

ROSS VALLEY SANITARY DISTRICT

OVERVIEW OF SIDE SEWER REQUIREMENTS

The following is an overview intended to assist applicants and contractors in understanding the necessary steps, design requirements, and construction requirements regarding repair/replacement, new construction, connection, and/or abandonment of side sewers.

All side sewers within Ross Valley Sanitary District (District) must conform to the District's Standard Specifications and Drawings and Sanitary Code, copies of which are available from the District office. In particular, see the District's Standard Specification Section 02600, Side Sewers and Standard Drawings SD-29 through SD-37 for more information.

DEFINITIONS:

Side Sewer: The privately owned and maintained sewer which connects the plumbing system of the building to the public sewer main. The side sewer begins at and includes the connection to the public sewer main and terminates at the point of connection to the building plumbing system.

Main Sewer: A publically owned sanitary sewer pipeline which accommodates one or more side sewers. These sewers are typically six (6) inches or larger in diameter.

SECTION 1 - GENERAL

1.01 JURISDICTION

The District has jurisdiction over all property to receive sewer service within the District's boundaries. District jurisdiction includes, but is not limited to: issuing permits to repair or connect to the main sewer, specification of design, type of material, construction requirements, inspection, and testing.

1.02 OWNERSHIP AND MAINTENANCE

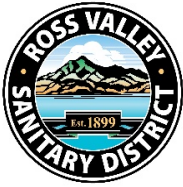
Each building's side sewer, including sewer ejector pump system if applicable, is owned and maintained by the owner of the building served thereby.

1.03 LIABILITY

The District and its officers and employees shall not be liable for injury or death to any person, or damage to any property, arising during or growing out of, the performance of any work described herein.

1.04 CALIFORNIA ENVIRONMENTAL QUALITY ACT REQUIREMENTS

Any person requesting a sewer connection permit must also comply with all applicable environmental guidelines, including the District's Local Guidelines adopted pursuant to the Environmental Quality Act of 1970, and must make all deposits required and pay all fees established by the District to process applications to comply with said Act.

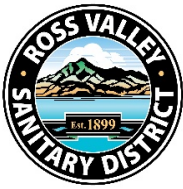


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1.05 PROHIBITED WASTES

- A. Except as hereinafter provided, it is unlawful for any person to discharge, or cause to be discharged, any of the following described waters or wastes into any manhole or sanitary sewer line connecting to the main sewer:
1. Drainage: Leaders from roofs and surface drains for rainwater. Surface or subsurface drains for rainwater, stormwater, seepage, industrial cooling water, or unpolluted industrial process waters.
 2. Swimming pool or spa discharge water, except when in compliance with Appendix B to the District's Standard Specifications, Requirements for Draining Swimming Pools and Spas to Sanitary Sewer System.
 3. Septic tank sludge.
 4. Industrial waste or any solid, semisolid, or liquid substance resulting from any industrial manufacturing, commercial process, or from any garage, service station, or wash rack, without first having obtained a permit to discharge.
 5. Liquid or vapor having a temperature higher than 150° F.
 6. Water or waste which contains more than 100 parts per million, by weight, of fat, oil, or grease.
 7. Garbage that has not been shredded so that all particles will be carried freely under the flow conditions normally prevailing in the main sewer, with no particle greater than one-half inch in any dimension.
 8. Ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, paunch manure, or any other solid or viscous substance capable of causing obstruction to the flow in sewers or causing other interference with the proper operation of the sewage works.
 9. Waters or wastes having a PH lower than 5.5 or higher than 9.0 or having any other corrosive property capable of causing damage or hazard to structures, equipment, and personnel of the sewage works.
 10. Waters or wastes containing toxic or poisonous substance(s) in sufficient quantity to injure or interfere with any sewage treatment process, constitute a hazard to humans or animals, or create any hazard in the receiving waters of the sewage treatment plant.
 11. Waters or wastes containing suspended solids of such character or quantity that unusual attention or expense is required to handle such materials at the sewage treatment plant.
 12. Noxious or malodorous gas or substance capable of creating a public nuisance.



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SECTION 2 - PERMITS AND INSPECTIONS

2.01 BUILDING PERMIT (FOR NEW BUILDINGS)

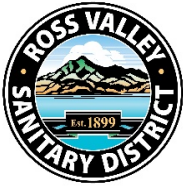
- A. Obtain permit from building department of jurisdiction prior to performing any work.
- B. Plans Required.
 - 1. Plans approved by the building department of jurisdiction must be furnished to the District upon making application for a sewer connection permit for new structures. Said plans must show the location of the proposed structure(s), floor plans showing plumbing fixtures, including any floor drains, and the location of the side sewer including size, slope, type of material to be used, and type of connection to public sewer. The District may require a survey by a registered land surveyor or engineer if it is necessary to determine:
 - a. The invert elevation of the side sewer and/or building floor
 - b. That the proposed sewer installation is within the property line or easement.

2.02 ENCROACHMENT PERMITS (AS REQUIRED)

If installation of the side sewer requires digging in a street or public right-of-way, applicant must obtain the necessary encroachment permit from the city, town, or county having jurisdiction over the street or right-of-way. Side sewer work located in a District easement or public right of way may not be done by the property owner and must be performed by a properly licensed contractor who has been registered with District.

2.03 DISTRICT PERMIT

- A. A permit from the District is required for any alteration, repair, replacement, new construction, connections, or abandonment/ disconnect to side sewers that flow to the District's public sewer system. Work performed without a valid District permit will be subject to removal, reconstruction, and additional fees to the property owner. To obtain a permit from the District:
 - 1. Complete the District's application form for the proposed side sewer work.
 - 2. Provide a set of approved plans showing work to be performed and plumbing fixtures.
 - 3. Provide previously obtained Building Permit Number.
 - 4. Provide copy of encroachment permits (if applicable).



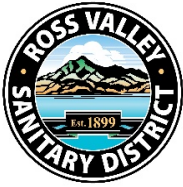
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5. Determine appropriate fees to District per District's application forms. Payment of fees must be made to District by cashier's check or money order.
- B. Permits are Non-Transferable: Permits are issued for a specific property giving the property's street address and Assessor's Parcel Number. Permits may not be transferred to another property without written approval of the District Board of Directors.
- C. Time Limit on Permits: The sewer permit becomes void and the fees paid are forfeited under the following conditions:
 1. Work is not commenced within one year from date of issue; or
 2. After partial completion, work is discontinued for a period of one year. Work may not begin/resume until a new, valid sewer connection permit is obtained. The new sewer connection permit will be issued upon application and payment of applicable fees.

2.04 ARRANGE FOR DISTRICT INSPECTIONS

- A. Minimum 48-hour advance notification required for all District inspections.
- B. The cameras used for inspections shall be equipped with footage counters.
- C. Prior to District arriving on-site for inspection, Contractor shall have backfill materials present and the pipe having completed or currently under pressure test. If when the District arrives these conditions are not met, the Contractor will have a grace period of 15 minutes. If the grace period expires before these conditions are met, then the inspection will be considered a failure. It will be the responsibility of the Contractor to reschedule and pay associated rescheduling fee.
- D. It is the responsibility of the sewer contractor to arrange for any additional and necessary District inspections as the work progresses.
- E. When the side sewer work is completed, a District inspector will provide a final inspection upon 48-hour notification by the sewer contractor.
- F. Work performed without inspection will be required to be exposed and tested in the presence of the District Inspector at the property owner or Contractor's expense.



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2.05 COMPLIANCE WITH REGULATIONS

- A. A copy of all required permits must be kept at the job site when the side sewer is being constructed.

