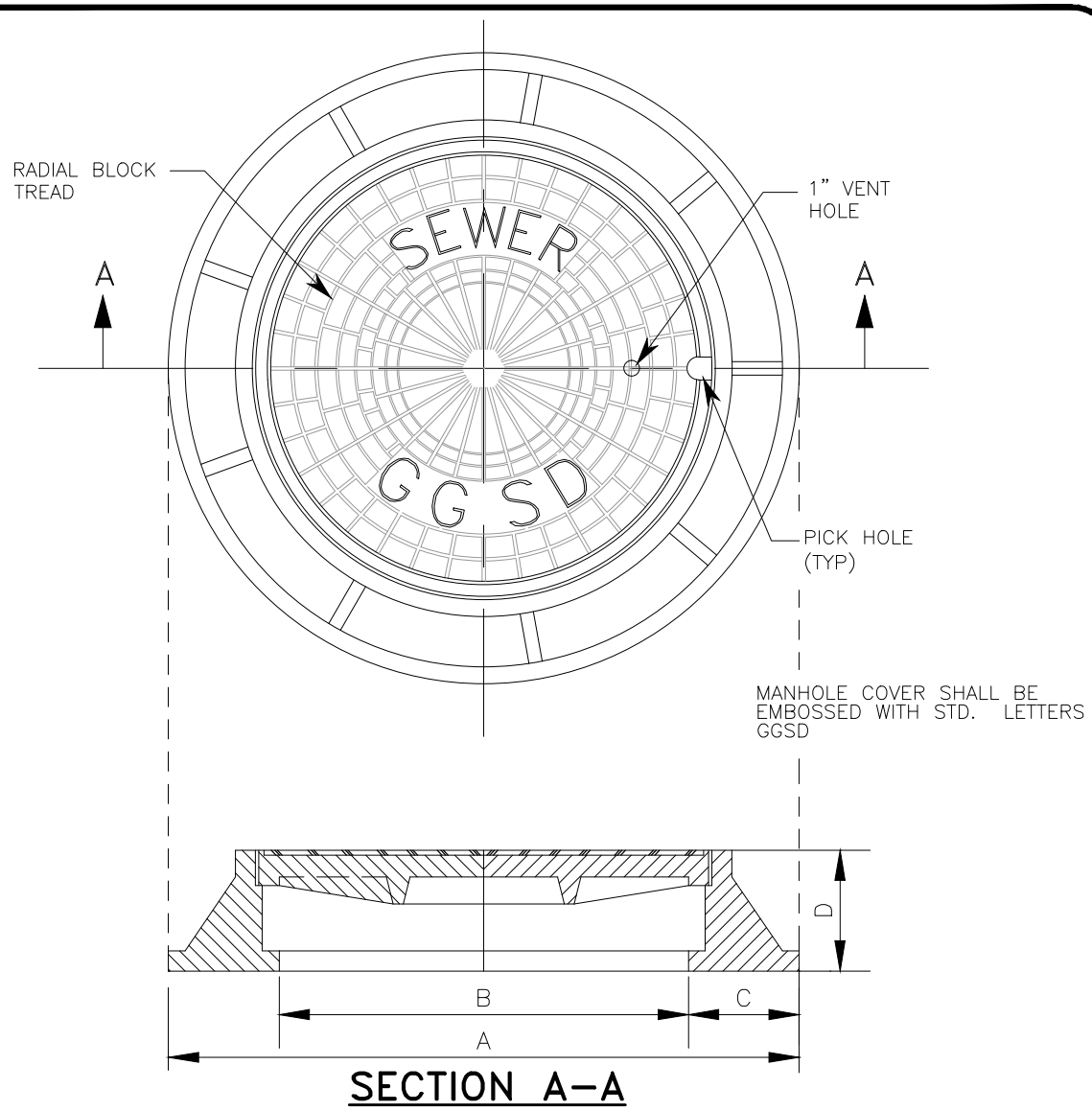
Approved _____ Date 12-8-15

City Engineer R.C.E. 52125 Exp.12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

S-102



SECTION A–A

MANHOLE SIZE	A	B	C	D	PLATE NUMBER
48"	32 1/2"	24	4 ¼	6	A–1495
60"	38 1/2"	30	4 ¼	6	A–1497
72"	44 1/2"	36	4 ¼	6	A–1498

NOTES:

1. WHERE FRAME AND COVER ARE SET 18" ABOVE GRADE, FOUR (4) ½" DIA. INSERTS FOR ADJUSTABLE STUDS SHALL BE CAST IN TOP GRADE RING, FRAME SHALL BE BOLTED TO GRADE RING.
2. MANHOLE COVER AND FRAME SHALL BE AS MANUFACTURED BY ALHAMBRA FOUNDRY. FRAME AND COVER SHALL BE COATED WITH ASPHALT OR COAL TAR.

Garden Grove Sanitary District

MANHOLE FRAME AND COVER (TRAFFIC LOADING)

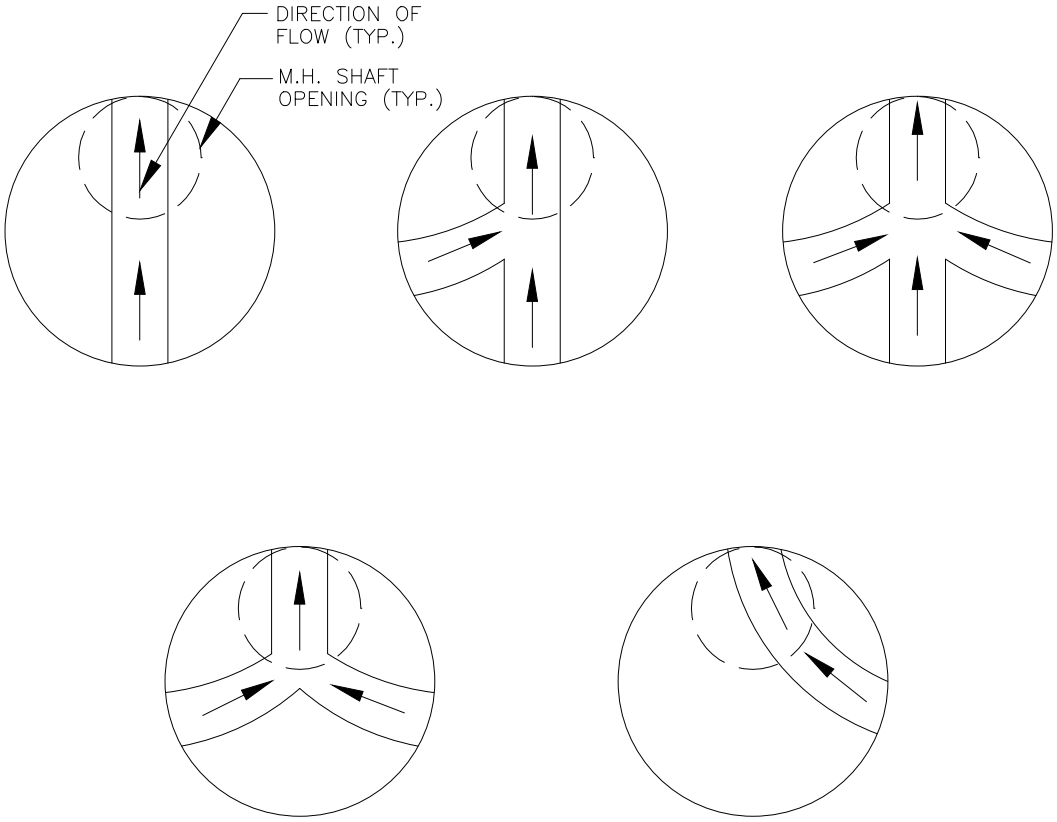
Approved _____ Date 12–8–15

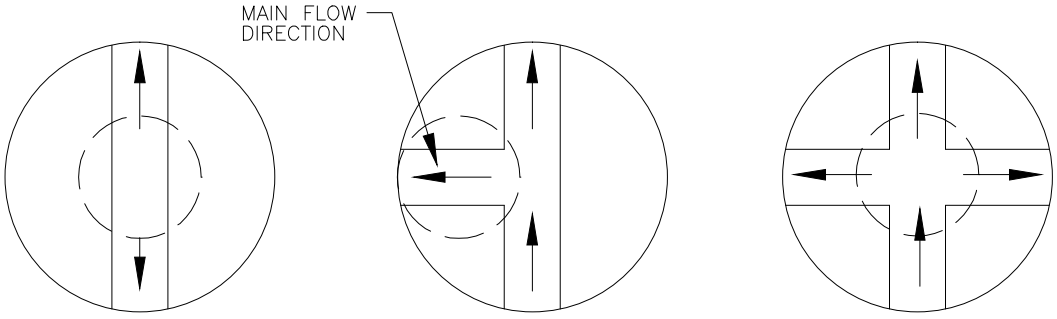
City Engineer R.C.E. 52125 Exp.12–31–16

REVISIONS	BY	DATE

STD. PLAN NUMBER

S–103





SUMMIT M.H. EITHER SIDE

SUMMIT M.H.

SUMMIT M.H. ANY POSITION

Garden Grove Sanitary District

MANHOLE SHAFT OPENING ORIENTATION PLAN

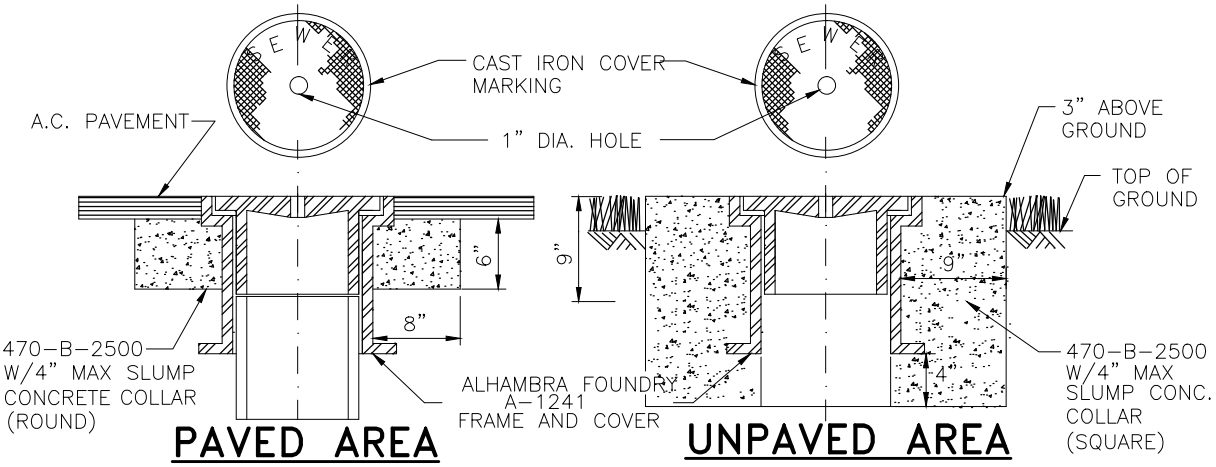
Approved _____ Date 12-8-15

City Engineer R.C.E. 52125 Exp.12-31-16

REVISIONS	BY	DATE

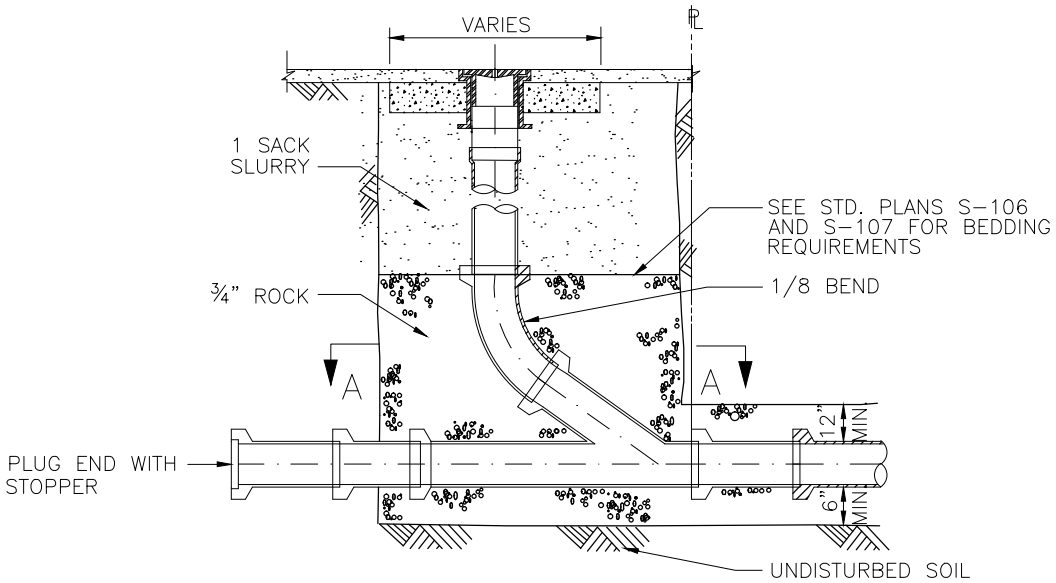
STD. PLAN NUMBER

S-104

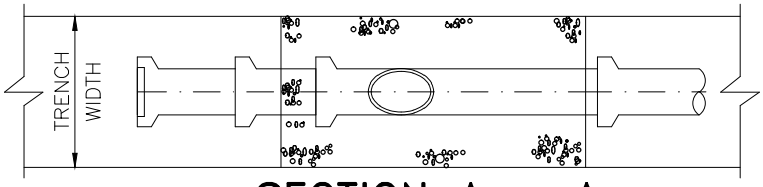


PAVED AREA

UNPAVED AREA



ELEVATION



SECTION A – A

NOTES:

1. CLEANOUT PIPE TO BE SAME SIZE AND KIND OF MATERIAL AS LATERAL.
2. CLEANOUTS TO BE INSTALLED WITHIN 5' OF BUILDING, DIRECTION CHANGES. MAXIMUM 75' INTERVALS AND AT PROPERTY LINE.

Garden Grove Sanitary District

LATERAL CLEANOUT DETAIL

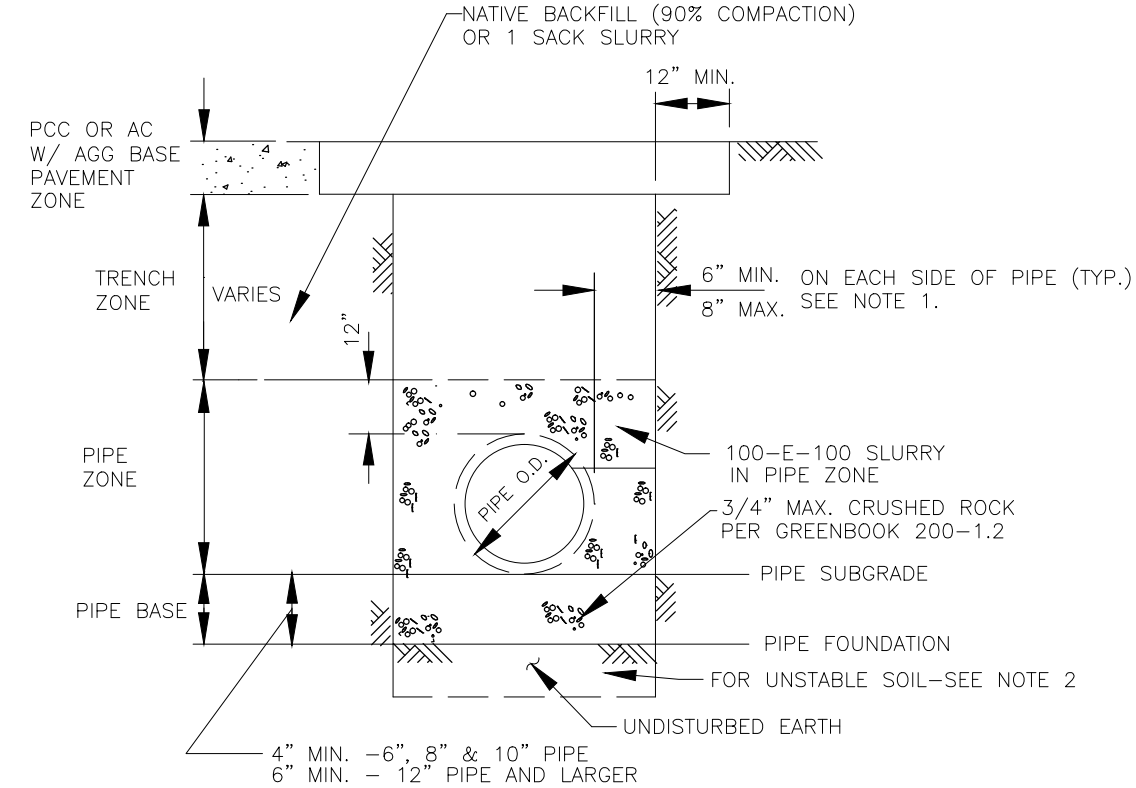
Approved Date 12-8-15

City Engineer R.C.E. 52125 Exp.12-31-16

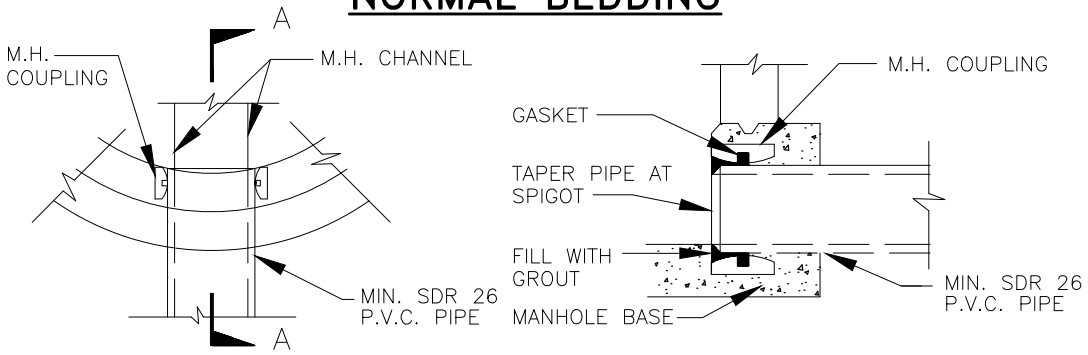
REVISIONS	BY	DATE

STD. PLAN NUMBER

S-105



NORMAL BEDDING



PLAN **SECTION A – A**

PVC PIPE MANHOLE CONNECTION DETAILS

NOTES:

1. CONCRETE ENCASEMENT PER STD. DWG. S-108 SHALL BE USED WHERE THE TRENCH WIDTH AT THE UPPER LIMIT OF THE PIPE ZONE EXCEEDS THE MAXIMUM WIDTH SPECIFIED ABOVE.
2. IF UNSTABLE SOIL IS ENCOUNTERED, DISTRICT REPRESENTATIVE SHALL DETERMINE DEPTH OF REMOVAL AND THICKNESS OF FOUNDATION ROCK REFILL MATERIAL.
3. SEE STD. PLANS S-101 AND S-102 FOR MANHOLE DETAILS.

Garden Grove Sanitary District

P.V.C. PIPE BEDDING & MANHOLE CONNECTION DETAILS

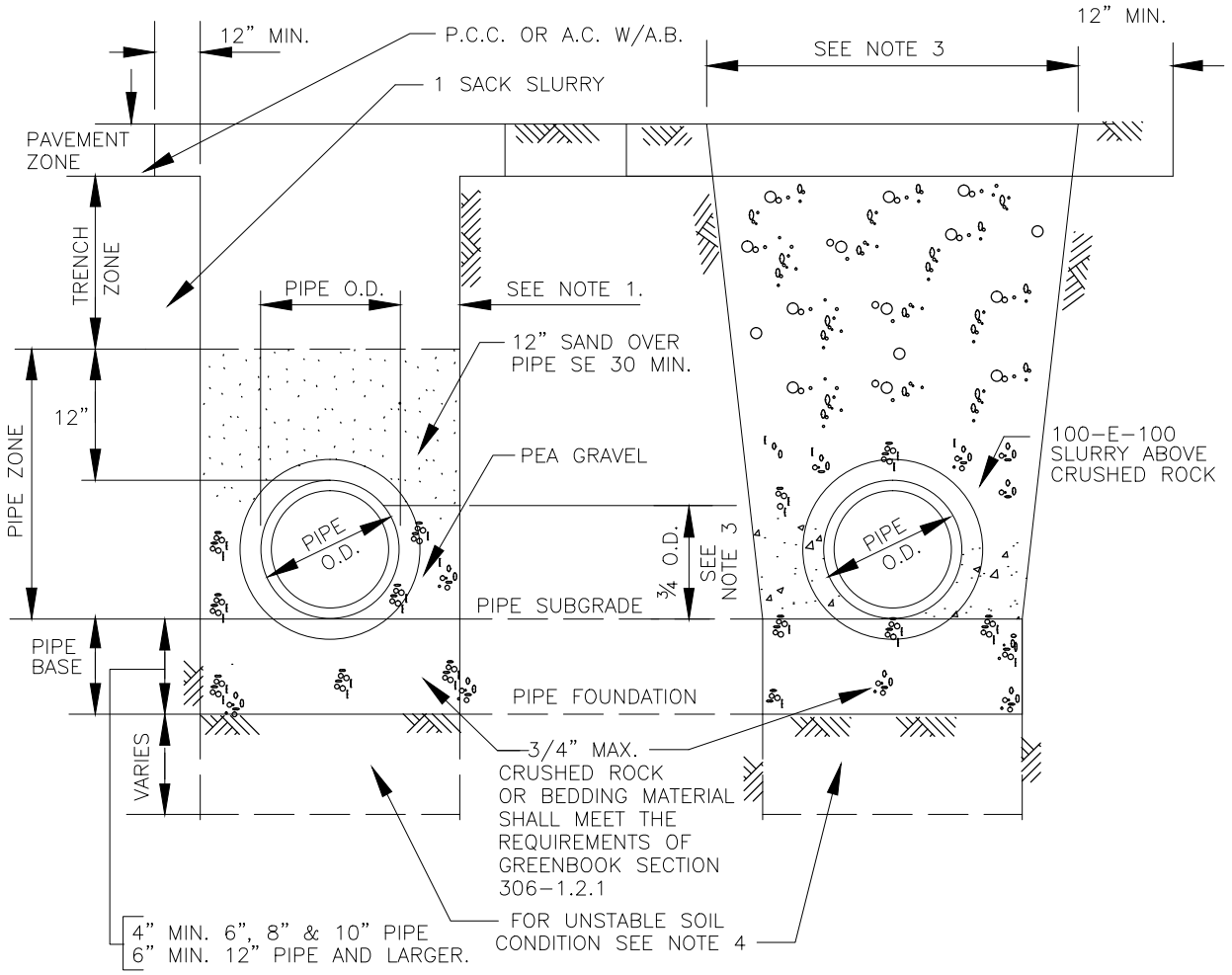
Approved _____ Date 12-8-15

City Engineer R.C.E. 52125 Exp.12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

S-106



TYPICAL NORMAL BEDDING OVERWIDTH BEDDING

SEE NOTE 2

NOTES:

1. TRENCH WIDTH AT THE UPPER LIMIT OF THE PIPE ZONE SHALL BE WITHIN THE FOLLOWING LIMIT FOR TYPICAL NORMAL BEDDING.
   (A) MAXIMUM TRENCH WIDTH–O.D. PIPE OR BELL PLUS 8" MAX. EACH SIDE OF PIPE.
   (B) MINIMUM TRENCH WIDTH–O.D. PIPE OR BELL PLUS 6" MIN. EACH SIDE OF PIPE.
2. OVERWIDTH BEDDING SHALL BE USED WHERE THE TRENCH WIDTH AT THE UPPER LIMIT OF THE PIPE ZONE EXCEEDS THE MAXIMUM WIDTH SPECIFIED ABOVE.
3. MAXIMUM OVERWIDTH BEDDING TO BE DETEMINED IN FIELD BY THE DISTRICT REPRESENTATIVE ON THE BASIS OF OVERWIDTH EXCAVATED.
4. IF UNSTABLE SOIL IS ENCOUNTERED, DISTRICT REPRESENTATIVE SHALL DETERMINE DEPTH OF REMOVAL AND SIZE OF FOUNDATION ROCK REFILL MATERIAL.

Garden Grove Sanitary District

V.C.P. PIPE BEDDING DETAILS

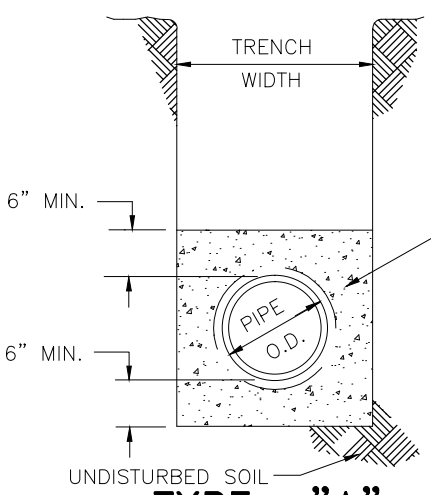
Approved _____ Date 12-8-15

City Engineer R.C.E. 52125 Exp.12-31-16

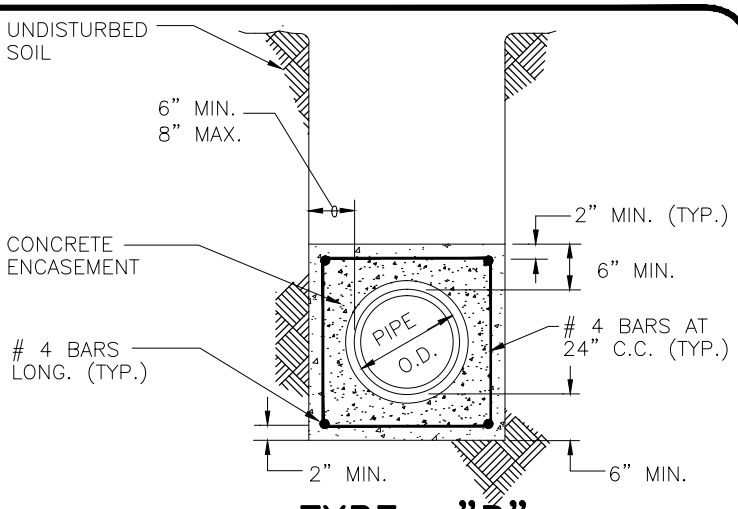
REVISIONS	BY	DATE

STD. PLAN NUMBER

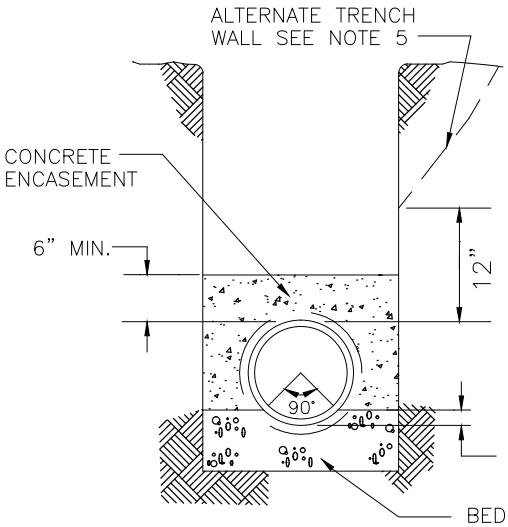
S-107



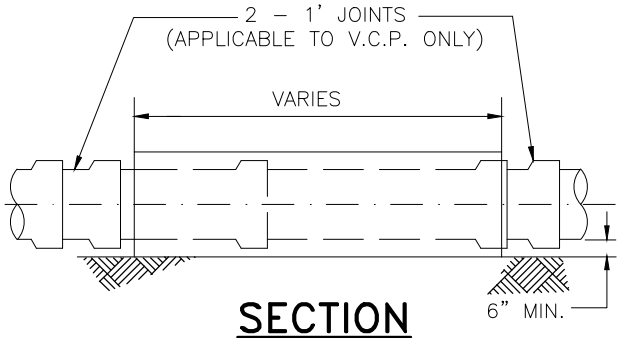
TYPE "A"



TYPE "B"



TYPE "C"



SECTION

NOTES:

1. CONCRETE ENCASEMENT SHALL BE USED WHEN COVER IS UNDER 4' OR OVER 20'.
2. ENCASEMENT TO BE PLACED AGAINST UNDISTURBED NATURAL GROUND OR FILL COMPACTED TO 90% RELATIVE DENSITY.
3. NO. 4 GRADE 60 STEEL REINFORCING BARS SHALL BE PLACED AS SHOWN.
4. TYPE OF CONCRETE ENCASEMENT TO BE USED SHALL BE SHOWN ON PLANS OR AS SPECIFIED BY DISTRICT REPRESENTATIVE TO MEET UNFORESEEN FIELD CONDITIONS. UNLESS NOTED OTHERWISE, ENCASEMENT SHALL BE 470-C-2500 WITH 4" MAX. SLUMP.
5. WHERE SLOPED TRENCHES ARE USED, WALLS WILL NOT BEGIN TO SLOPE CLOSER THAN 12" FROM THE TOP OF THE PIPE.

Garden Grove Sanitary District

CONCRETE ENCASEMENT TYPE A, B, & C

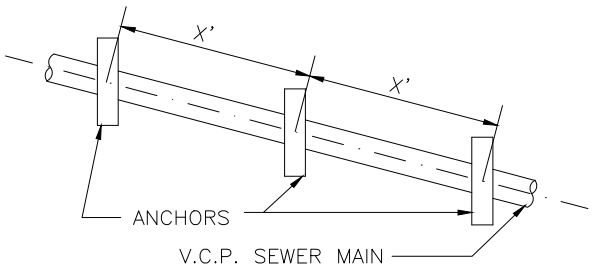
Approved _____ Date 12-8-15

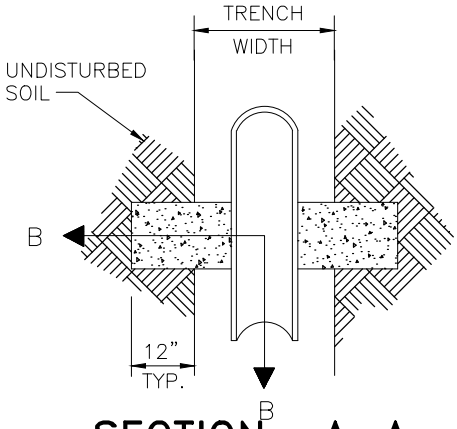
City Engineer R.C.E. 52125 Exp.12-31-16

REVISIONS	BY	DATE

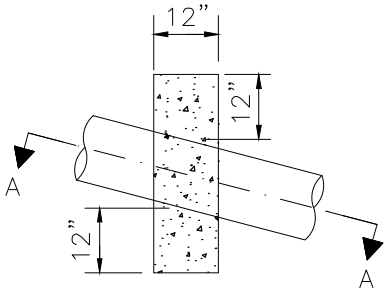
STD. PLAN NUMBER

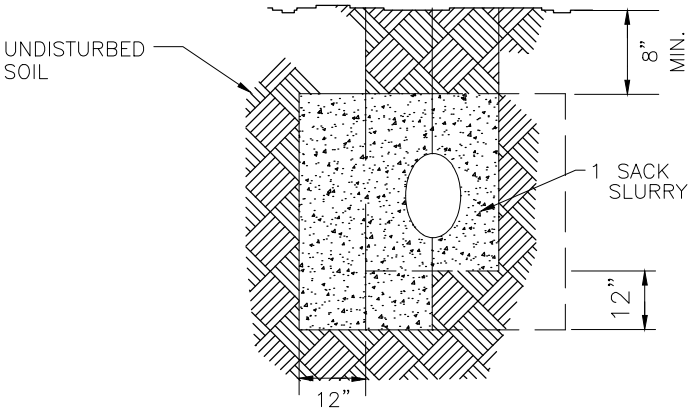
S-108





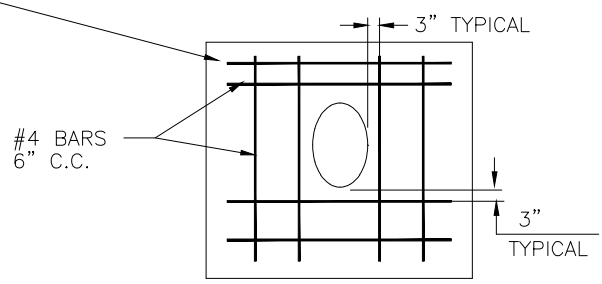
SECTION A–A





SECTION B–B

PIPE SLOPE	PIPE SLOPE	X DISTANCE
100%	1:1	12'
66.6%	1–1/2:1	14'
50%	2:1	16'
40%	2–1/2:1	18'
33.3%	3:1	20'



REINFORCING STEEL PATTERN

NOTES:

1. SLOPES GREATER THAN 10% SHALL BE USED BY SPECIAL WRITTEN APPROVAL OF CITY.
2. PIPE ANCHORS REQUIRED ON ALL SLOPES OF 3:1 OR STEEPER.
3. ANCHOR SHALL EXTEND 12" INTO NATURAL UNDISTURBED SOIL.
4. CONCRETE SHALL BE 560–C–3250 W/4" MAX. SLUMP.
5. ANCHORS FOR TRAPAZOIDAL TRENCH SECTIONS WILL CONFORM TO TO TRENCH CROSS SECTION AND EXTEND 12" INTO UNDISTURBED SOIL.

Garden Grove Sanitary District

CONCRETE SLOPE ANCHORS

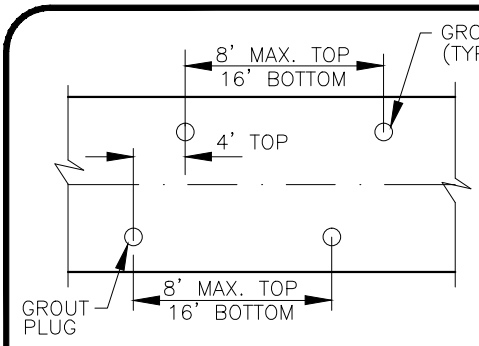
Approved _____ Date 12–8–15

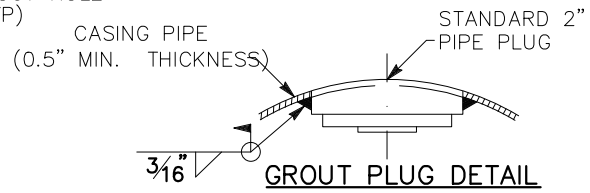
City Engineer R.C.E. 52125 Exp.12–31–16

REVISIONS	BY	DATE

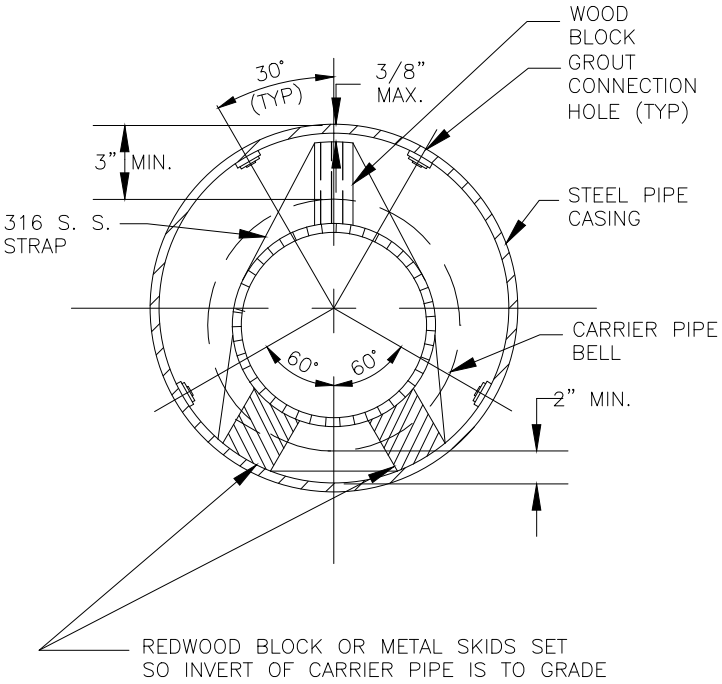
STD. PLAN NUMBER

S–109





GROUT PLUG DETAIL



CASING DETAIL

NOTES:

1. UNLESS NOTED OTHERWISE, CASING SHALL BE INSTALLED BY THE JACK AND BORE, AND/OR TUNNEL METHOD. IF OPEN-CUT INSTALLATION OF CASING IS ALLOWED, BACKFILL SHALL BE IN ACCORDANCE WITH STD. PLAN S-106 OR S-107
2. MINIMUM CASING SIZE SHALL BE 24" AND MINIMUM CASING THICKNESS SHALL BE 5/16".
3. ALL STEEL CASING PIPE FIELD JOINTS SHALL BE WELDED FULL-CIRCUMFERENCE.
4. UNFINISHED REDWOOD SKIDS SHALL BE PROVIDED PER DETAIL ABOVE.
5. CARRIER PIPE SHALL BE AIR PRESSURE TESTED PRIOR TO FILLING OF ANNULAR SPACE.
6. UPSTREAM AND DOWNSTREAM ELEVATIONS OF CARRIER PIPE SHALL BE VERIFIED PRIOR TO FILLING OF ANNULAR SPACE.
7. EACH END OF CASING SHALL BE SEALED WITH CONCRETE MORTAR, OR MANUFACTURED CASING END COVER.
8. PERIPHERY OF CASING SHALL BE PRESSURE GROUTED.
9. ANNULAR SPACE SHALL BE FILLED WITH LEAN GROUT.
10. FOR REDWOOD BLOCKS, 3' LONG SKIDS BEVELED AT BOTH ENDS SHALL BE STRAPPED IN PLACE 3" FROM EACH JOINT OF PIPE, NOTCH SKID SET TO SEAT STRAP.

Garden Grove Sanitary District

STEEL CASING PIPE

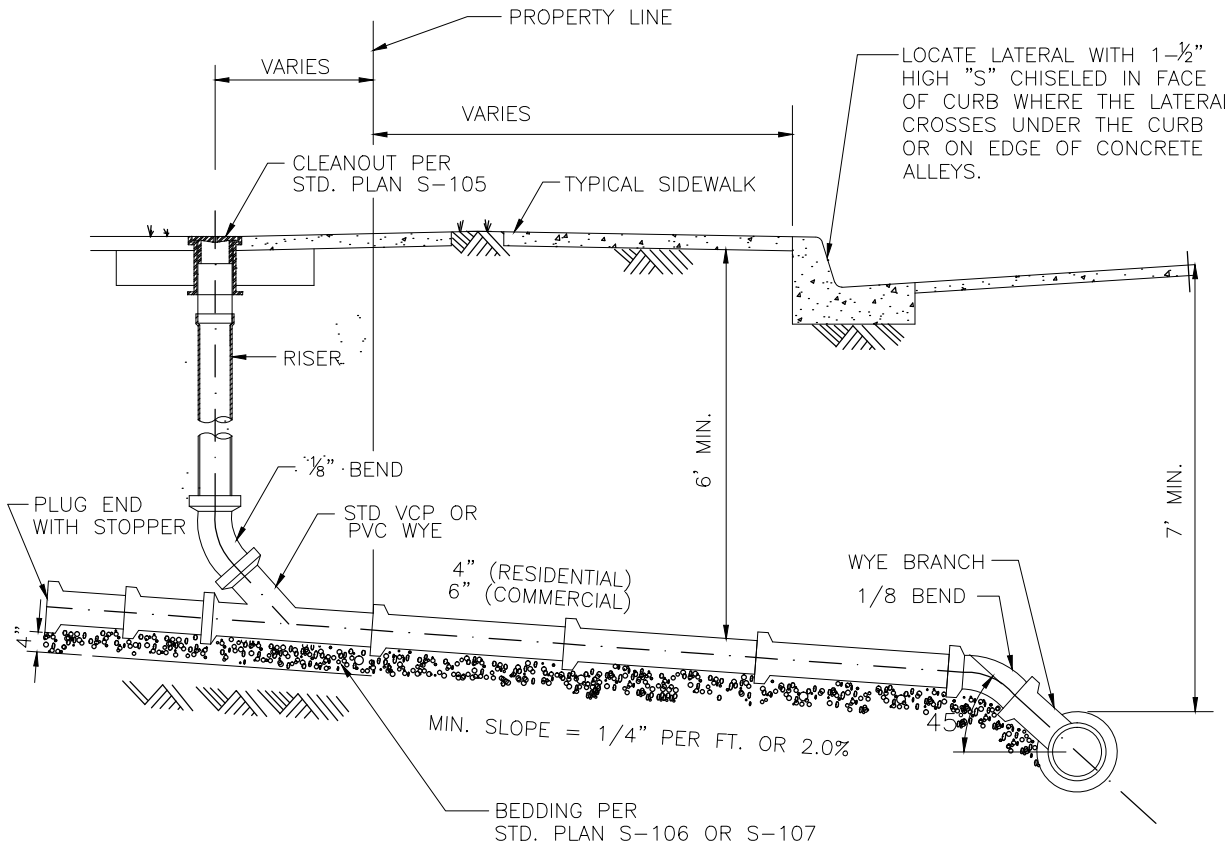
Approved _____ Date 12-8-15

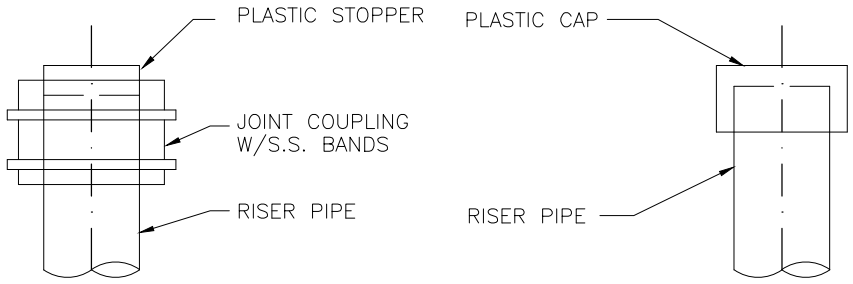
City Engineer R.C.E. 52125 Exp.12-31-16

REVISIONS	BY	DATE

STD. PLAN NUMBER

S-110





OPTIONAL STOPPER DETAILS

NOTES:

1. LATERAL SIZE TO BE DETERMINED ON THE BASIS OF TOTAL NUMBER OF FIXTURE UNITS DRAINED, BUT IN NO CASE SHALL THE LATERAL DIAMETER BE LESS THAN FOUR INCHES FOR SINGLE OR MULTIPLE FAMILY RESIDENTIAL AND SIX INCHES FOR COMMERCIAL OR INDUSTRIAL LAND USES.
2. LATERAL TO BE INSTALLED TO PROPERTY LINE.
3. IF LATERAL NOT BUILT, PLUG WYE BRANCH WITH STOPPER.
4. IF RISER NOT BUILT, PLUG LATERAL AT ℄ .

Garden Grove Sanitary District

V.C.P. OR P.V.C. TYPICAL LATERAL

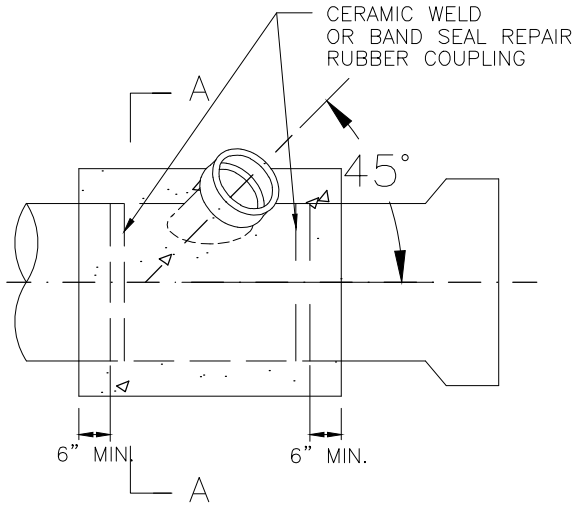
Approved _____ Date 12–8–15

City Engineer R.C.E. 52125 Exp.12–31–16

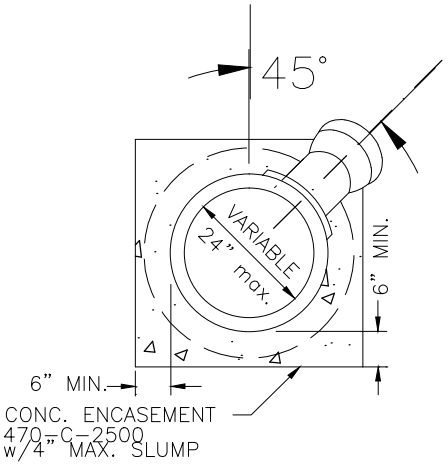
REVISIONS	BY	DATE

STD. PLAN NUMBER

S–111



CUT IN WYE



SECTION A–A

NOTES:

1. THE SADDLE CONNECTION SHALL BE SECURED WITH 470–C–2500 W/4" MAX SLUMP CONCRETE ENCASEMENT AFTER THE CONNECTION IS APPROVED BY THE DISTRICT REPRESENTATIVE.
2. ALL CHIPS, DIRT, EPOXY, MORTAR, AND CONCRETE SHALL BE KEPT OUT OF THE SEWER.
3. DAMAGED PIPE SHALL BE REPLACED.
4. 8" AND LARGER CONNECTIONS SHALL BE BY STANDARD OR DROP MANHOLES.