SECTION 3 - DESIGN REQUIREMENTS:

3.01 PIPE SIZE

- A. Per District Standard Specification Section 02600 SIDE SEWERS, the inside diameter of side sewers shall meet the following requirements:
1. The pipe must conform to the size requirements for horizontal drainage based on the Equivalent Dwelling Unit (EDU) as set forth by the Marin County Assessor's office records, or fixture unit loading as set out in the Uniform Plumbing Code. Minimum pipe inside diameter shall be as follows:

Number of EDUs	Or	Number of Fixture Units	Min Inside Diameter
Less than 3	or	Less than 150	4 inch
Greater than or equal to 3	or	Greater than or equal to 150	6 inch

- a. In no event will a side sewer be permitted to connect to a sewer of lesser inside diameter on the downstream side.
- b. When more than one building sewer is allowed to be connected to a single side sewer, the side sewer from the point of intersection of one or more building sewers to the main sewer shall be calculated and submitted to the District for the proper size, and the approval shall be at the District's discretion.

3.02 PIPE MATERIAL

- A. Pipe materials shall be per the Side Sewer Piping Schedule in the District's Approved Materials List, see attachment.
- B. All side sewer pipe material between structures shall be of the same type and material, unless otherwise permitted by the District.

3.03 PIPE ALIGNMENT

- A. Side sewers must be laid by the shortest route from the main sewer connection to the building plumbing outlet.



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3.04 SLOPE

A. Per District Standard Specification Section 02600 SIDE SEWERS, slopes of side sewers shall conform to the following:

1. The minimum slope of side sewers shall be as follows:

Pipe Nominal Size (Inches)	Minimum Slope (Percent)
4	1.5
6 or larger	0.7

2. Max slope of any portion of a side sewer shall not be greater than 150 percent.

3.05 COVER

A. Per District Standard Specification Section 02600 SIDE SEWERS, cover requirements for side sewers shall conform to the following:

1. Minimum cover between the top of side sewer piping and finished grade shall be as follows:

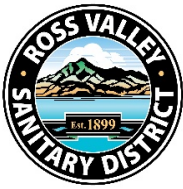
Location	Min Cover (feet)
Traffic Areas	3
Non Traffic Areas	1.5

- a. In non-paved areas that are not subject to vehicle loads, District approval will be required for any side sewer that cannot meet this minimum cover requirement. Special pipe materials, pipeline protection, and/or special backfill materials may be required.
- b. If the side sewer has less than three (3) feet of cover within the street right-of-way, Ductile Iron Pipe (DIP) shall be used in accordance with Section 15061, **DUCTILE IRON PIPE (DIP)**

3.06 BACKWATER PROTECTION DEVICES

Per District Standard Specification Section 02600 SIDE SEWERS, the following are requirements for backwater protection devices (BPDs) on side sewers:

1. A new BPD will be required for any and all repairs or alterations to existing side sewers that do not have an existing and properly functioning BPD in place.



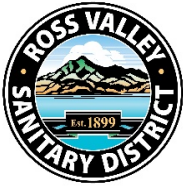
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2. A BPD is required at every location where sanitary sewer piping exits a building. Multiple BPDs may be required for some buildings. If multiple pipes that exit a building are within five feet of each other, only one BPD may be required.
3. BPDs shall be located within two (2) feet of the building foundation.
4. Elevation Requirements: BPDs shall be installed at an elevation that protects the property from damage and at least 6 inches below the lowest fixture unit in the building.
 - a. The Property Owner or Contractor is responsible to confirm that the backwater prevention device is at the proper elevation.
 - b. If any subsequent modification of the property results in the BPD being at an improper elevation, the Property Owner or Contractor shall adjust the BPD to the proper elevation at their cost.
5. See attached District Standard Drawings for Type 1 and Type 2 BPDs. Type 1 BPDs will typically be required.
 - a. Type 2 Backwater Prevention Devices shall only be used in areas with potential for flooding, where a Type 1 backflow cannot be installed, where extendable backwater valves are required, or where required by the District.

3.07 CLEANOUTS:

- A. Per District Standard Specification Section 02600 SIDE SEWERS, the following are requirements for cleanouts on side sewers:
 1. Cleanouts shall be installed at the following locations on side sewers:
 - a. When there are more than one building and the side sewers run from one building to the other, cleanouts shall be installed where the side sewer enters each building, and a cleanout and/or BPD shall be installed where the side sewer exits each building.
 - b. Within two (2) feet of the building foundation.
 - c. At or near the property line or public right of way line.
 - d. At intervals not to exceed ninety (90) feet of laid pipe length. If two-way (Tee) cleanouts are being installed at both ends, the length shall be one hundred and eighty (180) feet.
 - e. At any single bend, or any combination of bends that are greater than forty-five degrees (45°).



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- f. At intervals along the side sewer system where the cumulative total of deflection from the point of connection to the main sewer or from another cleanout equals or exceeds ninety degrees (90°)
 - g. At locations where there is a pipe material change, a cleanout shall be installed with secured plug to prevent from overflow.
 - 2. The cleanout(s) nearest the building foundation shall be provided with a BPD.
 - 3. Property line cleanouts shall be a two-way, wye, or a "Tee" as specified below,
 - a. PVC 900: Two-way
 - b. HDPE: Wye (facing sewer main)
 - c. Sch 80: Wye (facing sewer main)
 - d. CIP/DIP: "East Bay Code" Two-way
 - e. Blow off: Tee
 - f. BPD: Tee

Contractor is advised to discuss with property owner, and the District encourages the use of those per District's Approved Material list.

- 4. All risers on property line cleanouts shall be installed vertically. If there is a utility conflict preventing property line cleanouts being installed vertically, a one-way cleanout shall be installed with a bend making the rise vertical, allowing clearance for the cleanout.

3.08 BACKWATER CHECK VALVES

- A. Per District Standard Specification Section 02600 SIDE SEWERS, the following are requirements for backwater check valves:
 - 1. Extendable backwater check valves shall be installed on a side sewer if the difference in elevation between the lowest fixture unit in the building and the backwater prevention device is less than six (6) inches.
 - 2. Installation requirements for extendable backwater check valves shall be determined by District or its appointed Representative for the given field conditions.



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3. Extendable backwater check valves shall be per the District's Approved Materials List.

3.09 CONNECTIONS TO SEWER MAINS

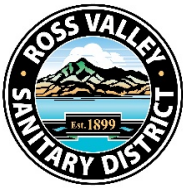
- A. Connections of side sewers to sewer mains shall be per District Standard Specification Section 02600 SIDE SEWERS and the District's Approved Materials List, as follows:

Sewer Main Pipe Material	Connection Type
VCP, PVC, DIP, CIP, or ACP	New Wye Fitting ^{1,2}
HDPE	Electrofusion Saddle , or Sidewall (Saddle) fusion fitting ³
Ex Pipe Lined w/ CIPP	Tap Connection ⁴

1. The Contractor shall cut and remove a portion of the existing main as required. Install a new wye fitting, spools of pipe, and adjustable repair couplings for connection the existing main (perform a pipeline spot repair with a new wye fitting).
 - a. If the new wye fitting is within 12 inches of an existing joint on the main line, the installation and replacement of the main shall extend beyond the joint (i.e. the joint shall be cut and removed). The new pipe material shall match the existing main, unless otherwise noted.
2. Tap connections (in lieu of a new wye fitting) may be used for connections to existing sewer mains with an inside diameter of 10 inches or larger. Tap connections shall be per the District's Approved Materials List.
3. Electrofusion saddles, or/and Sidewall (Saddle) fusion fittings shall be per the District's Approved Materials List.
4. Remove host pipe and connect tap connections to existing CIPP liner. Tap connection shall be per District's Approved Materials List.

3.10 PIPE BURSTING OF SIDE SEWERS

- A. Pipe bursting rehabilitation of side sewers with a minimum of three (3) feet of cover within street right of ways may be performed with District approval.
 1. The Contractor shall perform pre-CCTV of the side sewer prior to ordering materials in accordance with Section 02345, PIPE BURSTING and Section



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02300, CLEANING AND INSPECTION OF SATNITARY SEWER MAINS. The District may reject the use of pipe bursting method for rehabilitation of side sewers based on the pre-installation CCTV.