Garden Grove Sanitary District

CUT IN WYE CONNECTION

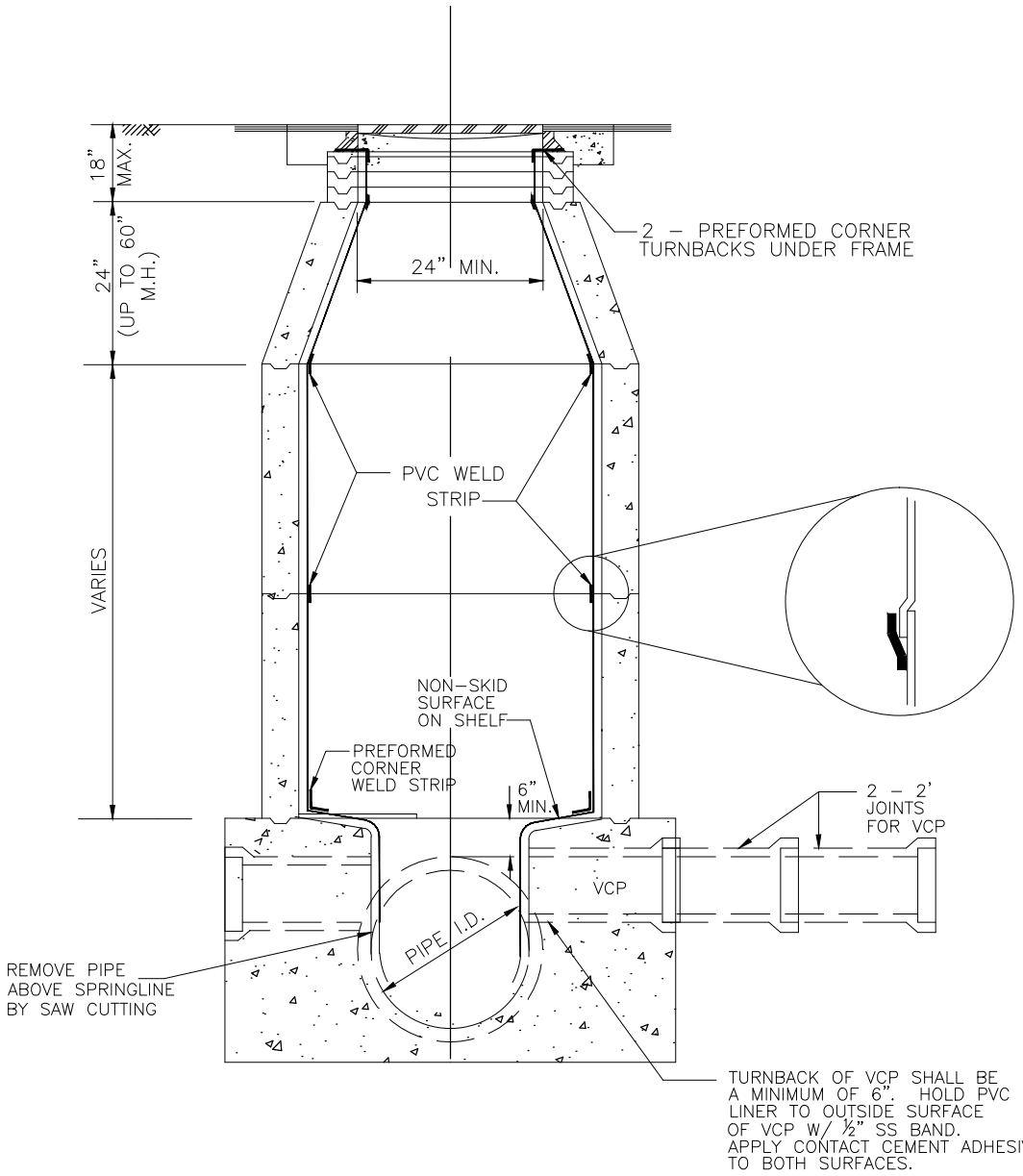
Approved _____ Date 12–8–15

City Engineer R.C.E. 52125 Exp.12–31–16

REVISIONS	BY	DATE

STD. PLAN NUMBER

S–112



SEE STD. PLANS S–101, S–102, S–103

Garden Grove Sanitary District

PVC MANHOLE LINER

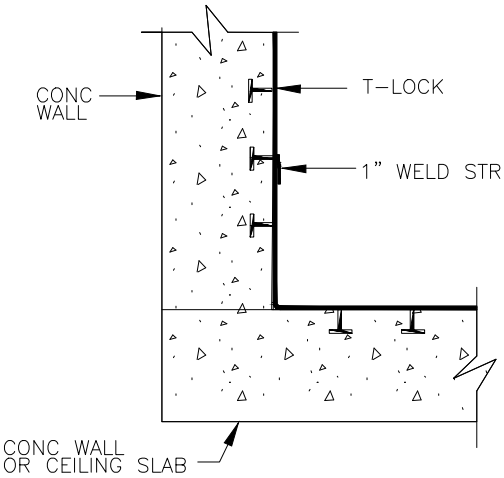
Approved _____ Date 12–8–15

City Engineer R.C.E. 52125 Exp.12–31–16

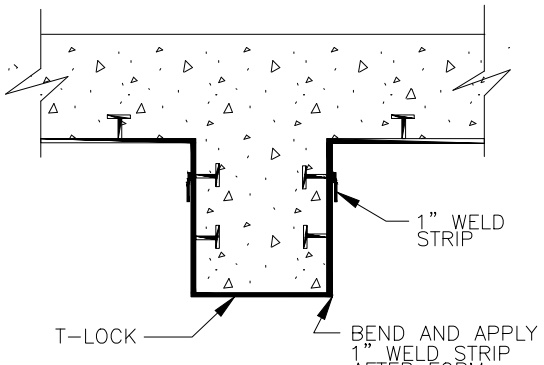
REVISIONS	BY	DATE

STD. PLAN NUMBER

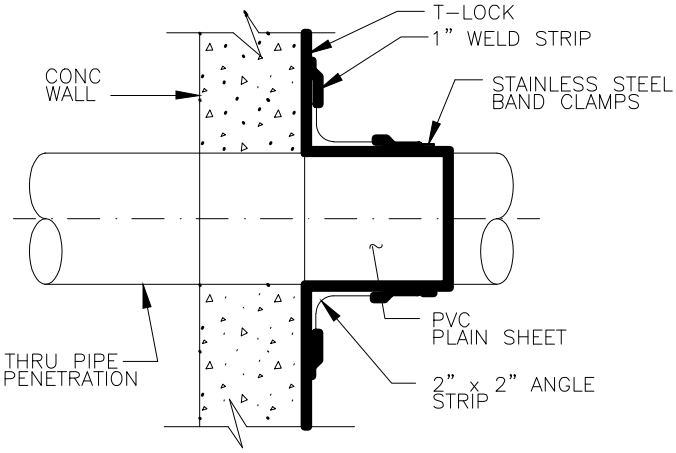
S–113



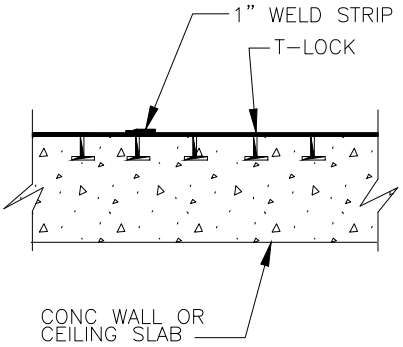
CORNER



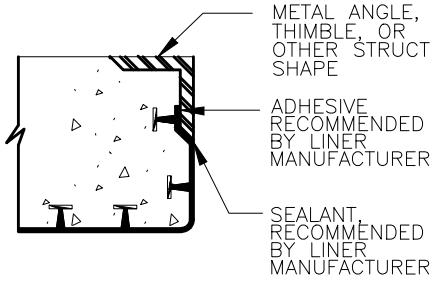
BEAM



PIPE PENETRATION



SPLICE



METAL EMBED

NOTE

1. AT BUTT JOINTS, INSTALL 1" WELD STRIP ON FRONT AND BACK.
2. LINER RIBS SHALL BE ORIENTED VERTICALLY ON VERTICAL SURFACES.

Garden Grove Sanitary District

P.V.C. T-LOCK LINER DETAILS

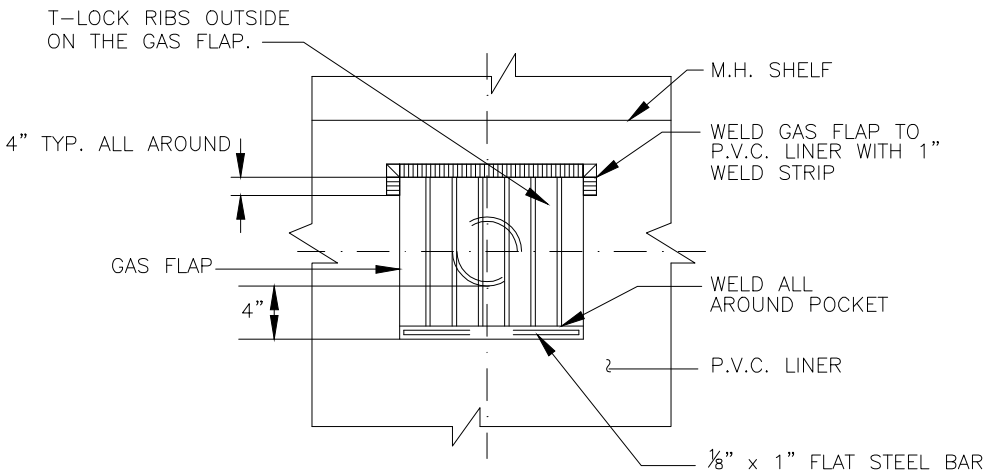
Approved _____ Date 12-8-15

City Engineer R.C.E. 52125 Exp.12-31-16

REVISIONS	BY	DATE

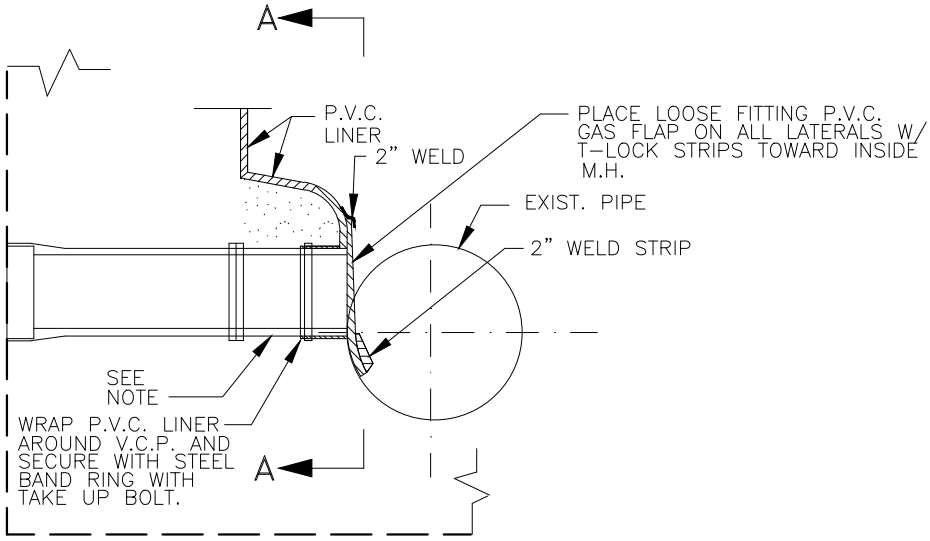
STD. PLAN NUMBER

S-114



VIEW A-A

NOT TO SCALE



PLAN

NOTE

FOR INSTALLATION AT EXISTING M.H., REMOVE INTERFERING CONCRETE AT END OF EACH LATERAL AND EXTEND VCP AS SHOWN. GROUT IN PLACE. EXTEND PVC M.H. LINER OVER GROUT AND INSTALL GAS FLAP AS SHOWN.

Garden Grove Sanitary District

P.V.C. LINER WITH GAS FLAP INSTALLATION

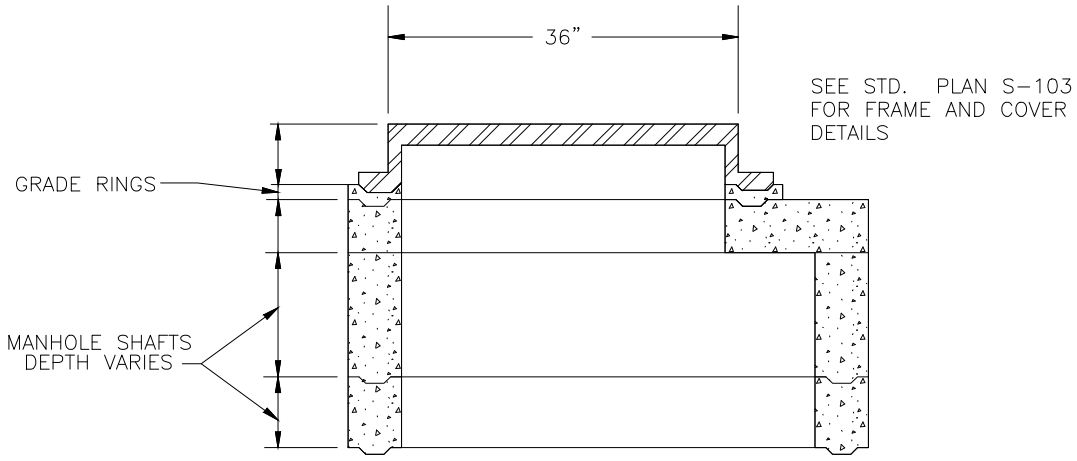
Approved _____ Date 12-8-15

City Engineer R.C.E. 52125 Exp.12-31-16

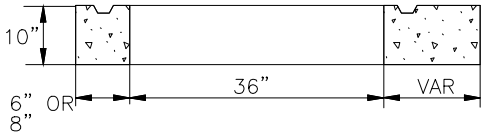
REVISIONS	BY	DATE

STD. PLAN NUMBER

S-115



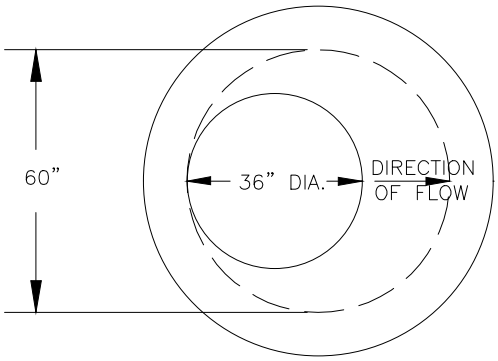
TYPICAL SECTION FLAT TOP MANHOLE



FLAT TOP COVER

NOTES

1. CONSTRUCTION SHALL BE IN ACCORDANCE WITH STD. PLAN S-101 AND S-103
2. REINFORCED CONCRETE MANHOLE, QUIKSET OR APPROVED EQUAL.
3. USE OF FLAT TOP MANHOLE REQUIRES WRITTEN DISTRICT APROVAL.



PLAN

Garden Grove Sanitary District

FLAT TOP MANHOLE

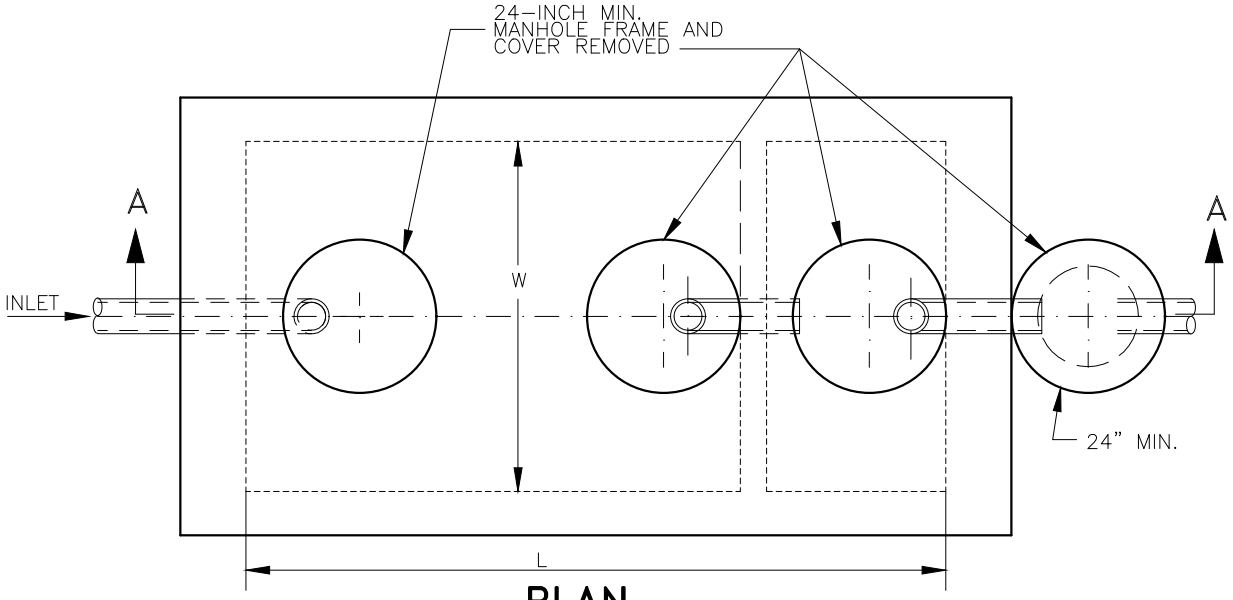
Approved _____ Date 12-8-15

City Engineer R.C.E. 52125 Exp.12-31-16

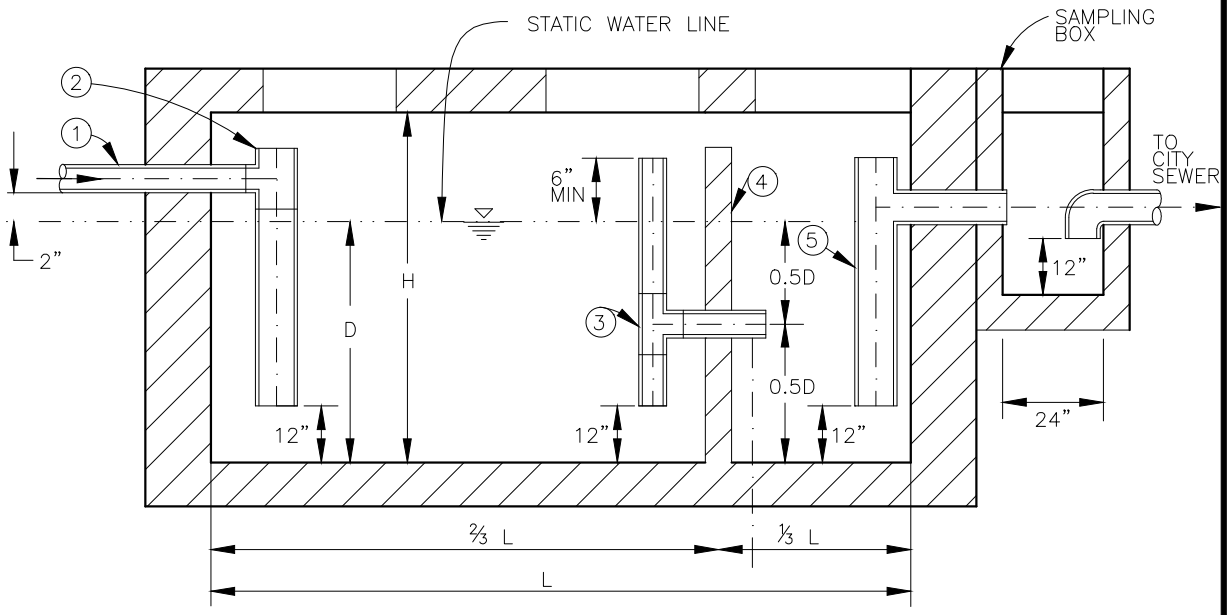
REVISIONS	BY	DATE

STD. PLAN NUMBER

S-116



PLAN



SECTION A–A

1. INLET PIPE 4–INCH MINIMUM
2. INFLOW TEE AND STANDPIPE
3. CROSSOVER TEE AND STANDPIPE
4. BAFFLE WALL
5. OUTFLOW TEE AND STANDPIPE

NOTE:

GREASE INTERCEPTOR SHALL BE DESIGNED AND SIZED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CALIFORNIA PLUMBING CODE, APPENDIX H.

Garden Grove Sanitary District

TYPICAL GREASE INTERCEPTOR

Approved _____ Date 12–8–15

City Engineer R.C.E. 52125 Exp.12–31–16

REVISIONS	BY	DATE

STD. PLAN NUMBER

S–117

SHEET 1 OF 2

1. GREASE INTERCEPTOR SHALL BE INSTALLED IN CONFORMANCE WITH THE PROVISIONS OF THE CALIFORNIA PLUMBING CODE AS ADOPTED BY THE CITY OF GARDEN GROVE.
2. ALL GREASE INTERCEPTOR SHALL BE OF AN APPROVED TYPE AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURES INSTALLATION INSTRUCTIONS OR AS SUBMITTED BY A DESIGN PROFESSIONAL.
3. INTERCEPTOR SHALL BE ON DRY LEVEL UNDISTURBED SOIL ON A FIRM COMPACTED BASE.
4. MANHOLE GRADE RINGS SHALL BE SEALED WITH MOTAR OR AN APPROVED ALTERNATIVE WATER BARRIER.
5. SAMPLE BOXES SHALL BE REQUIRED UNLESS EXEMPTED BY THE ENVIRONMENTAL SERVICES MANAGER.
6. ON PLUMBING PLAN SUBMITTAL INCORPORATE MANUFACTURE'S INSTALLATION INSTRUCTIONS, TYPE, AND LOCATION OF INTERCEPTOR.

Garden Grove Sanitary District

TYPICAL GREASE INTERCEPTOR

Approved Date 12-8-15

City Engineer R.C.E. 52125 Exp.12-31-16

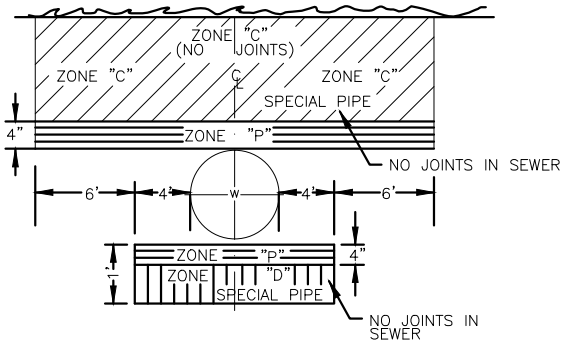
REVISIONS	BY	DATE

STD. PLAN NUMBER

S-117

SHEET 2 OF 2

NEW SEWER

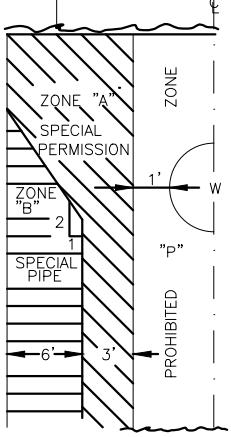


PERPENDICULAR CROSSING

NOTE: "P" IS A PROHIBITED CONSTRUCTION ZONE

NOTES:

ZONES IDENTICAL ON EITHER SIDE OF CENTER LINES. ZONE "P" IS A PROHIBITED ZONE, SECTION 64630 (2) CALIFORNIA ADMINISTRATIVE CODE, TITLE 22



PARALLEL INSTALLATION

NEW SEWER BEING INSTALLED

ZONE	SPECIAL CONSTRUCTION REQUIRED FOR SEWER
A,B,C,D	SEWER LINES PARALLEL TO WATER MAINS SHALL NOT BE PERMITTED IN THIS ZONE WITHOUT APPROVAL FROM THE STATE WATER RESOURCES CONTROL BOARD (SWRCB) AND THE CITY.

B A SEWER LINE PLACED PARALLEL TO A WATER LINE SHALL BE CONSTRUCTED OF:

1. EXTRA STRENGTH VITRIFIED CLAY PIPE WITH COMPRESSION JOINTS.
2. PLASTIC SEWER PIPE WITH RUBBER RING JOINTS, DR 26.
3. DUCTILE IRON PIPE WITH COMPRESSION JOINTS.
4. REINFORCED CONCRETE PRESSURE PIPE WITH COMPRESSION JOINTS (PER AWWA C302–74).

C A SEWER LINE CROSSING A WATER MAIN SHALL BE CONSTRUCTED OF:

1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING AND MECHANICAL JOINTS. NO JOINTS WITHIN 10' EITHER SIDE OF WATER.
2. A CONTINUOUS SECTION OF CLASS 305 (DR 14 PER AWWA C900) PVC PIPE OR EQUIVALENT, CENTERED OVER THE WATER PIPE BEING CROSSED.
3. A CONTINUOUS SECTION OF REINFORCED CONCRETE PRESSURE PIPE (PER AWWA C302–74) CENTERED OVER THE PIPE BEING CROSSED.
4. ANY SEWER PIPE WITHIN A CONTINUOUS STEEL PIPE SLEEVE.

PARALLEL INSTALLATION (CONT.)

D A SEWER LINE CROSSING A WATER MAIN SHALL BE CONSTRUCTED OF

1. A CONTINUOUS SECTION OF DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING AND MECHANICAL JOINTS CENTERED ON THE WATER PIPE BEING CROSSED.
2. A CONTINUOUS SECTION OF CLASS 305 (DR 14 PER AWWA C900) PVC PIPE OR EQUIVALENT, CENTERED ON THE WATER PIPE BEING CROSSED.
3. A CONTINUOUS SECTION OF REINFORCED CONCRETE PRESSURE PIPE (PER AWWA C302–74) CENTERED ON THE WATER PIPE BEING CROSSED.
4. ANY SEWER PIPE WITHIN A CONTINUOUS STEEL PIPE SLEEVE.
5. ANY SEWER PIPE MATERIAL ENCASED IN REINFORCED CONCRETE PER STD. DWG. S–108 TYPE "B".

Garden Grove Sanitary District

DESIGN CRITERIA FOR SEPARATION OF WATER AND SEWER MAINS

Approved _____ Date 12–8–15

City Engineer R.C.E. 52125 Exp.12–31–16

REVISIONS	BY	DATE

STD. PLAN NUMBER

S–118

Appendix E-3

Overflow Emergency Response Plan

SSO OVERFLOW EMERGENCY RESPONSE PLAN FOR PUBLIC SPILLS

PURPOSE:

To promptly contain, control, clean and protect public health from an unauthorized release of sewer wastewater, including notifying all appropriate agencies as a result of a public sewer system overflow (SSO).

OVERVIEW:

The Garden Grove Sanitary District (GGSD) a subsidiary district of the City of Garden Grove, owns and operates a diverse collection system that consists of three (3) pumping stations, 327 miles of gravity sewer mains, 9,150 feet of force mains, 37,100 sewer connections and an approximate population of 186,000[1] served by the GGSD. The proceeding plan provides how the GGSD responds to a public sewer overflow/spill. Actions presented reduce or eliminate public health hazards, prevent unnecessary property damage, minimize the inconvenience of service interruptions in event of an overflow/spill and prevent any overflows from entering streets, gutters and/or storm drains. GGSD utilizes the following five (5) main steps to take when responding to sewage overflow/spills:

1) CONTAIN spilling sewage
2) COMMUNICATE with agencies
3) CONTROL the spill and CLEAR the blockage
4) CLEAN UP affected areas
5) CALCULATE spill volume
6) PREVENT REOCCURANCE

NOTIFICATION PROCEDURES

The following illustrates GGSD's procedure to communicate internally and externally, mobilize, and respond to and correct or repair any condition that may cause or contribute to a SSO. There is a response to each reported spill caused by public or private facilities that occur on public or private property.

An overflow may be detected by GGSD staff, City employees, or by others (i.e. residents, business owners, etc.). The Water Services Division of the Department of Public Works is responsible for accepting all phone calls regarding possible sewer overflows during business hours, and is responsible for responding to these notifications 24 hours a day. After hours, a notification system is established with other City Departments which immediately directs any reports to the 24 hour on call "Stand-By" staff person for Water Services, who dispatches the crews, makes notifications to

[1] OCSD city and agency collection facilities O & M Survey '03-04 data

regulatory agencies and compiles information on the spill. The details of these procedures are summarized in the stepwise procedure below.

- Notification is received at the City, typically either from a private citizen, business owner or other GGSD or City staff.
- During business hours, calls are received at the City Water Services Division main office and then forwarded to the Sanitation Supervisor, Foreman, and other key GGSD personnel via text messaging. GGSD sanitation crews are then dispatched to the scene.
- After hours, City Police Department personnel will gather the proper information from callers and forward this information to the 24 hour on call "Stand-By" staff person.

Contain the Spill:

Upon arrival on the site, a preliminary investigation of the reported spill will take place in order to confirm whether a sewage spill is on private or public property. GGSD staff will determine what steps are needed to take place in order to contain the spill. GGSD will take the appropriate steps to prevent sewage from entering gutters, storm drains, channels or other critical locations. Containing the spill with sand bags, dirt berms and/or placing rubber mats over catch basins is initiated to prevent sewage from entering waters of the state. This includes surface, ground and storm drain water within the City boundaries. Afterwards, GGSD staff will establish perimeters and/or control zones utilizing cones, barricades and/or delineators. If necessary, GGSD staff will contact other City of Garden Grove Divisions for assistance.

If sewage enters a catch basin or storm drain, GGSD staff will go down stream to intercept and contain the flow of sewage. Once the sewage is contained, the combination truck will be used to vacuum up the sewage and wash down water from the catch basin or storm drain.

Communicate and Notification:

GGSD staff will identify the responsible party at the location of the spill then collect and document all information regarding the spill as set forth by the Regional Water Quality Control Board (RWQCB). RWQCB, Orange County Health Care Agency (OCHCA), and Orange County Public Works (OC Public Works) must be immediately notified of all spills via telephone, voice mail, or email. Spills that are 1,000 gallons or more must also be reported to the Office of Emergency Services (OES). In addition to the above agencies, GGSD staff also informs the Garden Grove Environmental Management Team (GGEMT) who is responsible for the Fats, Oils, and Grease (FOG) program and has the legal authority to cite businesses. GGSD staff will take photos of the spills. All agencies affected as specified by local, state, and other regulations will be notified.

The following summarizes the notification and reporting process:

Orange County Santa Ana Region

Sanitary Sewer Overflow Notification & Reporting Guidelines

Statewide General Waste Discharge Requirements Order No. 2006-0003 finds that all federal and state agencies, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one mile in length requires notification and reporting of all sanitary sewer overflows (SSOs). SSOs are defined as any overflow, spill, release, discharge or diversion of wastewater from a sanitary sewer system. (See page 5 of the Order No. 2006-0003 for the complete definition of SSOs).

Type of SSO	Initial Notification Timeframe*	Agency to Notify by Phone	Report Timeframe
Category 1 – Discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition that: A. Reach surface water and/or reach a drainage channel tributary to a surface water; or B. Reach a municipal separate storm sewer system and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. (Any volume of wastewater not recovered from the municipal separate storm sewer system is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or ground water infiltration basin (e.g., infiltration pit, percolation pond).) **<u>Greater than or equal to 1,000 gallons</u>**, **notify the OES** and obtain a notification control number.	As soon as practical within 2 hours of becoming aware	• OES1 • OCHCA[2] • OC Public Works[3] and city	Submit Draft report within 3 business days of becoming aware of the SSO. Certify within 15 calendar days of SSO end date. SSO Technical Report: Certify within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater is spilled to surface waters.
Category 1 – <u>any volume < 1000 gallons</u>	As soon as practical	• OCHCA[2]	
Category 2 – Discharges of untreated or partially treated wastewater of **<u>1,000 gallons or greater</u>** resulting from an enrollee's sanitary sewer system failure or flow condition that **<u>do not</u>** reach surface water, a drainage channel, or a municipal separate storm sewer system unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.	As soon as practical	• OCHCA[2]	Submit Draft report within 3 business days of becoming aware of the SSO. Certify within 15 calendar days of SSO end date.
Category 3 – All other discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition.	As soon as practical	• OCHCA[2]	Submit Certified report within 30 calendar days after the end of month in which SSO occurred.
Private lateral – Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sewer assets.	As soon as practical	• OCHCA[2] • OC Public Works[3] and city	PLSDs that the enrollee becomes aware of may be voluntarily reported to the CIWQS Online SSO Database.

Notes: *Updates should be provided as necessary; 1 Water Code section 13271; 2 Health and Safety Code; 3 NPDES Stormwater Regulations and local Water Quality Ordinance.

SSO Notification Contacts:

Normal Hours	After Hours
OCHCA (Please call down the list until someone is contacted) 1. (714) 433-6419 (Office Support Staff) 2. Hisham Elmishad (714) 433-6284 3. Juan Anzora (714) 433-6287 4. Pauline Liu (714) 433-6286	Control 1: (714) 628-7008 (will contact OCHCA oncall staff)
RWQCB - Santa Ana Region (951) 782-4130 Najah Amin (951) 320-6362	RWQCB: (951) 782-4130 (voice mail) OES: (800) 852-7550
OES (Office of Emergency Services) (800) 852-7550	24 hours
OC Public Works (714) 955-0600 (storm drain/flood channel facility owners) (877) 89-SPILL (897-7455) 24 HR. Hotline	Control 1: (714) 628-7008 (specify water pollution incident notification)
Water Quality Monitoring Sierra Analytical Labs, Inc (Rick Forsyth) (714)-348-9389	(714) 348-9389; sierralabs@sierralabs.net; www.sierralabs.net/sierra.html
Water Quality Monitoring Associated Laboratories (714) 771-6900	(714) 771-6900; info@associatedlabs.com; www.associatedlabs.com

Developed by the Orange County Sanitation District with RWQCB, OCHCA and OC Public Works. Updated on 3/26/2018.

The Sanitary Sewer Overflow (SSO) task force must also be contacted for spills that is not fully contained and returned to the sewer system or when sewage enters storm drains and/or waters of the state. The task force consists of the Public Works Director, City Engineer, Water Services Manager, Streets/Environmental Services Manager, Sanitation Supervisor, Sanitation Foreman, and any others necessary to complete tasks. The task force will take the appropriate steps to ensure compliance with all regulatory agencies and oversee clean up procedures. In addition, the task force may be convened when, in the opinion of any task force member, circumstances exist that warrant the convening of the group.

Written reports of overflows/spills must be prepared and filed as set forth per the Sanitary Sewer Overflow Reporting Guidelines.

It is necessary to document all relevant information, such as:

1) The time the SSO is first reported to GGSD and the name and phone number of the person reporting the SSO.

2) Names of GGSD staff reporting SSO to RWQCB (date and time contacted).

3) Names of GGSD staff responding to SSO.

4) Verified SSO start time through witnesses and stop time and dates.

5) Whether SSO reached storm drain or other surface waters.

6) Containment information.

7) Wash water disposal method.

8) Estimated SSO rate and calculation tabulation methodology used.

9) Amount (volume) of SSO lost and recovered.

10) Amount (volume) of recovered and lost wash water and sewage-contaminated water.

11) Location of the SSO (address, city, zip, county).

12) Number of prior SSO's within 1000 ft of the location and dates of prior SSO's.

13) Location of potential blockage and description of component from which spill occurred.

14) Likely cause of SSO.

15) SSO cause- detailed description.

16) Measurable precipitation during 72-hour prior to SSO.

17) Steps taken or planned to reduce, eliminate and prevent reoccurrence or mitigate the impact of SSO and schedule of major milestones.

18) Where SSO entered storm drain inlet, initial and/or secondary receiving water name/description.

19) Final destination of sewage.

20) Notification times and person(s) contacted at OCHCA, RWCQB, RDMD, and/or OES.

21) If possible, photo documentation of spill containment efforts.

22) All copies of reports, faxes, photos etc. need to be kept in the spill document binder and Waste Discharge filing cabinet located at the City Garden Grove Municipal Yard, Water Services Division, 13802 Newhope St. Garden Grove, CA 92843.

23) Note if the GGEMT is involved, and include GGEMT's findings, conclusions, and any actions taken or pending.

Control the Spill/Clear the Blockage:

Primary inspection to control the spill will begin at manholes both upstream and downstream of the overflowing manhole. The blockage location will then be determined. A combination truck will set up at the next manhole downstream of the overflowing manhole. Here the crew will be able to access the sewer line to relieve the blockage and determine the cause.

Clean Up the Spill:

All overflow/spills must be cleaned regardless of size. Affected areas are to be washed down then vacuumed up utilizing a vactor truck to prevent sewage overflow/spills and wash water from entering waters of the state. All solids or semisolids resulting from the cleaning operations will be

removed from the site and disposed at OCSD's Treatment Plant No. 2 located in Huntington Beach. For GGSD's records, photographs of affected area and existing damaged areas are taken for use in documenting factual evidence of the scene.

Calculate the Spill:

Water pump station flow rates assist in calculations. GGSD staff will record spill volumes on spill response form. GGSD uses several different methods for calculating spills: GGSD Flow Calculation Options, visual observation, OCSD's Flow Spreadsheet, and San Diego Wastewater Collection System Division Overflow Rate Demonstration sheet.

In order to calculate a spill the following methods may be used:

1) Area Calculation (for Ponded Areas)
    - Length in feet (ft.) x Width (in ft.) x Depth (in ft.) = Cubic ft. x 7.48 gallons = spill amount in gallons (gal.)
      (L x W x D = Cu. Ft. x 7.48 = gal.)

2) Flow Calculation (for V-gutters and Channels)
    - Width (in ft.) x Depth (in ft.) x Ft. per second (fps) = Cu. Ft. x 60 seconds per min. (spm) = __ x __ Minutes of Spill (mos) = __ x 7.48 Gal. = Spill Amount in Gallons.
      (W x D x fps = cu.ft. x 60 spm = __ X __ mos x 7.48 gal. = spill amt.)

3) Triangle Flow Calculation (for Curb and Gutter)
    - Width (in ft.) x ½ Depth (in ft.) x Fps = Cu. Ft. x 60 Sec/Min. (spm) = __x__ Min. of Spill (mos) =__x 7.48 gal. = Spill amount in gallons
      (W x ½ D x fps = cu.ft. x 60 spm = __x__mos =__x 7.48 = spill amount)

4) When flow has ceased prior to GGSD arrival and a ponded area is not present such as in the case of a mere wet spot around a manhole, an estimation of flow is made based upon a visual observation.

5) Orange County Sanitation District SSO Estimation Chart (for Manhole Cover Vent Holes and Pick Holes Flow)

Estimated Flows thru Manhole Cover Vent Holes and Pick Holes for SSO estimating

Hole Dia. inches	Area sq. ft.	Coeff.of Vel. Cv	Coeff. Of Cont. Cc	C Cv x Cc	Water Ht inches	Water Ht inches	Water Ht feet	Q cfs	Q gpm	Q gph
	Formula: =0.785*Ax*Ax/144			Formula: =Ix*449			Formula: =Gx/12	Formula: =Ex*Bx*(SQRT(2*32.2*Hx))	Formula: =Ix*449	Formula: =Jx*60
Vent Hole										
0.50	0.00136	0.945	0.70	0.662	1/16 th	0.063	0.005	0.0005	0.23	14
0.50	0.00136	0.945	0.70	0.662	1/8 th	0.125	0.010	0.0007	0.33	20
0.50	0.00136	0.945	0.70	0.662	1/4 th	0.250	0.021	0.0010	0.47	28
0.50	0.00136	0.945	0.70	0.662	one half	0.500	0.042	0.0015	0.66	40
0.50	0.00136	0.945	0.70	0.662	3/4 ths	0.750	0.063	0.0018	0.81	49
0.50	0.00136	0.945	0.70	0.662	1 inch	1.000	0.083	0.0021	0.94	56
0.50	0.00136	0.945	0.70	0.662	1 1/4 "	1.250	0.104	0.0023	1.05	63
0.50	0.00136	0.945	0.70	0.662	1 3/8"	1.375	0.115	0.0024	1.10	66
0.50	0.00136	0.945	0.70	0.662	1 1/2"	1.500	0.125	0.0026	1.15	69
0.50	0.00136	0.945	0.70	0.662	1 5/8"	1.625	0.135	0.0027	1.20	72
0.50	0.00136	0.945	0.70	0.662	1 3/4"	1.750	0.146	0.0028	1.24	74
0.50	0.00136	0.945	0.70	0.662	2 inches	2.000	0.167	0.0030	1.33	80
0.50	0.00136	0.945	0.70	0.662	2 1/4"	2.250	0.188	0.0031	1.41	84
0.50	0.00136	0.945	0.70	0.662	2 1/2"	2.500	0.208	0.0033	1.48	89
0.50	0.00136	0.945	0.70	0.662	2 3/4"	2.750	0.229	0.0035	1.56	93
0.50	0.00136	0.945	0.70	0.662	3 inches	3.000	0.250	0.0036	1.62	97
0.50	0.00136	0.945	0.70	0.662	3 1/4"	3.250	0.271	0.0038	1.69	101
0.50	0.00136	0.945	0.70	0.662	3 1/2"	3.500	0.292	0.0039	1.75	105
0.50	0.00136	0.945	0.70	0.662	3 3/4"	3.750	0.313	0.0040	1.82	109
0.50	0.00136	0.945	0.70	0.662	4.000	4.000	0.333	0.0042	1.88	113
Vent Hole										
0.75	0.00307	0.955	0.67	0.640	1/16 th	0.063	0.005	0.0011	0.51	31
0.75	0.00307	0.955	0.67	0.640	1/8 th	0.125	0.010	0.0016	0.72	43
0.75	0.00307	0.955	0.67	0.640	1/4 th	0.250	0.021	0.0023	1.02	61
0.75	0.00307	0.955	0.67	0.640	one half	0.500	0.042	0.0032	1.44	87
0.75	0.00307	0.955	0.67	0.640	3/4 ths	0.750	0.063	0.0039	1.77	106
0.75	0.00307	0.955	0.67	0.640	1 inch	1.000	0.083	0.0045	2.04	122
0.75	0.00307	0.955	0.67	0.640	1 1/4 "	1.250	0.104	0.0051	2.28	137
0.75	0.00307	0.955	0.67	0.640	1 3/8"	1.375	0.115	0.0053	2.39	144
0.75	0.00307	0.955	0.67	0.640	1 1/2"	1.500	0.125	0.0056	2.50	150
0.75	0.00307	0.955	0.67	0.640	1 5/8"	1.625	0.135	0.0058	2.60	156
0.75	0.00307	0.955	0.67	0.640	1 3/4"	1.750	0.146	0.0060	2.70	162
0.75	0.00307	0.955	0.67	0.640	2 inches	2.000	0.167	0.0064	2.89	173
0.75	0.00307	0.955	0.67	0.640	2 1/4"	2.250	0.188	0.0068	3.06	184
0.75	0.00307	0.955	0.67	0.640	2 1/2"	2.500	0.208	0.0072	3.23	194
0.75	0.00307	0.955	0.67	0.640	2 3/4"	2.750	0.229	0.0075	3.38	203
0.75	0.00307	0.955	0.67	0.640	3 inches	3.000	0.250	0.0079	3.53	212
0.75	0.00307	0.955	0.67	0.640	3 1/4"	3.250	0.271	0.0082	3.68	221
0.75	0.00307	0.955	0.67	0.640	3 1/2"	3.500	0.292	0.0085	3.82	229
0.75	0.00307	0.955	0.67	0.640	3 3/4"	3.750	0.313	0.0088	3.95	237
0.75	0.00307	0.955	0.67	0.640	4.000	4.000	0.333	0.0091	4.08	245
Vent Hole										
1.00	0.00545	0.960	0.65	0.624	1/16 th	0.063	0.005	0.0020	0.88	53
1.00	0.00545	0.960	0.65	0.624	1/8 th	0.125	0.010	0.0028	1.25	75
1.00	0.00545	0.960	0.65	0.624	1/4 th	0.250	0.021	0.0039	1.77	106
1.00	0.00545	0.960	0.65	0.624	one half	0.500	0.042	0.0056	2.50	150
1.00	0.00545	0.960	0.65	0.624	3/4 ths	0.750	0.063	0.0068	3.06	184
1.00	0.00545	0.960	0.65	0.624	1 inch	1.000	0.083	0.0079	3.54	212
1.00	0.00545	0.960	0.65	0.624	1 1/4 "	1.250	0.104	0.0088	3.96	237
1.00	0.00545	0.960	0.65	0.624	1 3/8"	1.375	0.115	0.0092	4.15	249
1.00	0.00545	0.960	0.65	0.624	1 1/2"	1.500	0.125	0.0097	4.33	260
1.00	0.00545	0.960	0.65	0.624	1 5/8"	1.625	0.135	0.0100	4.51	271
1.00	0.00545	0.960	0.65	0.624	1 3/4"	1.750	0.146	0.0104	4.68	281
1.00	0.00545	0.960	0.65	0.624	2 inches	2.000	0.167	0.0111	5.00	300
1.00	0.00545	0.960	0.65	0.624	2 1/4"	2.250	0.188	0.0118	5.31	318
1.00	0.00545	0.960	0.65	0.624	2 1/2"	2.500	0.208	0.0125	5.59	336
1.00	0.00545	0.960	0.65	0.624	2 3/4"	2.750	0.229	0.0131	5.87	352
1.00	0.00545	0.960	0.65	0.624	3 inches	3.000	0.250	0.0136	6.13	368

Estimated Flows thru Manhole Cover Vent Holes and Pick Holes for SSO estimating

Hole Dia. inches	Area sq. ft.	Coeff.of Vel. Cv	Coeff. Of Cont. Cc	C Cv x Cc	Water Ht inches	Water Ht inches	Water Ht feet	Q cfs	Q gpm	Q gph
	Formula: =0.785*Ax*Ax/144			Formula: =Ix*449			Formula: =Gx/12	Formula: =Ex*Bx*(SQRT(2*32.2*Hx))	Formula: =Ix*449	Formula: =Jx*60
Vent Hole										
1.00	0.00545	0.960	0.65	0.624	3 1/4"	3.250	0.271	0.0142	6.38	383
1.00	0.00545	0.960	0.65	0.624	3 1/2"	3.500	0.292	0.0147	6.62	397
1.00	0.00545	0.960	0.65	0.624	3 3/4"	3.750	0.313	0.0153	6.85	411
1.00	0.00545	0.960	0.65	0.624	4.000	4.000	0.333	0.0158	7.08	425
Pick Hole semicircular area										
1.00	0.00273	0.960	0.65	0.624	1/16 th	0.063	0.005	0.0010	0.44	27
1.00	0.00273	0.960	0.65	0.624	1/8 th	0.125	0.010	0.0014	0.63	38
1.00	0.00273	0.960	0.65	0.624	1/4 th	0.250	0.021	0.0020	0.89	53
1.00	0.00273	0.960	0.65	0.624	one half	0.500	0.042	0.0028	1.25	75
1.00	0.00273	0.960	0.65	0.624	3/4 ths	0.750	0.063	0.0034	1.53	92
1.00	0.00273	0.960	0.65	0.624	1 inch	1.000	0.083	0.0039	1.77	106
1.00	0.00273	0.960	0.65	0.624	1-1/2 inch	1.500	0.125	0.0048	2.17	130
1.00	0.00273	0.960	0.65	0.624	2 inches	2.000	0.167	0.0056	2.51	150
1.00	0.00273	0.960	0.65	0.624	2 1/4"	2.250	0.188	0.0059	2.66	159
1.00	0.00273	0.960	0.65	0.624	2 1/2"	2.500	0.208	0.0062	2.80	168
1.00	0.00273	0.960	0.65	0.624	2 3/4"	2.750	0.229	0.0065	2.94	176
1.00	0.00273	0.960	0.65	0.624	3 inches	3.000	0.250	0.0068	3.07	184
1.00	0.00273	0.960	0.65	0.624	3 1/4"	3.250	0.271	0.0071	3.19	192
1.00	0.00273	0.960	0.65	0.624	3 1/2"	3.500	0.292	0.0074	3.31	199
1.00	0.00273	0.960	0.65	0.624	3 3/4"	3.750	0.313	0.0076	3.43	206
1.00	0.00273	0.960	0.65	0.624	4.000	4.000	0.333	0.0079	3.54	213

Prevent Reoccurrence

All surrounding lines are cleaned to ensure a continued normal flow. The area is put on a hot spot list. All adjacent line(s) are inspected via Closed Circuit Television (CCTV). If structural deficiencies are found, repairs are scheduled and the area remains on a hot spot list until repairs are completed.

If the SSO is Food Service Establishment (FSE) and/or Fats, Oils, Grease (FOG) related, the GGEMT is contacted to perform follow up inspections and the owner/agent is put on notice pending further action based upon the results of the GGEMT follow up inspections.

Force Main Leak:

Clean up and containment efforts similar to those for a sewer line blockage/spill are utilized. In the event that an overflow/spill has occurred due to a leak from a force main, the following actions will be taken.

1. The force main pumps will be shut down. This will prevent pumping more sewage to the broken line. Based on visual observation, if wet wells are close to capacity, then a bypass sewer line will be put in place to allow sewage flow during construction/repairs.

2. Contact will be made with the appropriate agencies.

3. GGSD staff will locate the break and decide upon a strategy for repair.

4. GGSD will block the channel with any necessary means to prevent sewage from flowing down the channel. GGSD has contractors that can be contacted 24-hours a day, seven (7) days a week, for emergency repairs.

5. A bypass sewer line will be put in place to allow sewage flow during construction/repairs.

6. Use trailer mounted by-pass pump when needed.

If a bypass is not feasible, a vactor truck will be on site to vacuum up sewage from a manhole near the break. Depending on the nature of the damage to the pipeline, location of the leak, volume of flow being conveyed and depth of the pipeline, emergency repairs may be performed by GGSD staff or by a contractor. Since the threat to the environment and the public health would still exist, the clean up and containment efforts would be similar to those for a main line blockage/spill.

Pump Station Failure:

Each pump station is fitted with an alarm system that provides information to the Water Services main office in the event of a system failure. Upon receiving an alarm message, the Stand-By person will be contacted. GGSD will respond immediately and determine if the shutdown of the pump or equipment failure will result in the release of sewage. GGSD staff will contact the appropriate personnel from within the Public Works Department for assistance. Mobilizing the necessary equipment needed in a timely fashion is vital in the event of a pump station failure. Pump stations are fitted with a backup generator.

In the event of a power outage, the back-up generators are automatically activated. Pump station wells can collect sewage inflow at peak times for four to eight hours before affecting service. Steps leading to the return of proper operation of the pump station will commence when the proper equipment is on site.

SSO EMERGENCY RESPONSE PLAN FOR PRIVATE SPILLS

Purpose:

To promptly contain, control, clean and protect public health from an unauthorized release of sewer wastewater, including notifying all appropriate agencies as a result of a private sewer system overflow.

Overview:

The Garden Grove Sanitary District (GGSD) a subsidiary district of the City of Garden Grove, owns and operates a diverse collection system that consists of three (3) pumping stations, 327 miles of gravity sewer mains, 9,150 feet of force mains, 37,100 sewer connections and an approximate population of 186,000[2] served by the GGSD. The proceeding plan provides how the GGSD responds to a public sewer overflow/spill. Actions presented reduce or eliminate public health hazards, prevent unnecessary property damage, minimize the inconvenience of service interruptions in event of an overflow/spill and prevent any overflows from entering streets, gutters and/or storm drains. GGSD utilizes the following five (5) main steps to take when responding to sewage overflow/spills:

GGSD utilizes the following four main steps when responding to private sewage overflow/spills:

1) CONTAIN spilling sewage and prevent from entering streets, gutters, and/or storm drain systems.

2) COMMUNICATE with agencies, property owner, and the Garden Grove Environmental Management Team (GEMT).

3) CALCULATE spill volume.

4) CLEAN UP affected areas

NOTIFICATION PROCEDURES

The following illustrates GGSD's procedure to communicate internally and externally, mobilize, and respond to and correct or repair any condition that may cause or contribute to a SSO. There is a response to each reported spill caused by public or private facilities that occur on public or private property.

An overflow may be detected by GGSD staff , City employees, or by others (i.e. residents, business owners, etc.). The Water Services Division of the Department of Public Works is responsible for

[2] OCSD city and agency collection facilities O & M Survey '03-04 data

accepting all phone calls regarding possible sewer overflows during business hours, and is responsible for responding to these notifications 24 hours a day. After hours, a notification system is established with other City Departments which immediately directs any reports to the 24 hour on call "Stand-By" staff person for Water Services, who dispatches the GGSD crews, makes notifications to regulatory agencies and compiles information on the spill. The details of these procedures are summarized in stepwise procedure below.