2. Pipe bursting of side sewers shall be performed in accordance with Section 02345, PIPE BURSTING.
3. The Contractor shall provide air gaps between existing utilities, repair surface upheaval, and repair sags in accordance with Section 02345, PIPE BURSTING, and the Standard Drawings.

- B. The Contractor shall allow a minimum of 6 hours for new HDPE pipes to “relax” prior to final inspection.

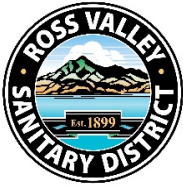
3.11 CURED-IN-PLACE REHABILITATION OF SIDE SEWERS:

- A. CIPP rehabilitation of side sewers may be performed only upon prior approval by the District and if a special condition exists. Per District Standard Specification Section 02600 SIDE SEWERS, CIPP rehabilitation of side sewers shall conform to the following:

1. CIPP products for side sewer rehabilitation shall be per the District's Approved Materials list.
2. The Contractor or subcontractor installing the CIPP shall be certified by the lining manufacturer. Submit experience and Certification to the District for review.
3. Perform pre-CCTV of the side sewer prior to ordering materials in accordance with District Standard Specification Section 02315, CURED-IN-PLACE PIPE (CIPP) and Section 02300, CLEANING AND INSPECTION OF SATNITARY SEWER MAINS. The District may reject the use of CIPP method for rehabilitation of side sewers based on the pre-installation CCTV.
4. The Applicant or Contractor shall be required to repair or replace the side sewer connection to the mainline as part of the construction work/permit (No hammer tap connections shall be allowed). If the connection to the main is in suitable condition, as determined by the District, then connection rehabilitation may be performed by trenchless methods, as specified in District Standard Specification Section 02315, CURED-IN-PLACE PIPE (CIPP) and per the District's Approved Materials List.

3.12 OLD SIDE SEWERS

Per District Standard Specification Section 02600 SIDE SEWERS, a new structure is not permitted to connect to an old side sewer unless the old side sewer is tested and inspected in the presence for a District Inspector and found to meet all current District Requirements. Inspection shall comply with District Ordinance 66.



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3.13 ABANDONING SIDE SEWERS

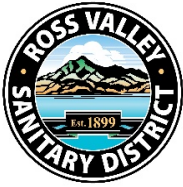
- A. When abandoning side sewers connected to the main sewer, including side sewers from structures that are demolished, the connection to the main must be dug out, cut away, and plugged with a solid piece of pipe of the same size and material. Plugging off must be done in the presence of a District Inspector.
- B. Abandonment of side sewer piping shall be in accordance with Section 02050, DEMOLITION, ABANDONMENT AND REMOVAL. The side sewer to be abandoned shall be either completely removed, or abandoned in place and completely filled with controlled low strength material (CLSM) or low density cellular concrete (LDCC), per Section 02200, EARTHWORK. Provide ventilation during abandonment to allow air to escape from side sewers.

3.14 INDIVIDUAL LOT PUMPING SYSTEMS:

- A. Sumps shall be installed outside the perimeter of the building envelope.
- B. Where gravity service is not feasible, special application may be made to the District to allow installation of a sewer ejector pump system in accordance with District Standard Specification Section 13100, INDIVIDUAL LOT PUMPING SYSTEMS and per the attached Standard Drawing SD-40. The District must approve the design of the system, and the District reserves the right to prohibit the installation of an individual lot pumping system.
- C. When the installation of an individual lot pumping system is approved by the District, the installation of the pumping system, electrical work, and the sump shall meet the codes and regulation of the building department of jurisdiction issuing the building permit and shall be inspected by the said department (Electrical only).
- D. See attached District's Approved Materials List for approved packaged pump stations.

3.15 INTERCEPTORS

As required in District Standard Specification Section 02600 SIDE SEWERS, for commercial side sewers, grease, oil, and/or sand interceptors must be installed where required by the District or the Central Marin Sanitation Agency (CMSA) for proper handling of liquid wastes grease in excessive amounts, flammable wastes, sand, or other substances capable of causing Public nuisance, damage or hazards to structures, equipment, and personnel.



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3.16 EXISTING SEPTIC TANKS

- A. Septic tanks are under the jurisdiction of Marin County Environmental Health Services. Marin County Environmental Health Services must be notified when a septic tank is to be abandoned or encountered during installation of a side sewer.
- B. The District's requirements are, per District Standard Specification Section 02600, SIDE SEWERS:
 - 1. All building plumbing outlets must connect to the side sewer and completely bypass the septic tank.
 - 2. The septic tank must be abandoned following the Uniform Plumbing Code and the regulations of the Marin County Environmental Health Services.

SECTION 4 - CONSTRUCTION

4.01 EXISTING SIDE SEWER LOCATIONS

- A. Per District Standard Specification Section 02600, Side Sewers, where an existing side sewer or its connection to the main is to be replaced or rehabilitated, it is the responsibility of the property owner or their contractor to locate and uncover the existing side sewer to serve the property.
 - 1. When the lateral stub or wye cannot be located, even though the District's records indicate such a connection exists, the side sewer must be connected to the main sewer at a location designated by the District at the expense of the property owner.
 - 2. The District does not guarantee the presence or location of lateral stubs or wyes.

4.02 NEW SIDE SEWER LOCATIONS

- A. Perform the following per District Standard Specification Section 02600 SIDE SEWERS:
 - 1. Prior to installation of side sewers in subdivisions, the lot corner nearest the side sewer and the lateral sewer terminus shall both be staked and flagged in the field.
 - 2. Where curbs, gutters and/or sidewalks exist or are to be a part of an improvement, the location of each lateral sewer shall be permanently marked by imprinting an "S" (2" size) or by chiseling an "S" (4" size) in the concrete surface vertically above the lateral sewer pipe. The "S" shall be



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marked on the curb, gutter or on the sidewalk. It shall be the Contractor's responsibility for providing the marking and for its accuracy.

4.03 BYPASS PUMPING

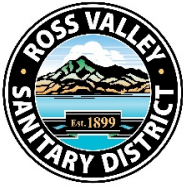
When performing work on side sewers, the Contractor shall bypass wastewater around the work area in accordance with the requirements of District Standard Specification Section 02145, SEWAGE FLOW CONTROL AND BYPASSING, or shall arrange with the Property Owner to temporarily shut down the side sewer. The Contractor shall ensure that no wastewater is discharged from the side sewer to the excavation.

4.04 TRENCHING

- A. Trenching and backfill shall be per District Standard Specification Section 02200, EARTHWORK and the Typical Trench Section in the Standard Details.
- B. Per District Standard Specification Section 02600 SIDE SEWERS, the District may reserve the right to require compaction tests for trench backfill by a soils engineer. The cost of compaction test must be paid by the Contractor or property Owner.

4.05 PIPELINE INSTALLATION

- A. Side sewers shall be installed per District Standard Specification Section 15050, GENERAL PIPING:
 - 1. Sewer pipelines shall be laid upgrade from the point of connection to the existing sewer main with the bell end at the upgrade end of each pipe length.
 - 2. Layout of deflections and/or curves shall conform to the requirements specified in the applicable section of the District's Standard Specifications for the particular pipe material being used.
 - 3. Per District Standard Specification Section 02600 SIDE SEWERS, the side sewer shall be installed using an industrial-standard laser grade control system to confirm that the pipe is installed to the proper grade for the following:
 - a. Wherever available slope is less than two percent (2%)
 - b. When length of the side sewer is greater than one hundred (100) feet
 - 4. Where it becomes necessary to modify the design pipe alignment to resolve conflicts with unforeseen obstructions or other causes, the



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Contractor shall propose a revised alignment to the District or the District's Representative for consideration. Such revision may be made by the deflection of joints, by the use of fittings or by forced bending of the pipe if permitted, however, in no case shall the deflection in the pipe or at any joint exceed the maximum deflection recommended by the pipe manufacturer.

5. The Contractor shall take all necessary precautions to prevent excavated or other foreign material from getting into the pipe during the laying operations. At all times when laying operations are not in progress and at the close of the day's work, the openings of all pipe and specials, whether in the trench or in storage, shall be protected with suitable bulkheads to prevent unauthorized access by persons, animals, water, or any undesirable substance. If debris is observed downstream of work, it is the responsibility of the Contractor to clean and CCTV the main lines.
6. The Contractor shall prevent the pipe from floating during and after its installation.

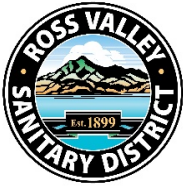
- B. Per District Standard Specification Section 02600, SIDE SEWERS, electronically detectable warning tape shall be installed above all side sewer piping installed by open trench method.

4.06 REPAIRS TO EXISTING SIDE SEWERS

- A. Repairs to side sewers shall be as shown in the attached District Standard Details, and per District Standard Specification Section 15050 GENERAL PIPING.
 1. The replacement pipe shall be squarely cut approximately one-half (1/2) inch shorter than the missing section, providing no larger than a one quarter (1/4) inch gap between pipes on each side.
 2. When repair of a damaged section of pipe is required within eighteen (18) inches of a pipe joint, the replacement section shall extend to and include the joint.
 3. Where repair couplings are permitted, couplings shall be per the District's approved materials list.
 4. The District Inspector may require replacement of broken, damaged or improper pipe or fittings discovered during sewer repair or replacement work.

4.07 LEAKAGE TESTING GRAVITY SIDE SEWERS

- A. Perform leakage testing in accordance with District Standard Specification Section 02735, SANITARY SEWER SYSTEM TESTING.



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1. Air test at a minimum of 4 psi for a minimum period of ten (10) minutes. If the pressure remains constant during the test period, the line has passed. If the pressure drops during the test time, the line has failed the test.
 - a. Hydrostatic testing of gravity pipelines may be performed in lieu of air testing if approved by the District. Fill segment with water to an elevation ten (10) feet above the top of pipe at the upstream end of the test section, or ten (10) feet above the existing groundwater elevation, whichever is greater. If the water level is maintained for a minimum of fifteen (15) minutes, the line has passed.

4.08 CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION:

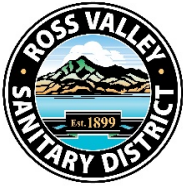
- A. Perform cleaning and television inspection in accordance with District's Standard Specification Section 02300, **CLEANING AND INSPECTION OF SANITARY SEWER MAINS.**
 1. Pre-installation CCTV inspection will be required for side sewers to be rehabilitated by pipe bursting or CIPP method. Submit videos to the District for review.
 2. Post installation inspection will be required for all side sewer installations and repairs.

4.09 EROSION CONTROL

- A. Provide erosion control per District Standard Specification Section 02270, **EROSION CONTROL.**
 1. Erosion control measures shall be in accordance with the requirements of Marin County Stormwater Pollution Prevention Program (MCSTOPPP), the San Francisco Bay Region Regional Water Quality Control Board (RWQCB), and the State Water Resources Control Board (SWRCB).
 2. The District may require the installation of trench dams per the Standard Details.

4.10 SURFACE RESTORATION

- A. The Contractor shall restore the area affected by its side sewer installation operations in kind and accordance with the requirements of any encroachment permits (if applicable), District Standard Specification Section 02050, **DEMOLITION**, and Section 02900, **PROTECTION OF TREES AND RESTORATION OF LANDSCAPING.**



ROSS VALLEY SANITARY DISTRICT

OVERVIEW OF SIDE SEWER REQUIREMENTS

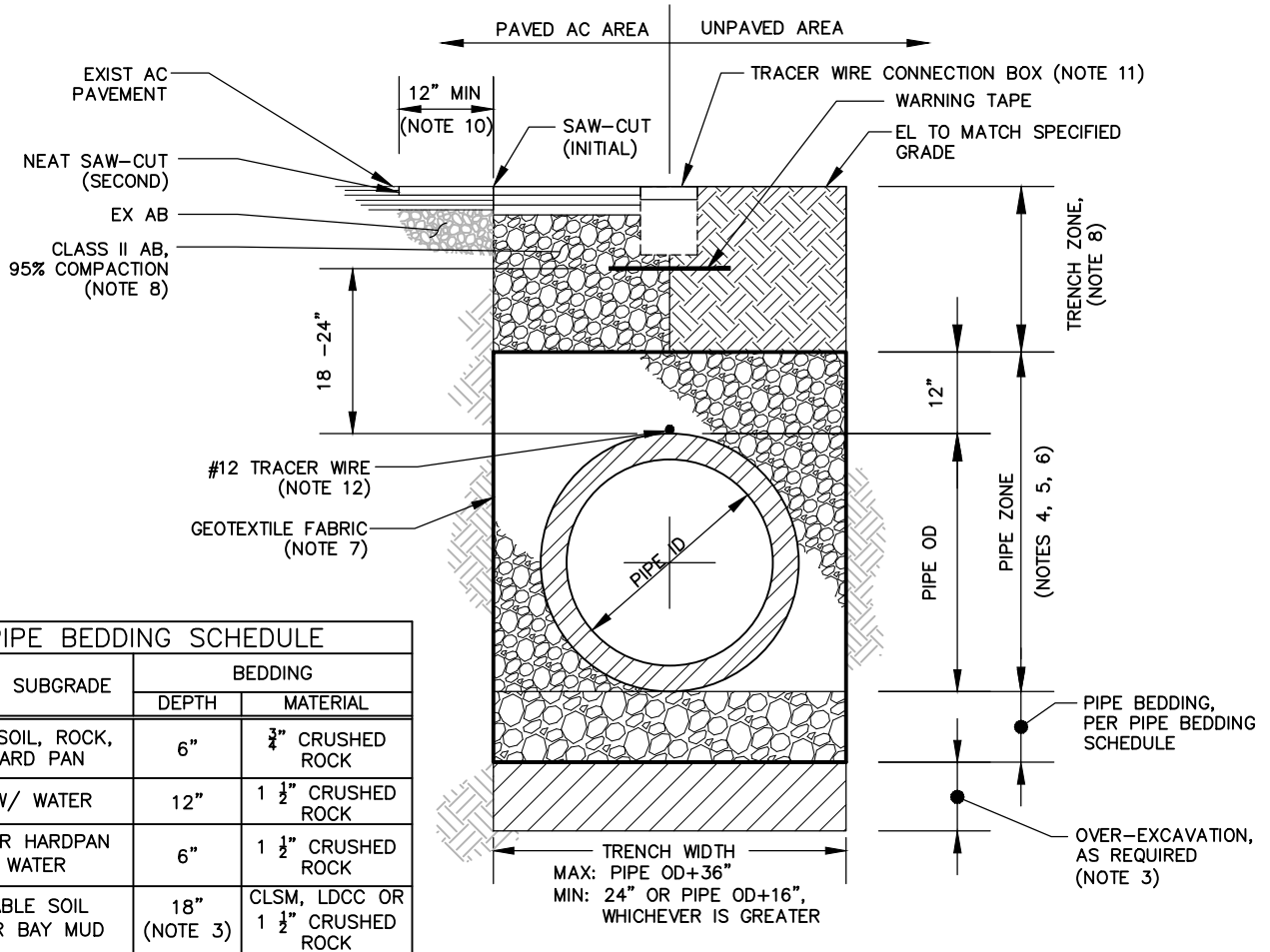
4.11 SPECIAL CONDITIONS

When encountering special conditions which are not covered by District Standard Specifications and/or Code, a District Inspector and/or the District Engineer will direct the Contractor or property owner in the required procedures.