- Notification is received at the City, typically either from a private citizen, business owner or other GGSD or City staff.
- During business hours, calls are received at the City Water Services Division main office and then forwarded to the Sanitation Supervisor, Foreman, and other key GGSD personnel via text messaging. GGSD sanitation crews are then dispatched to the scene.
- After hours, City Police Department personnel will gather the proper information from callers and forward this information to the 24 hour on call "Stand-By" staff person.

Contain the Spill:

Upon arrival at the site, a preliminary investigation of the reported spill will take place in order to confirm whether a sewage spill is on private or public property. The GGSD staff will determine what steps are needed to take place in order to contain the spill. If a spill is found on private property, the GGSD crews will take the appropriate steps to prevent sewage from entering gutters, catch basins, storm drains, channels or other critical locations.

Containing the spill with sand bags, dirt berms and/or placing rubber mats over catch basins is initiated to prevent sewage from entering waters of the state. This includes surface, ground and storm drain waters within the state boundaries. Afterwards, GGSD crews will establish perimeters and/or control zones utilizing cones, barricades and/or delineators to prevent citizen contact with sewage overflow. If a spill is determined to be on public property the outlined steps in the SSO Emergency Response Plan for Public Spills will be followed.

If sewage enters a catch basin or storm drain, GGSD staff will go down stream to intercept and contain the flow of sewage. Once the sewage is contained, the combination truck will be used to vacuum up the sewage and wash down water from the catch basin or storm drain.

Communicate and Notification:

GGSD crews will identify the responsible property owner at the location of the spill to collect and document all information regarding the spill as set forth by the RWQCB. RWQCB, OC Public Works, and the OCHCA will be notified of all spills regardless of size. GGSD staff will take pictures of the spill and forward the files to the City of Garden Grove Environmental Management Team (GGEMT) who is responsible for the Fats, Oils, and Grease (FOG) program and who has the legal authority to cite businesses. All agencies affected as specified by local, state, and other regulations will also be notified.

GGSD will inform the property owner that it is their responsibility to hire a private contractor or plumber at their expense to remedy the problem. If the property owner is uncooperative or unavailable to provide information, the GGSD staff will contact the OCHCA, OC Public Works, and RWQCB to inform them of an uncooperative or unavailable property owner.

GGSD staff will standby on-site until the problem has been resolved. After a reasonable time, if the private plumber or private contractor has not resolved the problem, then GGSD staff will take the necessary measures to remedy the problem at the property owners' expense. If the property owner fails to correct the problem, they may be subject to having their water service turned off and face possible fines and/or penalties.

GGSD staff will inform the property owner of measures that can be taken in order to prevent future spills. This includes grease control handouts and/or information on how to contact plumbers for preventative maintenance.

The following summarizes the notification process:

Orange County Santa Ana Region

Sanitary Sewer Overflow Notification & Reporting Guidelines

Statewide General Waste Discharge Requirements Order No. 2006-0003 finds that all federal and state agencies, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one mile in length requires notification and reporting of all sanitary sewer overflows (SSOs). SSOs are defined as any overflow, spill, release, discharge or diversion of wastewater from a sanitary sewer system. (See page 5 of the Order No. 2006-0003 for the complete definition of SSOs).

Type of SSO	Initial Notification Timeframe*	Agency to Notify by Phone	Report Timeframe
Category 1 – Discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition that: C. Reach surface water and/or reach a drainage channel tributary to a surface water; or D. Reach a municipal separate storm sewer system and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. (Any volume of wastewater not recovered from the municipal separate storm sewer system is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or ground water infiltration basin (e.g., infiltration pit, percolation pond).) **Greater than or equal to 1,000 gallons**, **notify the OES** and obtain a notification control number.	As soon as practical within 2 hours of becoming aware	• OES1 • OCHCA[2] • OC Public Works[3] and city	Submit Draft report within 3 business days of becoming aware of the SSO. Certify within 15 calendar days of SSO end date. SSO Technical Report: Certify within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater is spilled to surface waters.
Category 1 – any volume < 1000 gallons	As soon as practical	• OCHCA[2]	
Category 2 – Discharges of untreated or partially treated wastewater of **1,000 gallons or greater** resulting from an enrollee's sanitary sewer system failure or flow condition that **do not** reach surface water, a drainage channel, or a municipal separate storm sewer system unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.	As soon as practical	• OCHCA[2]	Submit Draft report within 3 business days of becoming aware of the SSO. Certify within 15 calendar days of SSO end date.
Category 3 – All other discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition.	As soon as practical	• OCHCA[2]	Submit Certified report within 30 calendar days after the end of month in which SSO occurred.
Private lateral – Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sewer assets.	As soon as practical	• OCHCA[2] • OC Public Works[3] and city	PLSDs that the enrollee becomes aware of may be voluntarily reported to the CIWQS Online SSO Database.

Notes: *Updates should be provided as necessary; 1 Water Code section 13271; 2 Health and Safety Code; 3 NPDES Stormwater Regulations and local Water Quality Ordinance.

SSO Notification Contacts:

Normal Hours	After Hours
OCHCA (Please call down the list until someone is contacted) 5. (714) 433-6419 (Office Support Staff) 6. Hisham Elmishad (714) 433-6284 7. Juan Anzora (714) 433-6287 8. Pauline Liu (714) 433-6286	Control 1: (714) 628-7008 (will contact OCHCA oncall staff)
RWQCB - Santa Ana Region (951) 782-4130 Najah Amin (951) 320-6362	RWQCB: (951) 782-4130 (voice mail) OES: (800) 852-7550
OES (Office of Emergency Services) (800) 852-7550	24 hours
OC Public Works (714) 955-0600 (storm drain/flood channel facility owners) (877) 89-SPILL (897-7455) 24 HR. Hotline	Control 1: (714) 628-7008 (specify water pollution incident notification)
Water Quality Monitoring Sierra Analytical Labs, Inc (Rick Forsyth) (714)-348-9389	(714) 348-9389; sierralabs@sierralabs.net; www.sierralabs.net/sierra.html
Water Quality Monitoring Associated Laboratories (714) 771-6900	(714) 771-6900; info@associatedlabs.com; www.associatedlabs.com

Developed by the Orange County Sanitation District with RWQCB, OCHCA and OC Public Works. Updated on 3/26/2018.

A Sanitary Sewer Overflow (SSO) task force has been established and must be contacted for spills in excess of 1,000 gallons or when sewage enters storm drains and/or waters of the state. The task force consists of the Public Works Director, City Engineer, Water Services Manager, Streets/Environmental Services Manager, Sanitation Supervisor, Sanitation Foreman, and any others necessary to complete tasks. The task force will take the appropriate steps to ensure compliance with all regulatory agencies and oversee clean up procedures. In addition, the task force may be convened when, in the opinion of any task force member, there are circumstances that warrant the convening of the group.

Written reports of overflows/spills must be prepared and filed within five (5) days with the above agencies after immediate notification has been completed.

It is necessary to document all relevant information, such as:

1. The time the SSO is first reported to GGSD and the name and phone number of the person reporting the SSO.

2. Names of GGSD staff reporting SSO to RWQCB (date and time contacted).

3. Names of GGSD staff responding to SSO.

4. Verified SSO start time through witnesses and stop time and dates.

5. Whether SSO reached storm drain or other surface waters.

6. Containment information.

7. Wash water disposal method.

8. Estimated SSO rate and calculation tabulation methodology used.

9. Amount (volume) of SSO lost and recovered.

10. Amount (volume) of recovered and lost wash water and sewage-contaminated water.

11. Location of the SSO (address, city, zip, county).

12. Number of prior SSO's within 1000 ft of the location and dates of prior SSO's.

13. Location of potential blockage and description of component from which spill occurred.

14. Likely cause of SSO.

15. SSO cause- detailed description.

16. Measurable precipitation during 72-hour prior to SSO.

17. Steps taken or planned to reduce, eliminate and prevent reoccurrence or mitigate the impact of SSO and schedule of major milestones.

18. Where SSO entered storm drain inlet, initial and/or secondary receiving water name/description.

19. Final destination of sewage.

20. Notification times and person(s) contacted at OCHCA, RWCQB, RDMD, and/or OES.

21. If possible, photo documentation of spill containment efforts.

22. All copies of reports, faxes, photos etc. need to be kept in the spill document binder and Waste Discharge filing cabinet located at the City Garden Grove Municipal Yard, Water Services Division, 13802 Newhope St. Garden Grove, CA 92843.

23. Note if the GGEMT is involved, include GGEMT's findings, conclusions, and any actions taken or pending.

Calculate the Spill:

Water pump station flow rates assist in calculations. GGSD staff will record spill volumes on spill response form. GGSD uses several different methods for calculating spills: GGSD Flow Calculation Options, visual observation, OCSD's Flow Spreadsheet, and San Diego Wastewater Collection System Division Overflow Rate Demonstration sheet.

In order to calculate a spill the following methods may be used:

1) Area Calculation (for Ponded Areas)
   - Length in feet (ft.) x Width (in ft.) x Depth (in ft.) = Cubic ft. x 7.48 gallons = spill amount in gallons (gal.)
     (L x W X D = Cu. Ft. x 7.48 = gal.)

2) Flow Calculation (for V-gutters and Channels)
   - Width (in ft.) x Depth (in ft.) x Ft. per second (fps) = Cu. Ft. x 60 seconds per min. (spm) = __ x __ Minutes of Spill (mos) = __ x 7.48 Gal. = Spill Amount in Gallons.
     (W x D x fps = cu.ft. x 60 spm = __ X __ mos x 7.48 gal. = spill amt.)

3) Triangle Flow Calculation (for Curb and Gutter)
   - Width (in ft.) x ½ Depth (in ft.) x Fps = Cu. Ft. x 60 Sec./Min. (spm) = __x__ Min. of Spill (mos) =__x 7.48 gal. = Spill amount in gallons
     (W x ½ D x fps = cu.ft. x 60 spm = __x__mos =__x 7.48 = spill amount)

4) When flow has ceased prior to GGSD arrival and a ponded area is not present such as in the case of a mere wet spot around a manhole, an estimation of flow is made based upon a visual observation.

5) Orange County Sanitation District SSO Estimation Chart (for Manhole Cover Vent Holes and Pick Holes Flow)

Estimated Flows thru Manhole Cover Vent Holes and Pick Holes for SSO estimating

Hole Dia. inches	Area sq. ft.	Coeff.of Vel. Cv	Coeff. Of Cont. Cc	C Cv x Cc	Water Ht inches	Water Ht inches	Water Ht feet	Q cfs	Q gpm	Q gph
	Formula: =0.785*Ax*Ax/144			Formula: =Ix*449			Formula: =Gx/12	Formula: =Ex*Bx*(SQRT(2*32.2*Hx))	Formula: =Ix*449	Formula: =Jx*60
Vent Hole										
0.50	0.00136	0.945	0.70	0.662	1/16 th	0.063	0.005	0.0005	0.23	14
0.50	0.00136	0.945	0.70	0.662	1/8 th	0.125	0.010	0.0007	0.33	20
0.50	0.00136	0.945	0.70	0.662	1/4 th	0.250	0.021	0.0010	0.47	28
0.50	0.00136	0.945	0.70	0.662	one half	0.500	0.042	0.0015	0.66	40
0.50	0.00136	0.945	0.70	0.662	3/4 ths	0.750	0.063	0.0018	0.81	49
0.50	0.00136	0.945	0.70	0.662	1 inch	1.000	0.083	0.0021	0.94	56
0.50	0.00136	0.945	0.70	0.662	1 1/4 "	1.250	0.104	0.0023	1.05	63
0.50	0.00136	0.945	0.70	0.662	1 3/8"	1.375	0.115	0.0024	1.10	66
0.50	0.00136	0.945	0.70	0.662	1 1/2"	1.500	0.125	0.0026	1.15	69
0.50	0.00136	0.945	0.70	0.662	1 5/8"	1.625	0.135	0.0027	1.20	72
0.50	0.00136	0.945	0.70	0.662	1 3/4"	1.750	0.146	0.0028	1.24	74
0.50	0.00136	0.945	0.70	0.662	2 inches	2.000	0.167	0.0030	1.33	80
0.50	0.00136	0.945	0.70	0.662	2 1/4"	2.250	0.188	0.0031	1.41	84
0.50	0.00136	0.945	0.70	0.662	2 1/2"	2.500	0.208	0.0033	1.48	89
0.50	0.00136	0.945	0.70	0.662	2 3/4"	2.750	0.229	0.0035	1.56	93
0.50	0.00136	0.945	0.70	0.662	3 inches	3.000	0.250	0.0036	1.62	97
0.50	0.00136	0.945	0.70	0.662	3 1/4"	3.250	0.271	0.0038	1.69	101
0.50	0.00136	0.945	0.70	0.662	3 1/2"	3.500	0.292	0.0039	1.75	105
0.50	0.00136	0.945	0.70	0.662	3 3/4"	3.750	0.313	0.0040	1.82	109
0.50	0.00136	0.945	0.70	0.662	4.000	4.000	0.333	0.0042	1.88	113
Vent Hole										
0.75	0.00307	0.955	0.67	0.640	1/16 th	0.063	0.005	0.0011	0.51	31
0.75	0.00307	0.955	0.67	0.640	1/8 th	0.125	0.010	0.0016	0.72	43
0.75	0.00307	0.955	0.67	0.640	1/4 th	0.250	0.021	0.0023	1.02	61
0.75	0.00307	0.955	0.67	0.640	one half	0.500	0.042	0.0032	1.44	87
0.75	0.00307	0.955	0.67	0.640	3/4 ths	0.750	0.063	0.0039	1.77	106
0.75	0.00307	0.955	0.67	0.640	1 inch	1.000	0.083	0.0045	2.04	122
0.75	0.00307	0.955	0.67	0.640	1 1/4 "	1.250	0.104	0.0051	2.28	137
0.75	0.00307	0.955	0.67	0.640	1 3/8"	1.375	0.115	0.0053	2.39	144
0.75	0.00307	0.955	0.67	0.640	1 1/2"	1.500	0.125	0.0056	2.50	150
0.75	0.00307	0.955	0.67	0.640	1 5/8"	1.625	0.135	0.0058	2.60	156
0.75	0.00307	0.955	0.67	0.640	1 3/4"	1.750	0.146	0.0060	2.70	162
0.75	0.00307	0.955	0.67	0.640	2 inches	2.000	0.167	0.0064	2.89	173
0.75	0.00307	0.955	0.67	0.640	2 1/4"	2.250	0.188	0.0068	3.06	184
0.75	0.00307	0.955	0.67	0.640	2 1/2"	2.500	0.208	0.0072	3.23	194
0.75	0.00307	0.955	0.67	0.640	2 3/4"	2.750	0.229	0.0075	3.38	203
0.75	0.00307	0.955	0.67	0.640	3 inches	3.000	0.250	0.0079	3.53	212
0.75	0.00307	0.955	0.67	0.640	3 1/4"	3.250	0.271	0.0082	3.68	221
0.75	0.00307	0.955	0.67	0.640	3 1/2"	3.500	0.292	0.0085	3.82	229
0.75	0.00307	0.955	0.67	0.640	3 3/4"	3.750	0.313	0.0088	3.95	237
0.75	0.00307	0.955	0.67	0.640	4.000	4.000	0.333	0.0091	4.08	245
Vent Hole										
1.00	0.00545	0.960	0.65	0.624	1/16 th	0.063	0.005	0.0020	0.88	53
1.00	0.00545	0.960	0.65	0.624	1/8 th	0.125	0.010	0.0028	1.25	75
1.00	0.00545	0.960	0.65	0.624	1/4 th	0.250	0.021	0.0039	1.77	106
1.00	0.00545	0.960	0.65	0.624	one half	0.500	0.042	0.0056	2.50	150
1.00	0.00545	0.960	0.65	0.624	3/4 ths	0.750	0.063	0.0068	3.06	184
1.00	0.00545	0.960	0.65	0.624	1 inch	1.000	0.083	0.0079	3.54	212
1.00	0.00545	0.960	0.65	0.624	1 1/4 "	1.250	0.104	0.0088	3.96	237
1.00	0.00545	0.960	0.65	0.624	1 3/8"	1.375	0.115	0.0092	4.15	249
1.00	0.00545	0.960	0.65	0.624	1 1/2"	1.500	0.125	0.0097	4.33	260
1.00	0.00545	0.960	0.65	0.624	1 5/8"	1.625	0.135	0.0100	4.51	271
1.00	0.00545	0.960	0.65	0.624	1 3/4"	1.750	0.146	0.0104	4.68	281
1.00	0.00545	0.960	0.65	0.624	2 inches	2.000	0.167	0.0111	5.00	300
1.00	0.00545	0.960	0.65	0.624	2 1/4"	2.250	0.188	0.0118	5.31	318
1.00	0.00545	0.960	0.65	0.624	2 1/2"	2.500	0.208	0.0125	5.59	336
1.00	0.00545	0.960	0.65	0.624	2 3/4"	2.750	0.229	0.0131	5.87	352
1.00	0.00545	0.960	0.65	0.624	3 inches	3.000	0.250	0.0136	6.13	368

Estimated Flows thru Manhole Cover Vent Holes and Pick Holes for SSO estimating

Hole Dia. inches	Area sq. ft.	Coeff.of Vel. Cv	Coeff. Of Cont. Cc	C Cv x Cc	Water Ht inches	Water Ht inches	Water Ht feet	Q cfs	Q gpm	Q gph
	Formula: =0.785*Ax*Ax/144			Formula: =Ix*449			Formula: =Gx/12	Formula: =Ex*Bx*(SQRT(2*32.2*Hx))	Formula: =Ix*449	Formula: =Jx*60
Vent Hole										
1.00	0.00545	0.960	0.65	0.624	3 1/4"	3.250	0.271	0.0142	6.38	383
1.00	0.00545	0.960	0.65	0.624	3 1/2"	3.500	0.292	0.0147	6.62	397
1.00	0.00545	0.960	0.65	0.624	3 3/4"	3.750	0.313	0.0153	6.85	411
1.00	0.00545	0.960	0.65	0.624	4.000	4.000	0.333	0.0158	7.08	425
Pick Hole semicircular area										
1.00	0.00273	0.960	0.65	0.624	1/16 th	0.063	0.005	0.0010	0.44	27
1.00	0.00273	0.960	0.65	0.624	1/8 th	0.125	0.010	0.0014	0.63	38
1.00	0.00273	0.960	0.65	0.624	1/4 th	0.250	0.021	0.0020	0.89	53
1.00	0.00273	0.960	0.65	0.624	one half	0.500	0.042	0.0028	1.25	75
1.00	0.00273	0.960	0.65	0.624	3/4 ths	0.750	0.063	0.0034	1.53	92
1.00	0.00273	0.960	0.65	0.624	1 inch	1.000	0.083	0.0039	1.77	106
1.00	0.00273	0.960	0.65	0.624	1-1/2 inch	1.500	0.125	0.0048	2.17	130
1.00	0.00273	0.960	0.65	0.624	2 inches	2.000	0.167	0.0056	2.51	150
1.00	0.00273	0.960	0.65	0.624	2 1/4"	2.250	0.188	0.0059	2.66	159
1.00	0.00273	0.960	0.65	0.624	2 1/2"	2.500	0.208	0.0062	2.80	168
1.00	0.00273	0.960	0.65	0.624	2 3/4"	2.750	0.229	0.0065	2.94	176
1.00	0.00273	0.960	0.65	0.624	3 inches	3.000	0.250	0.0068	3.07	184
1.00	0.00273	0.960	0.65	0.624	3 1/4"	3.250	0.271	0.0071	3.19	192
1.00	0.00273	0.960	0.65	0.624	3 1/2"	3.500	0.292	0.0074	3.31	199
1.00	0.00273	0.960	0.65	0.624	3 3/4"	3.750	0.313	0.0076	3.43	206
1.00	0.00273	0.960	0.65	0.624	4.000	4.000	0.333	0.0079	3.54	213

Clean Up the Spill:

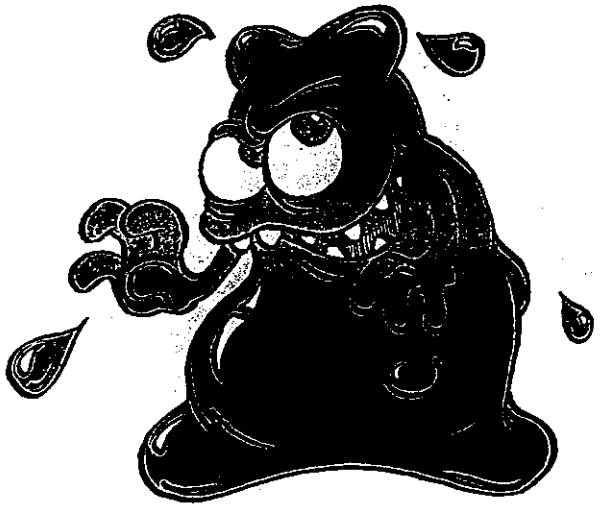
All overflow/spills must be cleaned regardless of size. Affected areas are to be washed down then vacuumed up utilizing a vactor truck to prevent sewage overflow/spills and wash water from entering waters of the state. All solids or semisolids resulting from the cleaning operations will be removed from the site and disposed at the OCSD's Treatment Plant No. 2 located in Huntington Beach. For the GGSD's records, photographs of affected area and existing damaged areas are taken for use in settling potential future claims.[3]

[3] Attached is Sewer Spill Response Form

Appendix F-1

FOG Control Program for Food Service Establishments

GARDEN GROVE SANITARY DISTRICT
FATS, OIL AND GREASE (FOG) CONTROL PROGRAM
FOR
FOOD SERVICE ESTABLISHMENTS



What's In Your Sink?
Help Control The Grease Monster

GARDEN GROVE SANITARY DISTRICT

GARDEN GROVE

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GARDEN GROVE SANITARY DISTRICT
11222 ACACIA PARKWAY, P.O. BOX 3070, GARDEN GROVE, CALIFORNIA 92842

MAR 01 2004

TO: Owners and Managers of Food Service Establishments

SUBJECT: Food Service Grease Control Program

The Garden Grove Sanitary District (GGSD or District) maintains the public sewer system serving your business on behalf of the City of Garden Grove and is required under new laws to institute a comprehensive grease control program. Grease from restaurants and other food preparation businesses are causing sewer line blockages and spills. The sewer spills end up in the storm drain system and waterways and are a significant cause of ocean water pollution.

In order for the GGSD to comply with the new regulations, the District is developing a new grease control program with your assistance. The first step is for a GGSD representative to visit your facility and review the kitchen equipment, drains, grease interceptor or grease trap (if existing), maintenance logs, kitchen best management practices, spill prevention and clean up practices, the menu, grease usage, and disposal practices.

The person visiting your facility will have proper identification and a copy of this letter. This person will be an employee of EEC, a consultant to the GGSD for this project. Information will be provided on the importance of minimizing grease discharges to the sewer system and recommendations for reducing discharges.

The regulations requiring the new grease control program could include substantial fines for sewer spills and non-conformance, therefore, your cooperation is a necessity.

Thank you for your participation and cooperation. If you have any questions, please call the GGSD at (714) 741-5956.

Sincerely,

A. J. Holmon III
Environmental Services Coordinator

GARDEN GROVE SANITARY DISTRICT
11222 ACACIA PARKWAY, P.O. BOX 3070, GARDEN GROVE, CALIFORNIA 92842

Kitchen Best Management Practices (BMP's)

Sinks and Drains

Drain Screens

- Be installed on all drains
- Have openings between 1/8" and 3/16"
- Be removable for ease of cleaning
- Be frequently cleaned (dispose of the screened solids to the trash)

Grease Container Usage

- Pour all liquid oil and grease from pots, pans, and fryers into a waste grease container
- Prior to washing, scrape solidified fats and grease from pots, pans, fryers, utensils, screens, and mats into a container
- Use recycling barrels or bins with covers for onsite collection of grease and oil
- Empty grill top scrap baskets or boxes into a container

Dishwashing

- Use rubber scrapers, squeegees, or towels to remove food and all visible fats, oils and grease from cook and serving ware prior to dishwashing
- Dry wipe remaining food and fats, oils and grease into trash can prior to dishwashing

Spill Prevention and Clean-up

Proactive Spill Prevention and Clean-Up Procedure BMPs

- Develop and post spill procedures
- Develop schedule for training employees about procedures
- Designate a key employee who monitors clean-up

Spill Prevention BMPs

- Empty containers before they are full to avoid accidental spills
- Provide proper portable container to transport materials without spilling
- Use a cover to transport grease materials to a recycling barrel

Spill Clean-up BMPs

- Block off sink and floor drains near the spill
- Clean spills with towels and absorbent material
- Use wet cleanup methods only to remove trace residues

Absorbent Materials and Towel Usage

- Use disposable absorbent materials to clean areas where grease may be spilled or dripped
- When using paper towels, use food grade paper to soak up oil and grease under fryer baskets
- Use towels to wipe down work areas
- Use absorbent materials under colanders in sinks when draining excess meat fat

Food Waste Disposal/Recycling

- Used or spent oil and grease generated from fryers and other cooking equipment can be recycled through a rendering or recycling company.

Food Grinders

- Food grinders should not be used in kitchens because the resulting large volume of food solids may clog drain pipes and/or fill grease traps and interceptors.

Employee Education

- An Education Program on the BMPs should be implemented consisting of:
  - New employee training program
  - Frequent refresher training program
  - Kitchen BMP signage

Ngay 14, Thang 1, Năm 2004

THÔNG CÁO: Người Chủ và Giám Đốc của Chỗ Làm Việc Thức Ăn

VỀ: Chương Trình Chế Ngự Dầu Mỡ Cho Các Việc Làm Thức Ăn

Garden Grove Sanitary District (GGSD/District) giữ gìn hệ thống ống cống nước cho dân chúng dùng cho kinh doanh, đại diện cho thành phố Garden Grove. Theo luật mới, chính phủ phải thành lập một chương trình đầy đủ chế ngự dầu mỡ. Dầu mỡ của nhà hàng và các tiệm làm thức ăn hay làm cống dầy ngăn chặn và tràn ra. Chất bẩn trong ống cống chảy vào lưu vực sông, sau đó đường sông; và là một lí do trầm trọng đã làm nước biển ô nhiễm.

Vì chính phủ theo luật mới, chính phủ đang khai triển một chủng trình chế ngự dầu mỡ cùng với sự giúp đỡ của quý vị. Bước đầu tiên là có người đại diện cho GGSD tới chỗ việc và xem xét kỹ đồ dùng trong nhà bếp, cống để thảo nước, máy bắt dầu (nếu có), sổ ghi các việc giữ gìn, phương pháp thu xếp nhà bếp, phương pháp ngăn cản sự đổ ra và quét dọn, danh sách chọn lựa thức ăn, cách dùng dầu mỡ và sự vứt bỏ.

Người đại diện mà đi xem chỗ việc sẽ có thẻ chứng minh đàng hoàng và mang theo thỏ này. Người nay làm cho hãng EEC, Inc., tư vấn của GGSD cho vụ này. Sẽ có thông tin về sự quan trọng bỏt đi dầu mỡ thả trong hệ thống cống rãnh và sử khuyên bảo.

Điều lệ mà cần chủng trình chế ngự dầu mỡ mới này sẽ có tiền phạt nặng nếu ống cống nước tràn ra và nếu không theo luật lệ, do đó, cộng tác của quý vị cần thiết.

Cám ơn cho sự tham gia và cộng tác của quý vị. Nếu có câu hỏi nào, xin liên lạc tôi tại GGSD (714) 741-5375.

Sincerely,

A.J. Holman, III

Environmental Services Coordinator

GARDEN GROVE SANITARY DISTRICT
11222 ACACIA PARKWAY, P.O. BOX 3070, GARDEN GROVE, CALIFORNIA 92842

Phương Pháp Thu Xếp Nhà Bếp (BMPs)

Hồ Rửa Chén Bát Và Cống Tháo Nước

Đồ che cống tháo nước

- Xếp đặt trên tất cả cống tháo nước
- Sẽ có lỗ giữa 1/8" và 3/16"
- Sẽ tháo ra được để rửa dễ dàng
- Sẽ rửa thường xuyên (vứt những đồ lọc trong thùng rác

Cách Dùng Bình Đựng Dầu Mỡ

- Đổ tất cả nước dầu mỡ từ chạu và chảo vào trong bình đựng dầu mỡ thừa
- Trước khi rửa, chà mập mỡ và dầu mỡ đã đặc lại ra chạu, chảo, đồ dùng, đồ che, và thảm trải vào trong bình
- Dùng lại thùng có nắp đậy để lấy được mỡ và dầu trên địa điểm
- Đổ ra vật thừa thải trong rổ hoặc thùng nướng bếp vào trong bình

Rửa Chén Bát

- Dùng đồ cạo loại cao su và cái chốt bằng cao su hoặc hay là khăn để tẩy sạch đồ ăn và tất cả dầu mỡ trong thấy được ra các đồ dùng nấu ăn trước khi rửa chén
- Lau khô đồ ăn thừa, vã dầu mỡ vào trong thùng rác trước khi rửa chén

Phương Pháp Ngăn Cản Sự Tràn Ra Và Quét Dọn

Phương thức thực hành cho sự tràn ra ngăn cản và quét dọn

- Khai triển và dán lên phương thức sự tràn ra
- Xếp đặt chương trình để luyện tập công nhân về phương thức
- Chỉ định một công nhân chính để kiểm thính việc quét dọn

Ngăn cản sự tràn ra

- Đổ ra bình trước khi dầy để tránh đánh đổ bất ngờ
- Sửa soạn thùng đang hoạn để chuyển chỗ đồ để không đổ ra
- Dùng nắp lúc chuyển chỗ đồ dầu mỡ tới hộp dùng lại

Quét Dọn Sự Tràn Ra BMPs

- Cản ra cống thảo nước ở trong hồ rửa chén và dưới dắt gần chỗ dánh đổ ra
- Dọn nước đổ ra với khăn và đồ thấm
- Dùng cách quét dọn đồ ướt chỉ lấy ra vật dư còn lại

<u>Cách Dùng Đồ Thấm Và Khăn Lau</u>

- Dùng đồ thấm có thể bỏ đi không xài nữa để dọn chỗ mà dầu mỡ có thể đổ hay chảy ra nhỏ ra
- Lúc dùng khăn lau, dùng giấy loại dùng cho đồ ăn để làm thấm dầu mỡ ở dưới rổ chiên
- Dùng đồ thấm ở dưới rá lọc trong hồ rửa chén lúc rút thịt mỡ thừa

<u>Vứt Bỏ Đồ Ăn Và Sử Dụng Lại</u>

- Dầu mỡ từ chảo chiên và đồ nấu khác có thể dùng lại qua hãng tái chế

<u>Máy Xay Đồ Ăn</u>

- Máy xay đồ ăn sẽ không được dùng trong nhà bếp tại vì có nhiều vật dư thừa đồ ăn có thể đóng nẹt ống tháo nước và/ hoặc hay là làm đầy máy bắt dầu mỡ

<u>Huấn Luyện Công Nhân</u>

- Sẽ làm cho xong Chương Trình Học Thức về BMPs gồm có:
- Chương trình huấn luyện cho công nhân mới
- Chương trình huấn luyện ôn lại thường xuyên
- Làm bảng cho nhà bếp BMP

March 1, 2004

PARA: Dueños y Gerentes De Establecimientos De Servicios De Comida
SUBJETO: Programa Nuevo Para El Control De Grasas

El Distrito Sanitario de la Ciudad de Garden Grove (GGSD ó El Distrito) mantienen el servicio publico de el alcantarillado que sirve su negocio de parte de la Ciudad de Garden Grove, y esta requirido bajo nuevas leyes de instituir un programa comprensivo de control de grasas. Grasas que vienen de restauranes y de otros negocios de preparacion de comida estan causando obstrucciones o derrames en las lineas de la alcantarilla. Los derrames que vienen de la alcantarilla terminan en el sistema de drenaje de lluvias y desvios de agua, los cuales son una causa significante de la contaminacion del agua del mar.

En orden para que el GGSD pueda compluir con las nuevas regulaciones, El Distrito esta desarrollando un nuevo programa para el control de grasas con su ayuda. El primer paso comienza con un representante del GGSD visitando su establecimiento para revisar su equipaje de cocina, desagues, interceptores de grasas (si existen), constancias de mantenimiento, buenas practicas de manejamiento de cocina, prevencion de derrames, practicas de limpieza, el menu, uso de grasas, y metodos de eliminacion de basura.

La persona que visite su establecimiento tendra identificacion apropriada y una copia de esta carta. Esta persona sera un empleado de la firma EEC, quienes estan sirviendo como consultores para el GGSD en este proyecto. Informacion se hara disponible sobre la importancia de minimizar los descargos de grasa que llegan al sistema de la alcantarilla, como tambien recomendaciones para reducir estos descargos.

Las regulaciones requiriendo el nuevo programa de control de grasas podrian incluir multas considerables por descargos a la alcantarilla y por no conformar con las regulaciones. Por eso, su cooperacion es muy importante y necesario.

Gracias por su participacion y cooperacion. Si tiene qualquier pregunta, porfavor llame al GGSD al 714-742-5375.

Sinceramentc,

A. J. Holmon III
Coordinador De Servicios Ambientales

식당 관계자에게 알립니다 March 1, 2004

배출하는 폐유를 규칙적으로 처리 합시다

가든그로브 위생 관리처 (Garden Grove Sanitary District) 는 업소 와 거주에서 사용 하는 공동 하수도를 관리함으로 여러분에게 이 편지를 보냅니다. 식당에서 내보내는 폐유가 오래되면 거리로 나가는 하수도 가 막히면서 오염이 여러군데로 퍼지고 또 직접바다로 흘러내려가 모든 환경을 파괴합니다. 앞으로 깨끗한 환경을 유지하기 위한 세로운 법을 여러분께서 지켜야 합니다.

가든 그로브 위생 관리처 (GGSD) 는 새로 세워진 법을 지키기 위하여 여러분 의 협조가 필요합니다. 첫째로, 위생 관계자들이 여러분 식당에 시찰하여 주방에 있는 도구, 배수설비, 유지를 걸러낼 수 있는 장치 가 준비되여있나 살표볼것입니다.

그리고 식당에 일람표 가있어 주방을 규칙적으로 종업원들이 깨끗이 정리하는 것을 기록하고 또 식당에서 제공하는 음식이 폐유를 많이 버리는 종류인가 살펴볼 예정입니다. 그리고 만약하수도가 폐유로 막히면 어떤방법으로 처리할수있나 위생관계자 에게 보여드려야 하며, 마지막으로 여러분이 어떤방법으로 유지 처리하나 질문할것입니다.

가든그로브 시 는 식당 "위생 환경회사" (Enviromental Engineering Contract Inc) 와 계약되여 이 회사 직원위생 관계자가 여러분 식당에 들려 주방을 검사할예정이며, 관계자께서는 그의 신임장 신분증과 이 편지를 여러분에게 보여드릴것입니다.

새로 계획한 폐유 감소 사항에 여러분의 협조가 필요하며 잘지켜주십시오. 앞으로 법을 위반하게 되면 벌금을 지불하게됩니다.

여러분의 협력을 간청하며 질문이 있으시면 가든그로브 위생 행정부로 연락하시고 또 언어에 어려운점이 있으시면 경찰국 유태경 에게 연락하십시오.

A.J. Holmon

GGSD: 741-5375

A.J. Holmon 드림

유태경: 741-5592

GARDEN GROVE SANITARY DISTRICT
11222 ACACIA PARKWAY, P.O. BOX 3070, GARDEN GROVE, CALIFORNIA 92842

주방을 제일 깨끗하게 관리하는 방법

배수 찌꺼기 채

모든배수에 배수채를 끼십시오.
배수채의 구멍사이는 1/8~3/16 인치가 되는 것을 사용하십시오.
채는 이동적인 것을 사용하여 쉽게 뺏다 낄수있어야 합니다.
채에 찌꺼기가 많이 모이면 쓰레기 통으로 버리십시오.

유지 통 사용 방법

냄비나 접시에서 버리는 액체 와 굳은유지 는 커다란 폐유통에
배치하십시오.
설거지 하기전에 미리 냄비나 접시에 굳어있거나 묻어있는 유지는
휴지를 이용하여 닦아 내십시오.
유지를 재생하는 통에 넣으시고 채워지면 재생회사에
연락하여 처리하는 방법으로 하십시오.
석쇠에 눌러붙은 찌꺼기를 긁어낸다음 쓰레기통에 배치하십시오.

설거지

접시에 남아있는 음식, 또는 주방 도구 등을 설거지하기 전에
묻어있는 유지를 종이행주를 사용하여 잘닦아내십시오.

배수관 유출

미리 배수관 유출 때 쉽게 처리할수있게 준비하십시오.
종업원들에게 유출에 관한방법을 미리 알려 주십시오.
종업원중에 유출 때 감시할 수 있는 사람을 정해놓으십시오.

유출당시에

주방에 쉽게 이동 할 수 있는 유지통이 있어야 하며 운반할 때 흘리지 않도록 조심하십시오.

유지재생통을 이동할 때 통뚜껑을 덮고 유지재생통으로 옮기십시오.

유지재생통을 실수로 쓸어트리면 바닥에 유지를 흘릴수가있으니 유지재생 통에 유지가 다차기 전에 미리 배치하십시오.

만약 유지재생통이 실수로 쓸어지면 주방바닥에 내려가는 배수관이 있으면 흘러내려가지 않도록 걸래로 막으십시오.

하수오물이나 잔여 물을 딱으실때는 물이나 청소하는 세제로 닦으십시오.

물질흡수하는 도구 와 천종류 의 걸레

흘린폐유를 치우실때는 사용후 버릴 수 있는 흡수하는 종이나 걸래를 사용하십시오.

튀김 이나 기름이 흐르는 음식 밑에는 기름을 흡수하는 종이행주를 사용하십시오.

요리 하는 근처 치우실때는 종이, 또는 깨끗한 천종류의 행주를 사용하십시오.

요리한 음식에서 기름이 많이 흘르면 여과기를 사용하고 밑에는 종이행주로 바치십시오.

버리는 음식 과 유지재생

버리는 요리기름 이나 도구들은 유지재생 회사에서 갖고갑니다.

음식 가는기계

음식가는 기계에 많은 찌꺼기를 깨끗지 딱아 낸다음 물로 씻어내시고 배수관으로 내려가는 곳에 찌꺼기 걷어내는 채를 끼여 놓으십시오.

종업원 가르키기

주방에서 위생적으로 일할 수 있는 방법 은 새로 채용한 종업원이 자세히 유지에 관한점을 알아야 합니다.

가끔 일하시는 분들은 위생에 관한 것을 반복하십시오.

규칙의 기호를 종업원들이 볼수있게 걸어놓으십시오.

GREASE TRAP / INTERCEPTOR MAINTENANCE LOG

FACILITY NAME: **LOCATION:**

DATE	SERVICED BY WHOM	TYPE OF SERVICE (pumping/hauling, repair, etc.)	Disposal Site (if known)	Volume Pumped	SERVICE COMMENTS (volume pumped, problems, etc.)

LATERAL SEWER LINE MAINTENANCE LOG

FACILITY NAME: **LOCATION:**

DATE	SERVICED BY WHOM	TYPE OF SERVICE (rodding, jetting, repair, etc.)	SERVICE COMMENTS (problems, observations, etc.)

EMPLOYEE BMP TRAINING LOG

FACILITY NAME: **LOCATION:**

EMPLOYEE NAME	INITIAL TRAINING DATE	REFRESHER TRAINING			

RECYCLABLE GREASE (YELLOW GREASE) PICKUP / DISPOSAL LOG

FACILITY NAME:

DATE	PICKED UP BY WHOM	SERVICE COMMENTS (volume collected, etc.)

GARDEN GROVE

CITY OF GARDEN GROVE
PUBLIC WORKS

February 15, 2005

Dear Food Service Establishment,

Grease is the number one cause of sewer line blockage. Grease from restaurants and food establishments hardens in the lines and blocks the flow, causing backups and sewer spills. These spills can enter the storm drain and pollute the ocean, causing beach closures.

Renderers are companies that collect Fats, Oil, Grease (FOG) from Food Service Establishments (FSEs). The renderer then properly disposes of the collected grease.

The 2 most common products rendered from an FSE are yellow grease and brown grease.

- Yellow grease: from bulk deep fat frying operations and oil/water separator units.
- Brown grease: from grease traps and interceptor waste.

The following businesses provide rendering services. Please note that the City of Garden Grove does not endorse the following contractors and their services:

Baker Commodities
4020 Bandini Blvd.
Los Angeles, CA 90023
(323) 269-6177

Darling International
P.O.Box 58725
Los Angeles, CA 90058
(213) 680-8963

OCP (Orange County Pumping)
P.O. Box 10415
Santa Ana, CA 92711-0415
714-505-9662

Martinez Pumping Grease Trap Service
P.O.Box 39144
Downey, CA 90239
(626) 625-6051

Martin Feed & Cattle, Inc.
7080 Summer Ave.
Corona, CA 92880
(909) 737-7617

Triple "A" Pumping & Jetting Services, Inc.
P.O. Box 54026
Irvine, CA 92619
(949) 855-7836

Southwest Processors
4120 Bandini Blvd.
Los Angeles, CA 90023
(323) 269-9876

Coast Packing Company
P.O.Box 58918
Vernon, CA 90058
(323) 277-7700

S.M.C. Grease Specialist
P.O. Box 1343
Corona, CA 92878
951-788-6042

To insure proper disposal of your grease, we encourage you to use the services of a grease renderer.

If you have any questions, please contact me at (714) 741-5564.

Sincerely,

Amabelle S. Padilla
Sr. Environmental Services Specialist

GARDEN GROVE SANITARY DISTRICT
11222 ACACIA PARKWAY, P.O. BOX 3070, GARDEN GROVE, CALIFORNIA 92842

WHAT'S IN YOUR SINK? HELP CONTROL THE GREASE MONSTER

GARDEN GROVE SANITARY DISTRICT (GGSD)
CONTACT LIST – WHO TO CALL

GARDEN GROVE SANITARY DISTRICT (GGSD)/CITY OF GARDEN GROVE
(Sewer Spills/Overflows/Back-ups)

Phone: (714) 741-5395

After Hours: (714) 741-5704

GARDEN GROVE SANITARY DISTRICT (GGSD) FOG PROGRAM
(Administration/Inspections):

Phone: (714) 741-5375 7:30 p.m. to 5:30 p.m. Monday-Friday

OTHER IMPORTANT PHONE NUMBERS

Orange County Healthcare Agency (Environmental Health Section)

Phone: (714) 667-3600

After Hours: (714) 628-7008

County of Orange RDMD (storm drain)

Phone: (714) 567-6363

After Hours: (714) 628-7008 Control 1

Regional Water Quality Control Board – Santa Ana Region

Phone: (909) 782-4130

After Hours: (800) 852-7550 Office of Emergency Services

Appendix F-2

FOG Informational Handouts

Spill Response Agencies

City of Garden Grove Fire Department
(714) 741-5600
or if there is an emergency dial 911

City of Garden Grove Environmental Compliance Division (714) 741-5375

Orange County Resources and Development Management Department (714) 567-6363

Household Hazardous Waste Disposal

City of Garden Grove Department of Public Works
(714) 741-5375

Report Illegal Dumping

City of Garden Grove Environmental Compliance Division (714) 741-5375

To Report a Clogged Catch Basin

City of Garden Grove Department of Public Works
(714) 711-5375

For more information about storm drain protection or additional brochures, please call the City of Garden Grove Public Works Department at (714) 741-5375.

This brochure is one of a series of pamphlets describing storm drain protection measures.

Pamphlets include:

- Painting
- Food Service Industry
- Fresh Concrete and Mortar Application
- General Construction and Site Supervision
- Heavy Equipment and Earth Moving Activities
- Landscaping, Gardening and Pest Control
- Home Repair and Remodeling
- Automotive Maintenance and Car Care
- Roadwork and Paving.

GARDEN GROVE

Published by:
City of Garden Grove
Public Works Department
Environmental Compliance Division

Preventing Storm Water Pollution During

Maintenance Practices for Your Business

A guide for:

- Commercial Businesses
- Industrial Businesses
- Property Management Companies
- Commercial and Industrial Property Owners

Ocean Pollution Prevention: It's Up To Us

Garden Grove has two drainage systems; sewers and storm drains. The storm drain system was designed to prevent flooding by carrying excess rainwater away from city streets out to the ocean. Because the system contains no filters, it now serves the unintended function of carrying urban pollution straight to the ocean.

This pamphlet tells you how to prevent ocean pollution from "stormwater" or "urban runoff."
Rain, industrial and household water mixed with pollutants creates stormwater pollution. The pollutants include: oil and other automotive fluids, paint and construction debris, yard and pet wastes, pesticides and litter.

Urban runoff pollution flows to the ocean through the storm drain system, which takes water and debris straight from the streets to the ocean. Each day 100 million gallons of polluted urban runoff enter the ocean untreated, leaving toxic chemicals in our surf and tons of trash on our beaches.
Urban runoff pollution contaminates the ocean, closes beaches, harms aquatic life and increases the risk of inland flooding by clogging gutters and catch basins.

These Best Management Practices (BMPs) will ensure a cleaner city and ocean.

Business Maintenance Problems:

Common business maintenance practices include outdoor area washing, outdoor storage of materials and routine parking lot cleaning. All of these activities can contribute to urban runoff and ocean pollution if not conducted or managed properly.
Materials and wastes blown or washed into a street, gutter or storm drain have direct impacts on the ocean.

Pollution from parking lots and outdoor area washing include sediment, oil, litter, pesticides and heavy metals. Sediment can clog the gills of fish, block light transmission and increase ocean water temperatures, all of which harm sea life, disrupting the food chain upon which both fish and people depend.

Solutions:

Keep Work Areas Clean

- Handling, storing and disposing of materials properly can prevent pollutants from entering the storm drains.

Cleaning Outdoor Areas

- If you wash your building, sidewalk or parking lot, you must contain the water. Use a shop vac to collect the water and contact the Garden Grove Sanitary District at (714) 741-5090 for proper disposal information. Do not allow the wash water to enter the street, gutter or storm drain.
- Use a damp mop, broom or scrub brush to clean floors and sidewalks.

Landscape Maintenance

- Compost grass clippings, leaves and sticks. Do not sweep or hose vegetative clippings to the street, gutter or storm drain.
- Irrigate slowly and inspect the irrigation system for leaks, overspray and runoff. Report problems to the property management.
- Do not apply fertilizers or pesticides with in 100 feet of waterways or if rain is expected within 48 hours.

Handling Materials & Wastes

- Do not dump any toxic substance or liquid waste on the pavement, ground or near a storm drain. Even materials that seem harmless such as latex paint or biodegradable cleaners can damage the environment.
- Call your trash hauler to replace leaking dumpsters or dumpsters missing lids.
- Keep dumpster lids closed. This prevents litter and trash from blowing out of the dumpster and rainwater from entering the dumpster.
- Keep the area around the dumpster clear of trash and debris. Do not overfill the dumpster.

Material Storage

- Store materials indoors or undercover and away from storm drains.
- Properly label materials and wastes. Educate employees with Material Safety Data Sheets.
- Place all 55 gallon drums on secondary containment pallets or in a bermed area.

Spills

- Do not hose down or use water on spills.
- Use dry cleaning methods to clean up dry spills, such as sweeping or mopping.
- Use cat litter, towels or rags to absorb wet spills. Dispose of all non-hazardous waste into the trash and hazardous waste appropriately.
- Prepare and use spill clean up kits in areas where hazardous or liquid wastes are stored. Include safety equipment and clean up materials appropriate to the type and quantity of material that could spill. Pour cat litter, sawdust or cornmeal on spills.

Employee & Customer Education

- Educate your employees. Include water quality training in new employee orientation and conduct annual review sessions.
- Educate your customers. Raise both employee and customer awareness by stenciling storm drains near the work place with the stencil: "No Dumping: This Drains to the Ocean."

Recycle

- Recycle all paper wastes, ink cartridges, glass and aluminum. Request recycle dumpsters from the property management.
- Recycle paints, solvents and other materials. For more information about recycling and collection centers, visit **www.oclandfills.com**

Ocean Pollution Prevention: It's Up To Us

Garden Grove has two drainage systems; one is the sewer system and the other is the storm drain system. The sewer system carries away wastes from indoor areas, such as sinks and toilets, to a treatment plant where it is cleaned prior to discharging to the ocean. The storm drain system is designed to prevent flooding by carrying excess rainwater away from city streets out to the ocean. Because the system contains no filters, it now serves the unintended function of carrying urban pollution straight to the ocean.