SIDE SEWER
DISTRICT APPROVED MATERIALS

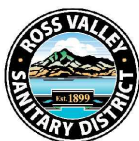
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NOTES:

- TRENCHING SHALL CONFORM TO THE "CONSTRUCTION SAFETY ORDERS OF THE STATE OF CALIFORNIA" AND SECTION 6705 OF THE CALIFORNIA LABOR CODE.
- PAVEMENT AND PAVEMENT THICKNESS SHALL CONFORM TO THE REQUIREMENTS OF THE TOWN OR CITY WITH JURISDICTION AND THE ENCROACHMENT PERMIT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH TRENCH PAVING REQUIREMENTS OF THE ENCROACHMENT PERMIT.
- IF UNSTABLE SUB-GRADE IS EXPOSED PRIOR TO BEDDING PLACEMENT, THE DISTRICT SHALL BE ADVISED IMMEDIATELY. WHEN DIRECTED BY THE DISTRICT, OVER-EXCAVATE ADDITIONAL 12" MIN UNSUITABLE SUB-GRADE MATERIAL FOR A TOTAL OF 18" BELOW PIPE AND BACKFILL PER STANDARD SPECIFICATION SECTION 02200, EARTHWORK.
- PIPE ZONE BACKFILL SHALL BE ¾" CRUSHED ROCK, COMPACTED TO 90% RELATIVE COMPACTION.
- BACKFILL SHALL BE PLACED IN 8" MAXIMUM LIFTS UNLESS OTHERWISE APPROVED BY THE DISTRICT. EACH LIFT SHALL BE COMPACTED BY A MINIMUM OF THREE (3) PASSES WITH A VIBRATORY PLATE COMPACTOR.
- WHERE ADEQUATE COMPACTION CANNOT BE ACHIEVED ABOVE CROWN OF PIPE DUE TO OBSTRUCTION OR OTHER CONDITIONS, REPLACE PIPE ZONE MATERIAL WITH CLSM, AS DIRECTED BY CONSTRUCTION MANAGER.
- GEOTEXTILE FABRIC INSTALLATION:
MAIN SEWERS: WRAP/ENCAPSULATE PIPE BEDDING AND PIPE ZONE BACKFILL TOGETHER USING GEOTEXTILE FABRIC WITH MINIMUM 12" OVERLAP
SIDE SEWERS: INSTALL A SINGLE LAYER/BANKET OF GEOTEXTILE FABRIC AT THE TOP OF THE PIPE ZONE.
- TRENCH ZONE BACKFILL SHALL BE:
IN PAVED AREAS: CLASS II AB, 95% COMPACTION, UNLESS OTHERWISE SPECIFIED OR DIRECTED BY THE DISTRICT.
IN NON PAVED AREAS: ENGINEERED FILL COMPACTED TO 90% RELATIVE COMPACTION. IN LANDSCAPED AREAS TOP 12" MAY BE TOPSOIL OR NATIVE.
- SAW-CUT FULL DEPTH OF EXISTING AC PAVEMENT. PAVEMENT EDGES OF SECOND NEAT SAW CUT DAMAGED DURING CONSTRUCTION SHALL BE RE-CUT TO NEAT LINES PRIOR TO PAVING. TACK COAT SHALL BE APPLIED TO ALL VERTICAL SURFACES IN ACCORDANCE TO THE LATEST CALTRANS STANDARD SPECIFICATIONS. TACK COAT SHALL BE APPLIED TO COMPLETE WIDTH AND EDGE JUST PRIOR TO PLACING ASPHALT CONCRETE.
- WHERE EDGE OF GUTTER IS WITHIN 3 FEET OF SAW-CUT, REMOVE REMAINING EXISTING AC PAVING AND REPLACE WITH NEW AC PAVING. EXPOSED EDGE OF SAW-CUT SHALL BE APPLIED WITH A TACK COAT PRIOR TO PAVING.
- ALL ROADWAY SURFACE MARKINGS, INCLUDING BUT NOT LIMITED TO STRIPING SHALL BE REPLACED TO PRE-EXISTING CONDITIONS.
- TRACER WIRE SHALL BE TAPED TO THE TOP OF ALL BURIED FORCE MAINS. FOR FORCE MAINS AND WHERE THE DISTANCE BETWEEN MANHOLES IS GREATER THAN 400 FT, A TRACER WIRE CONNECTION BOX SHALL BE INSTALLED, SEE SD-27. ALL OTHER TRACER CONNECTIONS SHALL BE INSTALLED WITHIN MANHOLES. FOR SIDE SEWERS, INSTALL DETECTABLE WARNING TAPE PER STANDARD SPECIFICATION SECTION 02600, SIDE SEWERS.



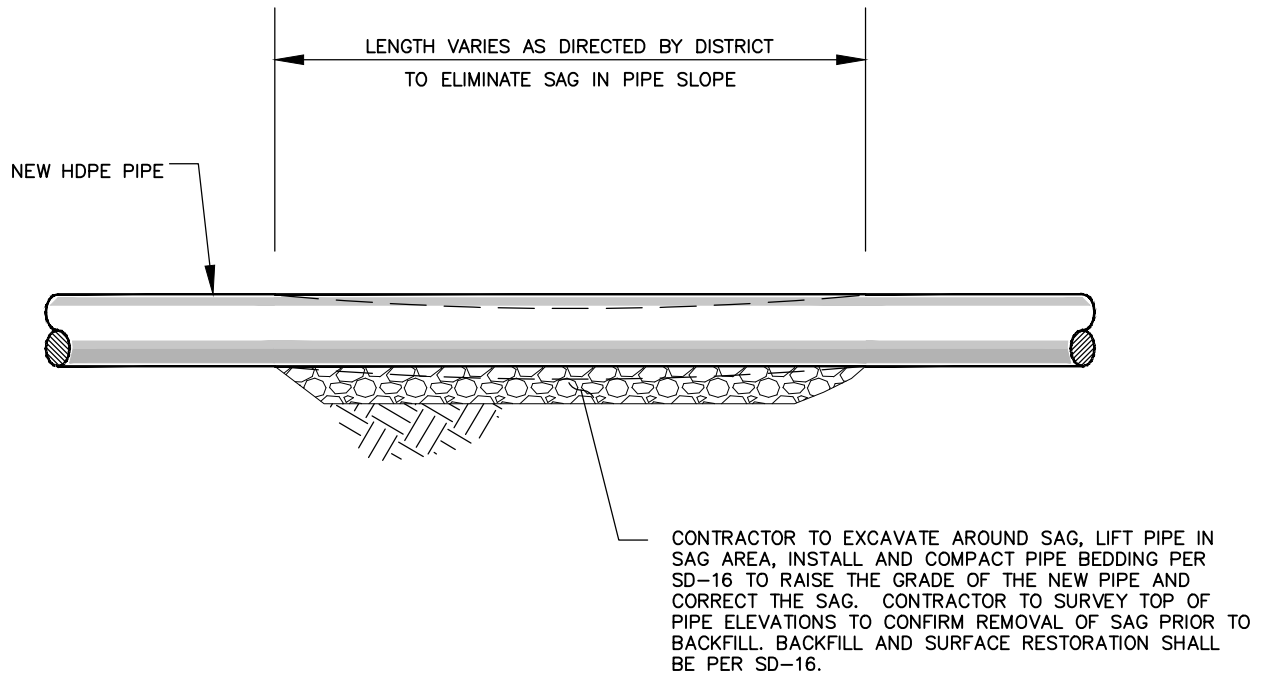
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ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS

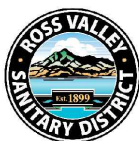
TYPICAL TRENCH SECTION

SD-16

2020



2020

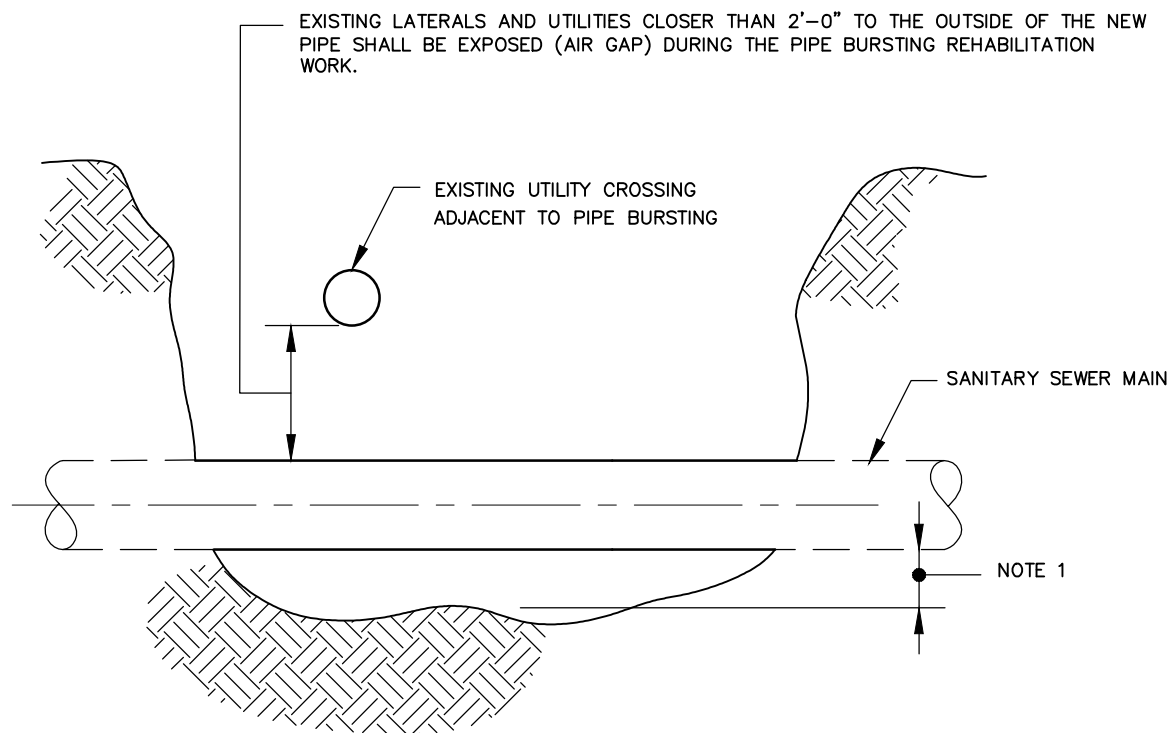


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ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS

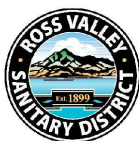
SANITARY SEWER SAG REPAIR
(AFTER PIPE BURSTING)

SD-20

**NOTES:**

1. EXCAVATE COMPLETELY AROUND THE SANITARY SEWER MAIN TO BE BURST. MAINTAIN 3" OF CLEARANCE FROM SOIL TO THE NEW PIPE OUTSIDE DIAMETER TO ENSURE THE BURSTING HEAD DOES NOT RAISE UP AT THESE LOCATIONS.
2. REMOVE ANY LOOSE AND/OR NATIVE SOIL FROM THE EXCAVATION AFTER BURSTING/REAMING OPERATIONS AND PRIOR TO BACKFILLING.
3. BACKFILL AND SURFACE RESTORATION SHALL BE PER SD-16.

2020

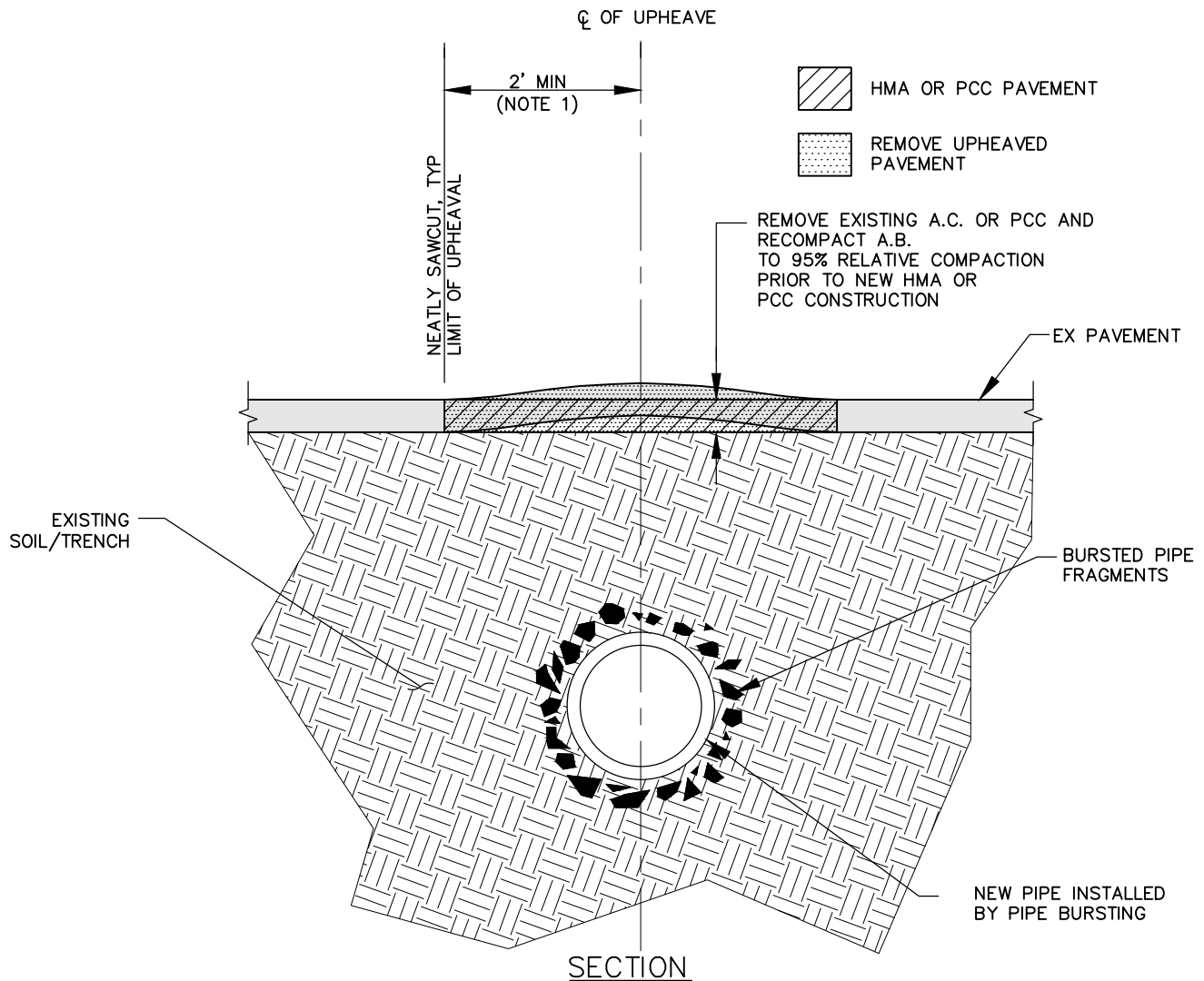


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**ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS**

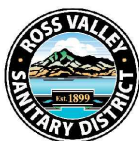
**AIR GAP FOR PIPE BURSTING
AT UTILITY CROSSING**

SD-21

**NOTES:**

1. LIMITS OF PAVEMENT REPAIR TO BE VERIFIED BY DISTRICT OR ITS APPOINTED REPRESENTATIVES AFTER PIPE BURSTING. WHERE LIMIT OF SURFACE UPHEAVAL REPAIR IS INDICATED IN THE DESIGN, SAWCUT FULL DEPTH OF PAVEMENT PRIOR TO BURSTING PIPE.