This pamphlet tells you how to prevent ocean pollution from "stormwater" or "urban runoff."

Rain, industrial and household water mixed with pollutants creates stormwater pollution. The pollutants include: oil and other automotive fluids, paint and construction debris, yard and pet wastes, pesticides and litter.

Urban runoff pollution flows to the ocean through the storm drain system, which takes water and debris straight from the streets to the ocean. Each day 100 million gallons of polluted urban runoff enter the ocean untreated, leaving toxic chemicals in our surf and tons of trash on our beaches.

Urban runoff pollution contaminates the ocean, closes beaches, harms aquatic life and increases the risk of inland flooding by clogging gutters and catch basins.

Use of the Best Management Practices (BMPs) explained in this brochure will aid in assuring a cleaner city, protection of human health and water quality and prevention of ocean pollution.

Food Service Establishment Maintenance Problems:

Common food service establishment maintenance practices include cleaning kitchen equipment, disposing of waste cooking oil, cleaning outdoor areas and dish washing. All of these activities can contribute to urban runoff and ocean pollution if not conducted or managed properly. Materials and wastes washed or discharged into the street, gutter or storm drains have direct impacts on the ocean.

Solutions:

Cleaning Kitchen Equipment

- Wipe off fats, oils and grease (FOG) and food residues from kitchen equipment, such as floor mats, hood filters and cooking equipment, prior to washing in the sink. Do not wash off any kitchen equipment or trash cans in an outdoor area where the wash water can flow to a street, parking lot or storm drain.
- All waste FOG and food scraps that have been wiped from cooking equipment should be thrown into the trash, not washed down the sink.

Washing Dishes

- Wipe off all utensils and dishes into a trashcan prior to washing.
- Place mesh screens in all sinks and floor drains to prevent food scraps from being washed down into the sewer system.
- All food grinders or garbage disposal devices are required to be removed.

Grease and Waste Oil Disposal

- Grease control devices, such as grease traps and grease interceptors, provide the function of removing latent FOG and suspended food particles from wash water. Grease control devices will facilitate the separation of FOG and food particles so only water can pass through to the sewer system.
- All grease traps and grease interceptors are required to be pumped out by a permitted company at least once every 6 months.
- All waste oil should be drained into a waste oil drum, not down the sink or thrown into a trashcan or dumpster. Waste oil containers should be kept clean and covered with a lid at all times. If possible, store the waste oil drum inside of a building or in an enclosure.
- Prevent spills of waste oil by not overfilling waste oil containers.
- When employees are disposing of waste oil into designated containers, prevent spills be carrying out smaller loads of waste oil for disposal.
- All receipts for waste oil pick up and grease control device cleaning should be kept for review by inspectors.
- For a list of waste oil recycling companies please visit www.ciwmb.ca.gov/foodwaste/renderer.htm or call Garden Grove Environmental Compliance Division at (714) 741-5375.

Spill Clean-Up

- Use dry clean up methods, like sweeping, wiping or mopping, to clean up spills.
- Never wash or hose down spills to the street, gutter, parking lot or other outdoor area.
- Always have a spill kit readily available for immediate response to clean up spills. Spill kits should include an absorbent material, gloves and rags. All employees should be trained on the proper use of spill kit contents and spill clean up procedures.
- If the spill travels off of your facility property, please call (714) 741-5375.

Outdoor Area Cleaning

- If any outdoor area, including sidewalks, outdoor seating, dumpster areas or outdoor storage areas need to be cleaned use dry cleaning methods, like sweeping.
- If any outdoor area needs to be cleaned with a liquid, it should first be swept to remove all dirt, trash and debris from the area. Then use a mop or scrub brush to clean areas where needed. Never hose off outdoor areas or allow wash water to travel off of your property.

Dumpster Area Maintenance

- Sweep up and remove all trash and debris from the dumpster area floor and surrounding the dumpster area.
- When employees are not in the process of disposing of trash or waste oil, keep dumpster lids and waste oil container lids closed.
- Do not pour liquids into dumpsters and double bag all leaking trash bags that are going to be disposed of in the dumpster.

Washwater Disposal

- Dispose of all washwater, like mop water, into a mop sink or sewer drain.
- Never throw washwater out in a parking lot, street, alley or storm drain.

Sewer Spills

- A sewer spill that is from a restaurant usually is caused by FOG. When FOG is washed down sinks it sticks to the sides of sewer pipes and builds up, reducing the capacity of the sewer line and eventually a sewer spill occurs.
- If your food service establishment has a sewer spill or you notice water flowing out from a grease control device, a manhole or sewer cleanout in the parking lot or street you are required to contact the City immediately at (714) 741-5375 or after hours at (714) 741-5704.
- Sewer spills present a hazard to human health, water quality and the environment.

Spill Response Agencies

City of Garden Grove Fire Department
(714) 741-5600
or if there is an emergency dial 911

City of Garden Grove Environmental Compliance Division (714) 741-5375

Orange County Resources and Development Management Department (877) 89-SPILL

Household Hazardous Waste Disposal

City of Garden Grove Public Works Department
(714) 741-5375

Report Illegal Dumping

City of Garden Grove
Environmental Compliance Division
(714) 741-5375

To Report a Clogged Catch Basin

City of Garden Grove Public Works Department
(714) 741-5375

For more information about storm drain protection or additional brochures, please call the City of Garden Grove Public Works Department at (714) 741-5375 or visit **www.garden-grove.org/storm.**

This brochure is one of a series of pamphlets describing storm drain protection measures.

Pamphlets include:

- Automotive Maintenance
- Food Service Establishments
- Fresh Concrete and Mortar Application
- General Construction and Site Supervision
- Heavy Equipment and Earth Moving Activities
- Home Repair and Remodeling
- Landscaping, Gardening and Pest Control
- Maintenance Practices for Your Business
- Painting
- Pet Waste
- Pool Maintenance
- Roadwork and Paving

GARDEN GROVE

Published by:
City of Garden Grove
Public Works Department
Environmental Compliance Division

Preventing Storm Water Pollution At

Food Service Establishments

A guide for:

- Restaurants
- Grocery Stores
- Cafeterias

- Hood filters, fry baskets, grill tops, grill top scrap baskets and cooking surfaces should be sprayed with degreaser and be wiped down prior to washing.
- Train staff on proper kitchen maintenance procedures (i.e. dishwashing, grease spill control, equipment cleaning etc.) to ensure excess grease is not entering the sewer. Employees should be trained at least 1 time per year, and documentation of the training should be made available for inspectors to review.
- Grease control devices, such as a grease interceptor or grease trap, should be serviced at a minimum of every six months. Keep receipts and documentation of grease control device servicing and pumping available for inspectors to review.
- If your facility does not have a grease control device, it is recommended that you regularly service your private sewer line by hydrojetting or using a snake/cable.
- If your food service establishment has a sewer spill or you notice water flowing out from a grease control device or a manhole or sewer cleanout in the parking lot or street, you are required to Contact the City immediately at (714) 741-5375 or after hours at (714) 741-5704.

The State now requires that the City of Garden Grove enforce limitations on the amount of FOG and other debris that enters the sewer system. If your food service establishment is not implementing proper maintenance procedures to prevent FOG from entering the sewer system and a sewer spill occurs, you may be subject to fines and the City may seek to recover expenses incurred from the cleanup of your facilities sewer spill.

Preventing FOG from entering the sewer system from your food service establishment by implementing these kitchen best management practices will reduce the likeliness of sewer spills occurring and potential fines being levied.

For questions regarding sewer spills or to request training material, contact the Environmental Compliance Division at (714) 741-5375 or Garden Grove Sanitary District at (714) 741-5395.

GARDEN GROVE SANITARY DISTRICT

13802 Newhope Street
Garden Grove, CA 92843

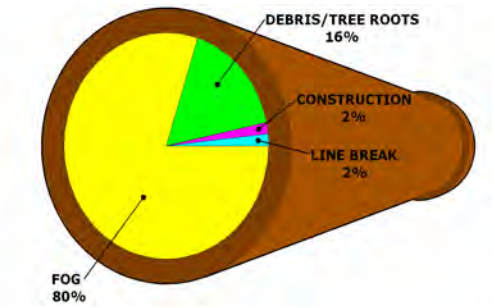
Phone: 714-741-5395
Fax: 714-638-9906
Email: PublicWorks@ci.garden-grove.ca.us
Website: www.garden-grove.org/storm

GARDEN GROVE SANITARY DISTRICT

SEWER SPILL PREVENTION
for
Households and Food Services Establishments

What Causes Sewer Blockages?

Sanitary sewer systems are designed to handle used water, human body waste and toilet paper. When fats, oils and grease enter the system, sewer blockages may occur. Based on sewer spill reports, most sewer blockages are caused by **fats, oils and grease (FOG).**



FOG can harden along the walls of the sewer lines and block the flow, causing backups, overflows and sewer spills. These backups are dangerous because sewage can enter the storm drains, which flow untreated to the ocean and ultimately these backups can cause beach closures, affect public health and the health of the environment.

Helpful Tips For Households

- Pour cooking oil into waste-grease cans for disposal. You can refrigerate used grease in a container until its ready for disposal.

BEFORE WASHING DISHES:

  - Scrape off all dishes, grills, cooking surfaces and dry wipe remaining food and FOG into trashcans.
  - Dispose of spent oil and grease generated from cooking equipment into waste-grease cans.

- Do not use hot water and soap to wash grease down the drain.
- Place a drain screen in sink/shower to catch solids/hair.

DO NOT USE TOILET AS A TRASH CAN:

- Use TRASH CAN for meat scraps, fat, leftovers, coffee grounds, egg shells, cat litter, baby diapers, baby wipes, feminine napkins, hair, cotton balls, Q-Tips and Kleenex.

INSPECT YOUR YARD FOR SIGNS OF POSSIBLE TREE ROOT INSTRUSION:

- Periodically have your service laterals cleaned out. Invasive tree roots and grease are the biggest causes of sewer blockages.

REMINDER

Property owners are responsible for the maintenance, repair, and cleaning of the sewer lateral from the house to the public sewer system.

WHAT IS THE CITY DOING?

The mission of the Garden Grove Sanitary District is to continue to adequately address the sewer system's capacity and structural deficiencies and comply with the State Waste Discharge Requirements. A Capital Improvement Plan was developed in accordance with findings contained in the District's System Evaluation and Capacity Assurance Plan and it's Sewer System Rehabilitation Plan. As part of the Capital Improvement Plan, an ongoing schedule of sewer improvements at various site locations are in progress to address the deficiencies that will in turn; decrease the potential of having Sanitary Sewer Overflows and enable development throughout the City.

Helpful Tips For Food Service Establishments

- Place screens in all drains, including mop sinks, floor drains, multi-compartment prep sinks and hand sinks.
- Employees should practice scraping off all dishes and dry wiping remaining food and FOG into trashcans prior to dishwashing.
- Food grinders (garbage disposals) should not be used in kitchens because the resulting large volume of food solids may clog sewer lines and/or fill grease traps and interceptors.
- Dispose of spent oil and grease generated from fryers and other cooking equipment into waste oil containers. Keep receipts and documentation of waste oil disposal available for inspectors to review.

Appendix F-3

Certified Liquid Wastehauler Vehicles

Registered Liquid Wastehauler Vehicles

County of Orange, Health Care Agency, Environmental Health
1241 E. Dyer Road, Ste. 120 Santa Ana, CA 92705
(714) 433-6287
This listing can also be found on the web at:
http://ochealthinfo.com/civicax/filebank/blobdload.aspx?BlobID=14743

NOTE: This listing is for informational purposes only and does not constitute an endorsement or guarantee of any company or service that may be provided. Companies listed may have had one or more Liquid Waste Hauling Vehicles inspected and legally registered by this Agency. Registrations are valid through December 31, 2015.

Company Name	Business Phone:	Each Company Indicated The Following Services Were Available:								
		Grease Interceptor	Grease Trap	Chemical Toilet	Septic Tank	Holding Tank/ Cesspool	Pipeline Blockage	Clarifier	Boat/ Ship	Rec. Vehicle
Los Indios Party Rental and Porta	714-478-4544	☐	☐	☑	☐	☐	☐	☐	☐	☐
Martinez Pumping	(626) 625-6051	☐	☑	☐	☐	☐	☐	☐	☐	☐
OCBioFuel	(949) 289-5504	☑	☑	☐	☐	☐	☐	☑	☐	☐
Ameriguard Maintenance Service	(800) 347-7876	☑	☑	☐	☐	☐	☐	☐	☐	☐
O.C. Vacuum, Inc.	(562) 984-8178	☐	☐	☐	☑	☐	☑	☑	☐	☐
Diamond Environmental	(760) 744-7191	☐	☐	☑	☑	☐	☐	☐	☐	☑
C&A Cesspool & Septic Tank	(714) 554-6582	☑	☑	☑	☐	☐	☐	☐	☐	☑
Golden State Pumping	(800) 491-1461	☐	☐	☑	☑	☐	☐	☐	☐	☑
Jimni Systems, Inc.	(949) 770-7654	☑	☑	☐	☑	☐	☐	☑	☐	☐
Mobile Harbor Services - Newport	(949) 515-8658	☐	☐	☐	☐	☐	☐	☐	☑	☐
Rightway Portable Toilets	(951) 674-8608	☐	☐	☑	☐	☐	☐	☐	☐	☐
LA Grease Solutions	(323) 232-2629	☑	☑	☐	☐	☐	☐	☐	☐	☐
AAA Septic	(714) 836-6621	☐	☑	☐	☑	☑	☑	☐	☑	☑
Robert's Waste & Recycling	(714) 557-2533	☐	☐	☑	☐	☐	☐	☐	☑	☑
A & J Portables, Inc	(562) 299-8582	☐	☐	☑	☐	☐	☐	☐	☐	☐
Triple "A" Pumping, Inc.	(714) 628-0900	☑	☑	☐	☑	☑	☑	☑	☐	☐
Clean Harbors Environmental Ser	(310) 764-5851	☑	☑	☐	☑	☑	☐	☑	☐	☐
Buster Biofuels	(760) 294-9400	☑	☑	☐	☐	☐	☐	☐	☐	☐
A-1 Septic	(714) 779-0775	☑	☑	☐	☑	☑	☑	☐	☐	☑
National Construction Rentals	(714) 285-0243	☐	☐	☑	☐	☐	☐	☐	☐	☐
So Cal Sanitation, LLC	(800) 850-8871	☐	☐	☑	☑	☐	☐	☐	☐	☐
Liquid Environmental Solutions	(858) 481-8106	☑	☑	☐	☐	☐	☐	☐	☐	☐
A-Throne	(562) 981-1197	☐	☐	☑	☑	☐	☐	☐	☐	☐
1st Jon, Inc.	(714) 529-8646	☐	☐	☑	☑	☐	☐	☐	☐	☑
R.E. Commodities	(951) 830-7315	☑	☑	☐	☐	☐	☐	☐	☐	☐
JN Grease Service	(951) 343-1221	☑	☑	☐	☐	☐	☐	☑	☐	☐
Right Angle Solutions Inc	(951) 934-3081	☑	☑	☑	☑	☑	☑	☑	☑	☑
Andy Gump, Inc.	(661) 251-7721	☐	☐	☑	☐	☐	☐	☐	☐	☐

RELEASE DATE: March 10, 2015

Company Name	Business Phone:	Each Company Indicated The Following Services Were Available:								
		Grease Interceptor	Grease Trap	Chemical Toilet	Septic Tank	Holding Tank/ Cesspool	Pipeline Blockage	Clarifier	Boat/ Ship	Rec. Vehicle
Universal Waste Systems, Inc.	(562) 941-4900	☑	☑	☑	☑	☑	☐	☑	☐	☑
American Environmental, Inc.	(800) 669-2783	☑	☑	☐	☑	☑	☑	☑	☐	☐
G.G. Garcia Plumbing, Pumping	(714) 744-8912	☑	☑	☑	☑	☐	☑	☐	☐	☐
Ocean Blue Environmental Svs	(562) 624-4120	☑	☑	☑	☑	☑	☑	☑	☑	☑
Pumpty Dumpty	(714) 585-1969	☐	☐	☐	☐	☐	☐	☐	☑	☐
West Coast Environmental Servic	909-465-5800/9	☑	☑	☐	☑	☐	☐	☑	☐	☐
Orange County Pumping	(714) 505-9662	☑	☑	☐	☑	☑	☑	☑	☐	☑
Darling International	(714) 556-7867	☑	☑	☐	☑	☐	☐	☑	☐	☐
A-1 Coast Temporary Services	(310) 325-3300	☐	☐	☑	☐	☐	☐	☐	☐	☐
Farris Septic	(800) 978-7900	☐	☐	☐	☑	☑	☐	☐	☐	☐
SoCal Pumping Co.	(866) 479-4976	☑	☑	☐	☐	☐	☐	☐	☐	☐
Royal Flush Pumping	(888) 656-2551	☐	☐	☐	☐	☐	☐	☐	☑	☐
Western Sump Services	(888) 900-0960	☑	☑	☐	☑	☐	☐	☐	☐	☐
Double Barrel Environmental Svs	(909) 499-6959	☐	☐	☐	☐	☐	☑	☑	☐	☐
Ancon Marine	(562) 326-5905	☑	☑	☑	☑	☑	☑	☑	☑	☐
SMC Grease Specialist	(951) 788-6042	☑	☑	☐	☐	☐	☐	☐	☐	☐
Susy Party Rentals	(714) 329-1031	☐	☐	☑	☐	☐	☐	☐	☐	☐
Canyon Septic Services	(714) 649-3226	☑	☑	☑	☑	☑	☐	☑	☐	☐
Three Stars	(714) 293-9232	☐	☐	☑	☐	☐	☐	☐	☐	☐
Shoemaker's Enviro-Tech	(661) 296-2394	☑	☑	☐	☐	☐	☐	☑	☐	☐

Appendix G-1

Recommended Capacity Improvement Projects

Garden Grove Sanitary District Sewer System Management Plan

Appendix G-1
Recommended Capacity Improvement Projects

Date: April 2020

Future Housing Developments

Area	Location	Land Use	No. Units	Unit Type	Area (ac)	Density (du/ac)	Unit Flow Factor (gpd/unit)	Total Ave Load (gpd)
1	***Construction Completed***							
2	***Eliminated***							
3	SE corner of Chapman Ave and Brookhurst St	High Density Residential	250	DU	8.3	30.1	225	56,250
4	NW corner of Brookhurst and Garden Grove Blvd (Brookhurst Traingle)	High Density Residential	550-750	DU	16.6	33-45	225	168,750
		General Commercial/Retail	200	TSF			125	25,000
							Subtotal for Area 4	**193,750**
5	***Eliminated***							
6	***Eliminated***							
7	***Construction Completed***							
8	***Eliminated***							
9	South of Garden Grove Blvd at West St (Olson II)	Low Density Residential	10-30	DU	0.4	25-75	300	9,000
10	NE corner of Garden Grove Blvd and West St	High Density Residential	200	DU	2.3	86.2	225	45,000
11	***Eliminated***							
12	***Construction Completed***							
13	***Construction Completed***							
14	Northwest corner of Harbor Blvd and Twintree Ln	Hotel	500	Rooms	3.9		150	75,000
		Restaurant	10	TSF			1000	10,000
		Indoor/Outdoor Water Park[1]	100	TSF				10,600
							Subtotal for Area 14	**95,600**
15	North of Chapman Ave and west of Harbor Blvd (Langsdon Pit)	Hotel	238	Rooms	9.4		150	35,700
		Restaurant	5	TSF			1,000	5,000
							Subtotal for Area 15	**40,700**
16	Northeast corner of Harbor Blvd and Twintree Ln	Hotel	700	Rooms	5.2		150	105,000
		Restaurant	15	TSF			1,000	15,000
							Subtotal for Area 16	**120,000**
17	***Construction Completed***							
18	***Eliminated***							
19	***Eliminated***							
20	***Eliminated***							
21	***Construction Completed***							
22	***Construction Completed***							
23	***Construction Completed***							
24	***Construction Completed***							
25	SE corner of Adelle St and Stanford Ave	Low Density Residential	12	DU	0.8	15.5	300	3,600
26	***Construction Completed***							
27	***Construction Completed***							
28	***Construction Completed***							
29	South side of Garden Grove Blvd, west of Brookhurst St (Galleria Project)	High Density Residential	400	DU	2.2	184.0	225	90,000
		General Commercial/Retail	17	TSF			125	2,125
							Subtotal for Area 29	**92,125**
30	8218-8242 Garden Grove Blvd	High Density Residential	46	DU	1.51	30.5	225	10,350
31	***Construction Completed***							
32	***Construction Completed***							
33	SW Corner of Chapman Ave and Brookhurst St	Restaurant	11	TSF	25.9		1000	11,000
34	North side of Garden Grove Blvd, east of Galway St	General Commercial/Retail	30	TSF	1.0		125	3,750
35	South side of Garden Grove Blvd at Village Rd	General Commercial/Retail	60	TSF	3.1		125	7,500
36	West side of Nelson St, north of Stanford Ave	Low Density Residential	12	DU	1.3	9.4	300	3,600
37	SW corner of Garden Grove Blvd and Euclid St	General Commercial/Retail	15	TSF	0.5		125	1,875
38	North side of Hazard Ave, west of Euclid St	High Density Residential	90	DU	6.0	15.0	225	20,250
39	Between Harbor Blvd and Buaro St	General Commercial/Retail	12	TSF	0.6		125	1,500
40	Southwest corner of Harbor Blvd and Twintree Ln	Hotel	400	Rooms	3.74		150	60,000
41	South side of Garden Grove Blvd, east of Euclid St, at 11222 Garden Grove Boulevard	High Density Residential	16	DU	0.65	24.6	225	5,538
42	West side of Buaro St, south of Chapman Ave, at 12111 Buaro Street	Medium Density Residential	17	DU	1	17.0	275	4,675
43	Northwest corner of Lewis St and Garden Grove Blvd, at 12901 Lewis Street.	Low Density Residential	70	DU	9	7.8	300	2,333
44	9861 11th Street, Garden Grove,	Medium Density Residential	31	DU	1.76	17.6	275	4,844
45	9841 11th Street, Garden Grove	Medium Density Residential	10	DU	0.44	22.7	275	6,250

[1] It is estimated that a maximum of 10,000 gpd of the carry off will enter the sewer system. Each filtration system will use 600 gpd per backwash and the backwash of the systems will be time staggered to flush only one of the systems per day. The indoor/outdoor water park load is not peaked in the model.

Appendix G-2

Ordinance No. 10

ORDINANCE NO. 10

AN ORDINANCE OF THE GARDEN GROVE SANITARY DISTRICT AFFIRMING ESTABLISHED SEWER USER FEES FOR SEWER SERVICES WITHIN GARDEN GROVE SANITARY DISTRICT SERVICE AREA, CLARIFYING EXISTING PROVISIONS, AND AUTHORIZING FUTURE AUTOMATIC ADJUSTMENTS IN SEWER USER FEES TO ACCOUNT FOR INFLATION

District Counsel Summary

This Ordinance affirms existing established sewer user fees and related Garden Grove Sanitary District regulations, implements annual inflationary adjustments to sewer user fees for a period of five (5) years, confirms existing regulatory language that property owners are subject to a separate sewer user fee for each portion of a parcel served by a separate metered water service, confirms that sewer user fees may be billed to and/or paid by tenants along with bills for water service, but property owners remain ultimately responsible for the payment of all sewer user fees applicable to their property, and clarifies that tenants paying sewer user fees are also eligible for rebates or refunds, where applicable.

THE BOARD OF DIRECTORS OF THE GARDEN GROVE SANITARY DISTRICT hereby finds as follows:

A. On September 13, 2005, the Garden Grove Sanitary District Board of Directors (Board of Directors) adopted Ordinance No. 7 establishing revised Sewer User Fees for sewer services within the Garden Grove Sanitary District (District) service area.

B. Ordinance No. 7 implemented a new Sewer User Fee structure, based on the use of the sewer system, in order to generate sufficient revenue to operate, maintain, replace, and upgrade the system to adequate capacity and make repairs mandated pursuant to Order No. R8-2002-0014, General Waste Discharge Requirements for Sewage Collection Agencies in Orange County, issued by the Regional Water Quality Control Board, Santa Ana Region (the 2002 Order).

C. The 2002 Order required all sewer collection agencies to prepare a Sewer System Management Plan (SSMP) to address the capacity deficiencies; structural deficiencies; fats, oils and grease control; and proper funding, operation, and maintenance of their sewer systems. Pursuant to the 2002 Order, the District prepared and adopted a SSMP, which included a System Evaluation and Capacity Assurance Plan and Rehabilitation and Replacement Plan.

D. In conjunction with the SSMP, in 2005, the District prepared an updated Financial Analysis and Rate Study resulting in the development of a Capital Improvement Program and an enhanced maintenance program in compliance with the 2002 Order, along with a financial model to evaluate the rate structure necessary to generate sufficient revenues to allow the District to meet its obligations. The 2005 Financial Analysis and Rate Study was submitted to the

Board of Directors and made available to the general public at a Public Hearing prior to the adoption of Ordinance No. 7.

E. Ordinance No. 7 and the revised charges for sewer service established through Ordinance No. 7 were based on the findings and recommendations set forth in the 2005 Financial Analysis and Rate Study, as such recommendations were revised based on comments received at the Public Hearing.

F. In 2006, the 2002 Order was superseded by Order No. 2006-003-DWR, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, issued by the State Water Resources Control Board (the 2006 Order). The 2006 Order continues to require implementation of an SSMP and mandates that local sewer collection agencies establish proper rate structures to adequately fund the operation, maintenance, repair and replacement of their sanitary sewer systems.

G. The District has subsequently continued to inspect and evaluate its sanitary sewer system facilities and to update its SSMP to reflect necessary identified structural and capacity deficiencies. Amendments to the District's SSMP reflecting these updates were adopted by the Board of Directors in 2009 and 2011.

H. In conjunction with these SSMP updates, District staff and consultants have updated the financial model developed pursuant to 2005 Financial Analysis and Rate Study, conducted an evaluation of the adequacy of the existing rates to satisfy the District's obligations, and prepared an updated Financial Analysis (which is made a part of the public record of the Public Hearing) that updates and supplements the 2005 Financial Analysis and Rate Study, and that recommends continued implementation of the rate structure established pursuant to Ordinance No. 7, including continued implementation of annual inflationary increases based on the Engineering News Record's Cost Index for the Los Angeles Area.

I. Government Code Section 53756 authorizes any agency providing sewer service to adopt a schedule of fees or charges authorizing adjustments for inflation for a period not to exceed five (5) years.

J. The purpose of this Ordinance is to authorize annual inflationary adjustments to the Sewer User Fees in accordance with Government Code Section 53756, affirm the existing Sewer User Fees as originally authorized by Ordinance No. 7, and to make such other changes to the District's regulations pertaining to Sewer User Fees as are necessary to conform to existing law and/or to clarify certain provisions. The amounts set forth in Table A of Subsection 3.B. of this Ordinance reflect the current legal rates and charges, as lawfully established and adjusted in accordance with Ordinance No. 7 and State law, and do not reflect new or additional increases in the rates and charges imposed by the District for sewer services.

K. In support of this Ordinance and the charges for sewer service as provided for on Table A herein, the 2005 Financial Analysis and Rate Study and the updated Financial Analysis, as approved hereby by the Board of Directors, has resulted in the development of a Capital Improvement Program and an enhanced maintenance program consistent with the goals and policies of the Board of Directors and the public, which also provide for the construction of necessary improvements to eliminate existing capacity deficiencies in the system, accommodate projected increased flows and the rehabilitation and refurbishment of existing facilities. The Board of Directors further finds that programming annual inflation adjustments in sewer service charges over a period of years is appropriate and ensures adequate revenues to finance the improvements and programs necessary to eliminate existing capacity deficiencies in the system, accommodate projected increased flows, rehabilitate, replace, and refurbish existing facilities, and retire any necessary or prudent debt incurred to finance such improvements in a reasonable manner and over a reasonable period of time. The Board of Directors also finds that such Sewer User Fees are reasonably related to, and do not exceed the cost of providing sewer services.

L. The financial requirements of the District, as shown in reports prepared by staff and consultants relating to the sewerage system, are based on current, reliable information and data relating to population estimates, wastewater flow, capital facilities' needs, and increased proper maintenance, and are expected to be realized in each year as described in the reports.

M. The revenues derived under the provisions of this Ordinance will be used for the acquisition, construction, reconstruction, maintenance, and operation of the sewage collection facilities of the District; to repay principal and interest on debt instruments; to repay Federal and State loans issued for the construction and reconstruction of said sewerage facilities, if any, together with costs of administration and provisions for necessary reserves.

N. The owners or occupants of properties upon which all fees and charges established and/or affirmed by this Ordinance are levied discharge wastewater to the District's collection facilities. The costs of operating and maintaining said facilities have constantly increased due in part to increased regulatory requirements to upgrade the collection system including, but not limited to, the Order No. 2006-003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, issued by the State Water Resources Control Board on May 2, 2006.

O. The need for upgraded and improved maintenance of the sewage collection facilities is required to protect the public health and safety, and to preserve the environment without damage.

P. The Sewer User Fees levied by this Ordinance are to allow the District to recover the reasonable costs to provide a service to individual properties which have been improved for any of numerous types of uses. The basis for the

respective charge is the request of the owner of property or a structure thereon, for the benefit of him/her/itself, or the occupants of the property, to receive a service based upon actual use, consumption, and disposal of wastewater to the District's system in lieu of disposal by other means.

Q. The Board of Directors has determined the following with regard to the Sewer User Fees established and/or affirmed by this Ordinance: (i) such fees and charges are not imposed as a condition of approval of a development project, as defined in California Government Code Section 66001; (ii) such fees and charges are established upon a rational basis between the fees charged each customer and the service and facilities provided to each customer of the District; (iii) the revenues derived from such fees and charges do not exceed the estimated reasonable cost to provide the sewer service for which the fees and charges are levied; (iv) the revenues derived from such fees and charges shall not be used for any other purpose than that for which the fees and charges are imposed; (v) such fees and charges do not exceed the proportional cost of the sewer service attributable to each consumer; (vi) such fees and charges are imposed on sewer services which are actually used by or immediately available to the consumer; (vii) such fees and charges are not levied for general governmental services; and (viii) the rates and charges are not discriminatory or excessive, are sufficient under Government Code section 54515, comply the provisions or covenants of any outstanding revenue bonds of the District payable from the revenues of the District, comply with the provisions of Title 5, Division 2, Chapter 6 of the California Government Code, and are in compliance with all other applicable law.

R. The Sewer User Fees adopted and/or affirmed herein will not necessarily result in an expansion of facilities to provide for growth outside the existing service area. The adoption and/or affirmation of these Sewer User Fees will not result in any specific project, nor result in a direct physical change in the environment.

S. The District is required by Federal and State law, including the Federal Water Pollution Control Act, also known as the Federal Clean Water Act (33 U.S.C. 1251, et seq.), and the Porter-Cologne Water Quality Control Act (California Water Code Sections 13000 et seq.) to implement and enforce a program for the regulation of wastewater discharges to the District's sewers.

T. In accordance with Proposition 218, notice of a Public Hearing to consider the proposed adjustments in sewer rates and charges and containing such information required to be included pursuant to California law was mailed to all record owners of affected property to the addresses as they appear on the latest equalized assessment roll and to all District customers located on the affected parcels at the addresses to which the District customarily mails the billing statements.

U. On February 14, 2012, in accordance with applicable legal requirements, the Board of Directors conducted a duly noticed Public Hearing to consider the proposed adjustments in sewer rates and charges set forth herein, at which time all those who wished to speak for or against the proposed adjustments in sewer rates and charges were heard and the Board of Directors heard all objections and protests to the proposed adjustments in sewer rates and charges. The District received 88 written protests against the proposed adjustments in sewer rates and charges, which does not constitute a majority protest, as defined in Proposition 218.

V. Pursuant to California Government Code Section 66016 notice of the time and place of this Public Hearing, including a general explanation of the matter to be considered and a statement that the data required by Government Code Section 66016 has been available for public review at the District, was mailed to interested parties requesting notice at least fourteen (14) days prior to the Public Hearing.

W. Pursuant to California Government Code Section 66016 the District made available to the public the updated Financial Analysis, and other data documenting the estimated costs required to provide services for which the proposed modified rates and charges will be levied and the revenue sources anticipated to provide the services.

X. All fees and charges established and/or affirmed herein have been approved by the Board of Directors at a noticed public meeting, all in accordance with applicable provisions of law.

Y. The adoption of this Ordinance and the establishment of such rates and charges is statutorily exempt under the California Environmental Quality Act ("CEQA") pursuant to the provisions of Public Resource Code Section 21080(b)(8) and Section 15378 and Section 15273 of the CEQA Guidelines because, (i) the increased rates and charges are for the purpose of meeting operational and maintenance expenses of the District, and (ii) the rates and charges constitute the creation of funding mechanism/other governmental fiscal activity that does not involve any commitment to any specific project which may result in a potentially significant physical impact on the environment.

The Board of Directors of the Garden Grove Sanitary District hereby ordains as follows:

Section 1: Purpose and Scope. The purpose of this Ordinance is to establish Sewer User Fees required to be paid by property owners for the services and facilities furnished by the District in connection with its sewage collection system. Revenues derived under the provisions of this Ordinance shall be used for the acquisition, construction, reconstruction, maintenance, and operation of the wastewater collection facilities of the District; to repay principal and interest on

debt instruments; or to repay federal and state loans, if any, issued for the construction and reconstruction of said sewerage facilities, together with costs of administration and provisions for necessary reserves.

Section 2: Sewer User Fees. Commencing with the effective date of this Ordinance, the owner(s) of each parcel of real property located within the District that is improved with structures designed for residential, commercial, industrial, school, or other use and which, at the request of the owner or the owner's predecessor-in-interest, is connected to the District's system, shall pay a monthly Sewer User Fee or monthly Sewer User Fees based on the respective class of users, in the sum or sums, as set forth in Section 3 of this Ordinance, below. Property owners are subject to a separate Sewer User Fee for each portion of a parcel served by a separate metered water service. The District's billing to, and/or periodic acceptance of payment from, a tenant shall not relieve the owner(s) of a parcel of property from the obligation to pay any unpaid Sewer User Fees due pursuant to this Ordinance.

Section 3: Establishment of Sewer User Fees. Based on the engineering and financial studies, and pursuant to provisions of California Health & Safety Code Section 5471, the following sewer service charges are hereby established.

A. Sewer Service Rate Formula. The owner of each parcel of land connected to the District's sewer collection system shall be assigned to one or more customer classes, based on property use, and shall pay a monthly sewer service charge for each portion of the parcel served by a separate metered water service, computed according to the following formula:

Base Rate (according to customer class), plus Usage Charge of $0.86 per hundred cubic feet ("HCF") of water used per month during the bi-monthly period of lowest consumption (determined annually, based on analysis of 12 months of water billing data), not to exceed the Maximum Billing Cap designated for each customer class.

B. Customer Classes and Rates. The following sewer customer classes and rates are hereby established:

TABLE A

User Class	**Base Rate**	**Maximum Billing Cap**
Residential – SFR and Duplex	$ 3.98/metered d.u.	$ 12.61
Car Wash	$ 58.78	$185.86
Church	$ 14.28	$ 45.16
Commercial 1*	$ 3.98	$ 12.61

Commercial 2*	$ 7.98	$ 25.23
Commercial 3*	$ 15.95	$ 59.09
Commercial 4*	$ 31.90	$118.17
Commercial 5*	$ 59.83	$232.37
Commercial 6*	$ 79.78	$252.32
Hotels/Motels	$ 79.78	$252.32
Private School	$ 41.29	$130.58
Hospital	$223.37	$706.48
Industrial	$ 44.11	$139.52
Laundromat	$ 54.83	$173.36
Multi-Unit Residential**	$ 33.76/water meter	$106.83
Public School	$ 53.35	$168.69

"Commercial 1 through Commercial 6" set forth above are defined to mean commercial, retail and related uses collectively, unless otherwise set forth specifically in the matrix, and includes any other land use not described in the above stated matrix. Further, the General Manager of the District, or his designee, shall make administrative determinations as necessary to determine in individual cases the most applicable land use category for a particular property. In so doing, the General Manager, or his designee, shall utilize the land use matrix for land uses as set forth in Garden Grove Municipal Code Section 9.16.020.030.

**Where individual units are not connected directly to the sewer system, a charge of $1 per month, per unit will be assessed in addition to the base rate and usage charge rate for this user class.

*Commercial Class Rates are based upon those persons or entities who consume metered water quantities in accordance with the following schedule:

Class #	Per 100 cu. Ft. of Water/Month
1	0 - 10
2	10.1 - 20
3	20.1 - 50
4	50.1 - 100
5	100.1 - 200
6	200 or greater

C. Adjustments for Inflation. The usage charge, base rates and maximum billing caps established in Sections 3.A. and 3.B. above will be adjusted for inflation annually on July 1, commencing July 1, 2012, and continuing through July 1, 2016, based on the same percentage as the percentage of increase in construction costs between March 1 of the calendar year immediately preceding March 1 of the then current calendar year, based on the Engineering News Record

Construction Costs Index – Los Angeles Area, without further action by the Board of Directors. However, if the inflation adjustment in any year exceeds six (6) percent under the inflation index set forth above, the amount of the inflation adjustment shall be presented to the Board of Directors for final legislative determination. The General Manager of the District, or his designee, shall cause notice of any automatic adjustment made pursuant to this Subsection (C) to be given pursuant to Subdivision (a) of Government Code Section 53755, as it may be amended from time to time, and/or other applicable law, not less than thirty (30) days before the effective date of the adjustment.

Section 4: Rebates or Refunds.

A. Exemptions. It is the intent of the District that the legal owner(s) and/or tenants of parcels of real property otherwise subject to the levy and payment of the Sewer User Fees as prescribed herein, be relieved, in whole or in part, from the payment of said fees, in certain circumstances and under conditions prescribed herein, and be entitled to either a rebate or a refund with respect to fees paid, as more specifically set forth in subparagraphs 4.B. and 4.C. below, provided an inequity is established or a billing error is proven, as specified in subparagraphs 4.B. or 4.C.

B. Application for Rebate. Any property owner or tenant made responsible by the property owner for payment of the Sewer User Fees may apply to the District for a rebate of Sewer User Fees paid to the District by establishing that an incorrect classification of the property, or portion thereof, has been made by the District. An applicant for a rebate must establish, by proof satisfactory to the General Manager of the District, or his designee, that an inequity exists between the amount of the charge paid and the amount of wastewater discharged to the District's system, resulting in an incorrect classification. Satisfactory proof shall establish that either:

(1) The principal water use is agricultural or horticultural and wastewater is not discharged from the property to the District's system; or

(2) The property, or applicable portion thereof, is devoted to any other use wherein the amount of wastewater discharged to the District's system is significantly less on a regular basis than the amount that would normally be expected to be discharged by the class of property in question.

Satisfactory proof shall include, but not be limited to, documentation showing actual water usage for each billing cycle during the entire period for which the rebate is sought.

The amount of any rebate shall not reduce the charge payable by any property owner, whose property is connected to the District's system, to less than

the charge would be if the property was assigned to the single family residential user class.

C. Application for Refund. Any property owner or tenant may apply to the District for a refund of Sewer User Fees paid to the District by establishing that the amount paid was pursuant to an error in the amount billed or the amount paid. The applicant for a refund must submit proof satisfactory to the General Manager of the District, or his designee, that a billing error has been made by the District or the County Tax Collector. Such proof shall include, but not be limited to, proof that:

(1) The owner's parcel of property is not connected to the District's system; or

(2) The property has not been classified in the proper land use category; or

(3) A clerical error has been made.

D. Limitations Period. Applications for rebates and refunds shall be deemed to be governed by the provisions of California Revenue and Taxation Code Sections 5096 and 5097, allowing for refunds for a period of four (4) years from the date of payment of the second installment of the bill claimed to be either inequitable or incorrect.

E. Determination. All applications for rebates or refunds of the Sewer User Fees will be determined by the General Manager of the District, or his designee, who, based on the submitted proof, may grant a full or partial rebate or refund.

F. Administrative Fee. At the time of filing the application for rebate or refund, the property owner shall pay the District an administrative fee for the processing of such application. The amount of the fee shall be equal to the total of all fees and charges imposed on the District by any other public entity, such as the Orange County Tax Collector, the Orange County Auditor, or the Orange County Recorder, in connection with the rebate or refund.

G. Underpayment. In the event the District determines that, due to a billing or payment error, or to inequity in the amount billed, a property owner has underpaid annual Sewer User Fees payable to the District, the District may, within four (4) years after the date of mailing of the tax bill:

(1) Collect the amount of any deficiency directly on the County Tax Roll;

(2) Off-set the amount of any deficiency against any amounts that the District determines is owing, by the District, to the property owner, as a rebate or refund under this Ordinance; or

(3) Submit, directly to the property owner, a bill for the amount of any deficiency, that shall be due and payable within thirty (30) days of the invoice date and that, if not paid, shall become a lien on said property.

Section 5: Collection of Sewer User Fees Within the City of Garden Grove. Pursuant to the provisions of California Health & Safety Code Section 5471, the Board of Directors hereby elects to have the Sewer User Fees for parcels within the corporate boundaries of the City of Garden Grove collected with the charges of the City of Garden Grove's water utility, and that these charges may be collected on the same bills as the water charges, or on separate bills, as may be determined by the City of Garden Grove. Bills for Sewer User Fees applicable to a parcel of property, or a portion thereof, may be provided solely to and/or paid by the same person(s) to which bills for water charges are provided, even if not the owner(s) of the property. Notwithstanding the foregoing, the owner(s) of such property shall be and remain responsible for payment of all Sewer User Fees applicable to the property.

Section 6: Collection of Sewer User Fees Outside the City of Garden Grove. Pursuant to the provisions of California Health & Safety Code Section 5473, the Board of Directors hereby elects, in its discretion, to have the Sewer User Fees for those areas outside of the corporate boundaries of the City of Garden Grove collected on the tax roll in the same manner, by the same persons, and at the same time as, together with and not separately from, the general taxes of the District.

Section 7: Severability. If any section, subsection, subdivision, sentence, clause, phrase, word or portion of this Ordinance is, for any reason, held to be invalid by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this ordinance. The Garden Grove Sanitary District Board of Directors hereby declares that it would have adopted this ordinance and each section, subsection, subdivision, sentence, clause, phrase, word or portion thereof, irrespective of the fact that any one or more sections, subsections, subdivisions, sentences, clauses, phrases, words or portions thereof be declared invalid.

Section 8: The President shall sign and the District Secretary shall certify to the passage and adoption of this Ordinance, and this Ordinance shall take effect immediately upon adoption.

Adopted this 14th day of February 2012.

ATTEST:

/s/ BRUCE A. BROADWATER
PRESIDENT

/s/ KATHLEEN BAILOR
SECRETARY

STATE OF CALIFORNIA)
COUNTY OF ORANGE) ss:
CITY OF GARDEN GROVE)

I, KATHLEEN BAILOR, Secretary of the Garden Grove Sanitary District, hereby certify that the foregoing Ordinance was duly adopted by the Board of the Garden Grove Sanitary District at an Adjourned Regular Meeting held on the 14th day of February 2012, by the following vote:

AYES:	MEMBERS: (5)	BEARD, DALTON, JONES, NGUYEN, BROADWATER
NOES:	MEMBERS: (0)	NONE
ABSENT:	MEMBERS: (0)	NONE

/s/ KATHLEEN BAILOR
SECRETARY

GARDEN GROVE SANITARY DISTRICT
SEWER BUDGET
FY 2010-11 - 2012-13
($000)

	2011-12 Adopted Budget	FY 11-12 Projected Year End	FY 12-13 Proposed Budget	FY 13-14 Forecast
FUNDS AVAILABLE				
BEGINNING BALANCE	$ 625.1	$ 625.1	$ 189.1	$ 1,048.1
BOND PROCEEDS (Annual Allocation)	0.0	0.0	0.0	0.0
REVENUES	10,242.3	10,242.3	10,620.0	10,959.0
RATE ADJUSTMENT	0.0	0.0	0.0	0.0
FUNDS AVAILABLE	10,867.4	10,867.4	10,809.1	12,007.1
OPERATION EXPENDITURES				
OPERATIONS				
LABOR	2,507.2	2,375.7	2,613.7	2,718.0
CONTRACTUAL SERVICES	1,125.0	1,125.0	1,168.2	1,215.0
COMMODITIES	238.2	238.0	233.5	243.0
VEHICLE / EQUIPMENT RENTALS	241.7	241.7	253.7	264.0
INSURANCE	41.7	41.7	41.7	43.0
ADMIN SUPPORT COSTS	512.2	512.2	524.6	546.0
BOND ISSUANCE COSTS	0.0	0.0	0.0	0.0
DEBT SERVICE	1,462.3	1,462.3	1,463.3	1,463.0
LATERAL LOAN PROGRAM	0.0	0.0	0.0	0.0
OPERATING RESERVE	250.0	250.0	0.0	0.0
SEWER SYSTEM CONTINGENCY RESERVE	0.0	0.0	0.0	0.0
TOTAL OPERATION EXPENDITURES	6,378.3	6,246.6	6,298.7	6,492.0
SEWER CAPITAL				
CAPITAL REPLACEMENT	1,431.7	1,431.7	1,462.3	1,506.2
NEW CAPITAL IMPROVEMENTS	3,000.0	3,000.0	2,000.0	2,000.0
CAPITAL EXPENDITURES	4,431.7	4,431.7	3,462.3	3,506.2
TOTAL EXPENDITURES	10,810.0	10,678.3	9,761.0	9,998.2
FUNDS AVAILABLE	10,867.4	10,867.4	10,809.1	12,007.1
EXPENDITURES	10,810.0	10,678.3	9,761.0	9,998.2
ENDING BALANCE	$ 57.4	$ 189.1	$ 1,048.1	$ 2,008.9

Type	User Class	Maximum Monthly Units		Maximum Bi-Mo Units	New Unit Rate	07/01/12 Mo. Base Rate 2.5% ENR	07/01/12 Mo. Max Billing Cap ($0.8627 x 2.5% = $0.8843)	07/01/12 Bi-Mo. Base Rate 2.5% ENR	07/01/12 Bi-Mo. Max Billing Cap ($0.8627 x 2.5% = $0.8843)	
						July 2012 - June 2013 Billing Dates		July 2012 - June 2013 Billing Dates		
R	Residential - SFR	10.00		20.00	0.88	$ 4.08	$ 12.92	$ 8.16	$ 25.84	
D	Duplex	10.00		20.00	0.88	$ 4.08	$ 12.92	$ 8.16	$ 25.84	
W	Car Wash	147.30		294.60	0.88	$ 60.25	$ 190.51	$ 120.50	$ 381.02	
G	Church	35.80		71.60	0.88	$ 14.64	$ 46.30	$ 29.28	$ 92.60	
C/10	Commercial 1*	10.00		20.00	0.88	$ 4.08	$ 12.92	$ 8.16	$ 25.84	
C/20	Commercial 2*	20.00		40.00	0.88	$ 8.18	$ 25.87	$ 16.36	$ 51.74	
C/50	Commercial 3*	50.00		100.00	0.88	$ 16.35	$ 60.57	$ 32.70	$ 121.14	
C/100	Commercial 4*	100.00		200.00	0.88	$ 32.70	$ 121.13	$ 65.40	$ 242.26	
C/200	Commercial 5*	200.00		400.00	0.88	$ 61.33	$ 238.19	$ 122.66	$ 476.38	
C/200+	Commercial 6*	200.00	+	400.00	0.88	$ 81.77	$ 258.63	$ 163.54	$ 517.26	
N	Hotels / Motels	200.00		400.00	0.88	$ 81.77	$ 258.63	$ 163.54	$ 517.26	
E	Private School	103.50		207.00	0.88	$ 42.32	$ 133.85	$ 84.64	$ 267.70	
H	Hospital	560.00		1,120.00	0.88	$ 228.95	$ 724.16	$ 457.90	$ 1,448.32	
I	Industrial	110.60		221.20	0.88	$ 45.21	$ 143.01	$ 90.42	$ 286.02	
L	Laundromat	137.40		274.80	0.88	$ 56.20	$ 177.70	$ 112.40	$ 355.40	
M	Multi-Unit Residential **	84.70		169.40	0.88	$ 34.60	$ 109.50	$ 69.20	$ 219.00	+ $1 per unit/mo
S	Public School/GGUSD	133.70		267.40	0.88	$ 54.68	$ 172.91	$ 109.36	$ 345.82	
B	Public School/Non-GGUSD	133.70		267.40	0.88	$ 54.68	$ 172.91	$ 109.36	$ 345.82	
F	Fire Service									
A	Agriculture									
P	Parks									
Q	Public Sch Fire Spr									
Z	Landscape									
O	Sewer/Septic									