2020



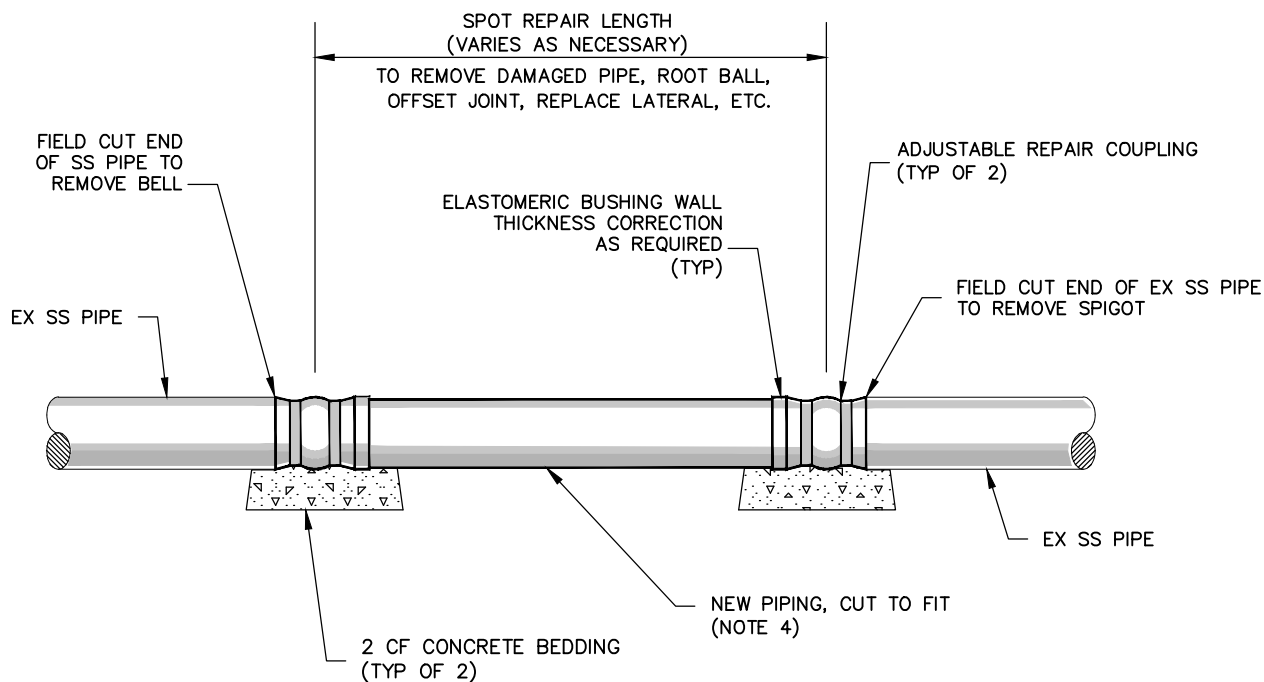
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**ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS**

SURFACE UPHEAVAL REPAIR

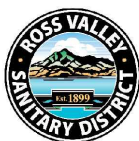
SD-22

APPENDIX A

**NOTES:**

1. THE CONTRACTOR SHALL VERIFY ACTUAL POINT REPAIR LOCATIONS IN THE FIELD IN COORDINATION WITH THE REVIEW OF PRE-INSTALLATION CCTV. ANY POINT REPAIRS OR ADDITIONAL LENGTHS NOT SHOWN IN THE DESIGN DRAWINGS SHALL BE APPROVED BY THE DISTRICT OR ITS REPRESENTATIVES PRIOR TO INSTALLATION.
2. WHERE SPOT REPAIRS ARE SHOWN IN DESIGN DRAWINGS TO ENTER INTO AN EXISTING MANHOLE, REMOVE AND REPLACE EXISTING PIPE AND REPAIR MANHOLE WALL AND BASE PER SD-9.
3. TRENCH BACKFILL AND SURFACE RESTORATION SHALL BE IN ACCORDANCE WITH SD-16.
4. NEW PIPING SHALL BE PER THE DISTRICT'S APPROVED MATERIAL LIST, AND MATCH EXISTING PIPE MATERIAL. IF EXISTING PIPE MATERIAL IS NOT ON THE DISTRICT'S APPROVED MATERIAL LIST, CONTRACTOR SHALL USE MATERIAL AS SPECIFIED BY THE DISTRICT.

2020

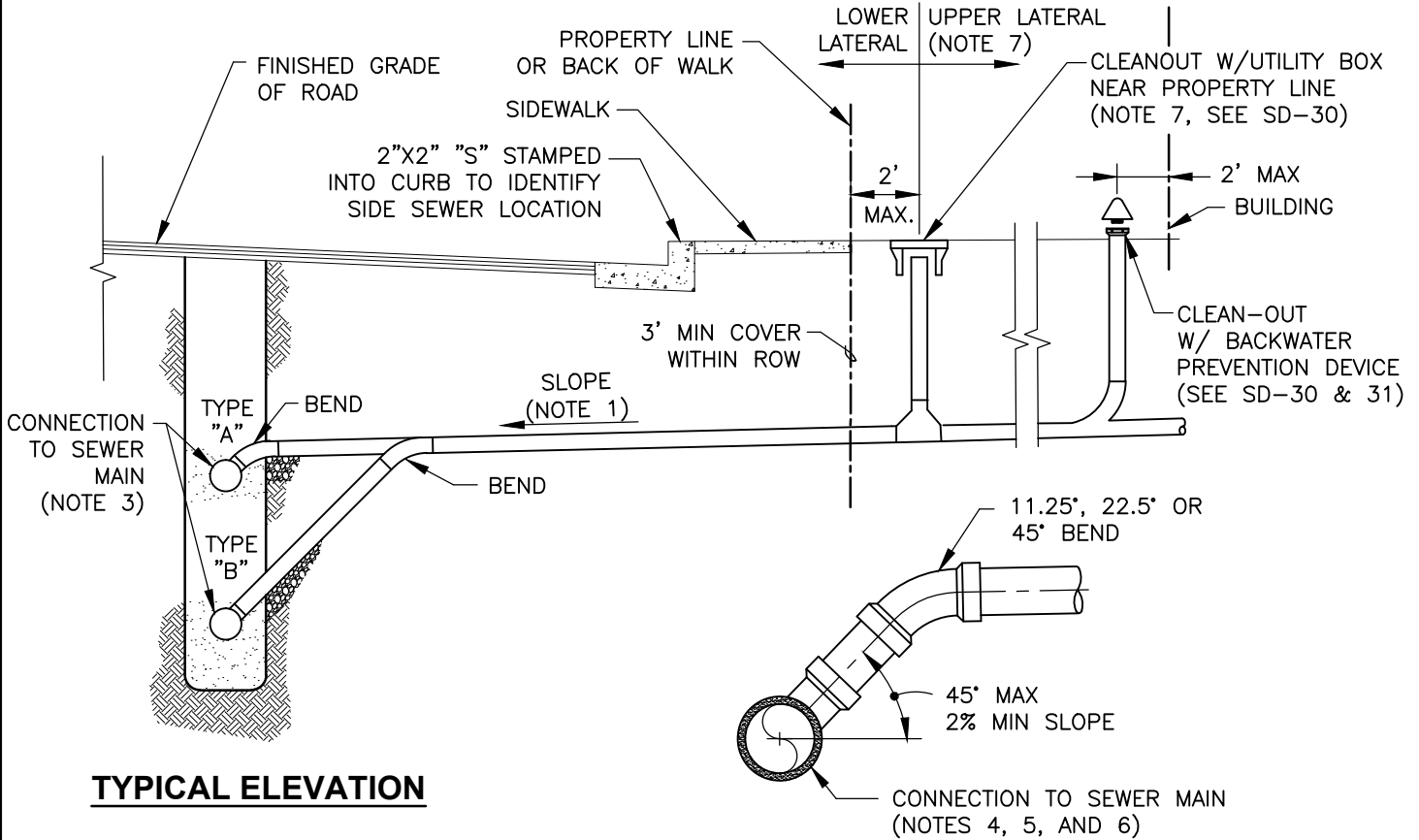


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ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS

PIPELINE SPOT REPAIR

SD-23



TYPICAL ELEVATION

**SIDE SEWER CONNECTION
TO SANITARY SEWER MAIN**

NOTES:

1. MIN SLOPE FOR 4-INCH SIDE SEWERS SHALL BE 1.5%. MIN SLOPE FOR 6-INCH OR GREATER SHALL BE 0.7%.
2. TRENCHING AND SURFACE REPAIR SHALL BE PER SD-16.
3. CONTRACTOR SHALL USE THE MOST APPROPRIATE TYPE CONNECTION (A OR B) FOR THE PARTICULAR SITUATION.
4. SIDE SEWER CONNECTION TO SEWER MAIN SHALL BE WITH A NEW WYE FITTING. FOR CONNECTIONS TO EXISTING SEWER MAINS, REMOVE AND REPLACE A PORTION OF SEWER MAIN AS REQUIRED FOR THE WYE FITTING AND PIPING INSTALLATION. PIPING AND CONNECTIONS TO EXISTING MAINS AND EXISTING SIDE SEWERS SHALL BE WITH ADJUSTABLE REPAIR COUPLINGS AND PER STANDARD PIPELINE SPOT REPAIR DETAIL, SEE SD-23. NEW WYES AND PIPING SHALL MATCH EXISTING MAIN MATERIAL.
5. TAP CONNECTIONS PER DISTRICT'S APPROVED MATERIALS LIST MAY BE USED TO SEWER MAINS 10-INCH OR LARGER IF APPROVED BY THE DISTRICT.
6. FOR CONNECTIONS TO HDPE MAINS, SEE SD-34.
7. PROPERTY LINE CLEANOUTS SHALL BE A TWO-WAY, WYE OR A "TEE" AS SPECIFIED IN SPECIFICATION SECTION 02600, AND SHALL BE PER DISTRICT'S APPROVED MATERIAL.
8. ADDITIONAL CLEANOUT(S) WILL BE REQUIRED IN ACCORDANCE WITH THE REQUIREMENTS OF SPECIFICATION SECTION 02600, SIDE SEWERS.

2020

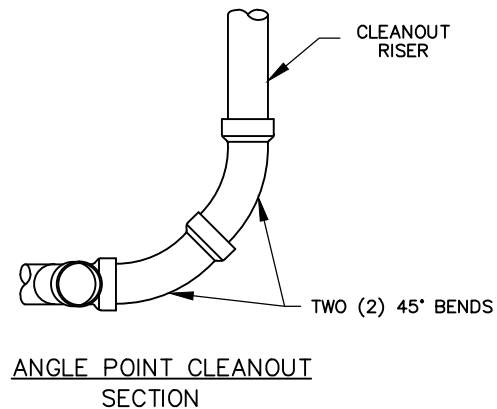
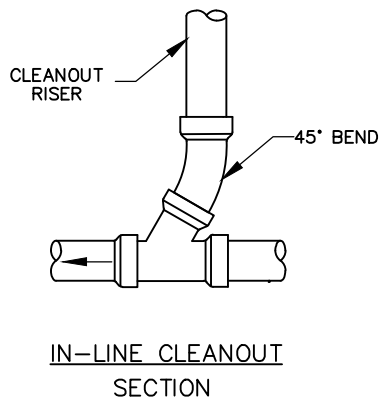
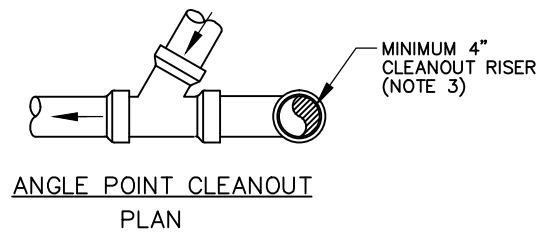
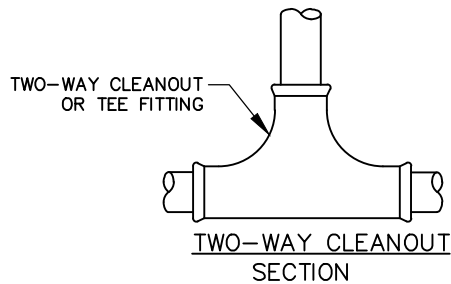
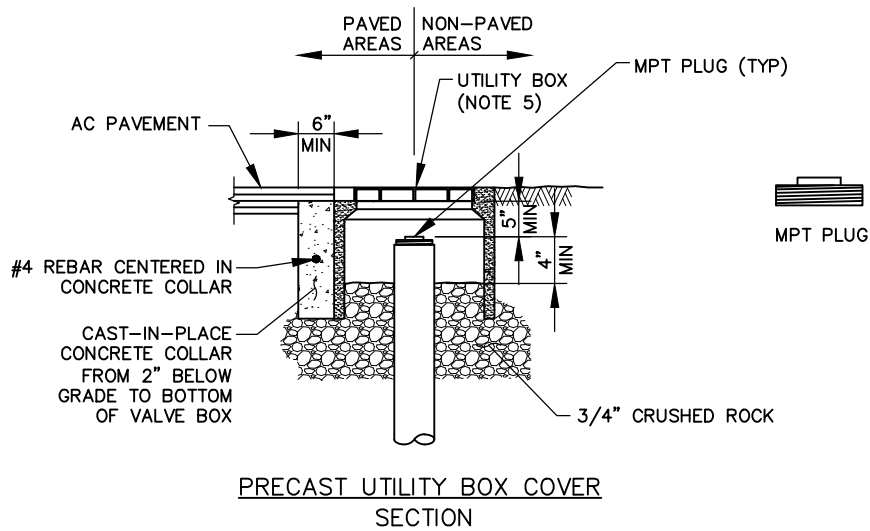


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**ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS**

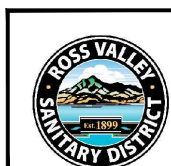
TYPICAL SIDE SEWER

SD-29



NOTES:

- CLEAN-OUT SHALL BE THE SAME SIZE AS THE SIDE SEWER.
- FITTINGS FOR CLEANOUTS AND SIDE SEWERS SHALL BE PER THE DISTRICT'S APPROVED MATERIALS LIST, SEE SIDE SEWER FITTINGS.
- ANGLE POINT CLEAN-OUT REQUIRED AT SIDE SEWER DEFLECTIONS EQUAL TO OR GREATER THAN 45°, OR/AND AT INTERVALS NOT TO EXCEED NINETY FEET OF LAID PIPE LENGTH.
- CLEAN-OUT IS REQUIRED AT INTERVALS NOT TO EXCEED NINETY FEET OF LAID PIPE LENGTH. IF TWO-WAY (TEE) CLEAN-OUTS ARE BEING INSTALLED AT BOTH ENDS, THE LENGTH IN BETWEEN CAN BE UP TO ONE HUNDRED AND EIGHTY FEET.
- THE CLEAN-OUT NEAREST TO SEWER MAIN (NEAR THE PROPERTY LINE) SHALL BE PROVIDED WITH A UTILITY BOX. ALSO, THE DISTRICT ENCOURAGES THE USE OF TWO-WAY CLEANOUTS WHERE FEASIBLE FOR PROPERTY LINE CLEANOUTS.
- ALL SEWER LATERAL CLEANOUTS SHALL BE INSTALLED IN PRECAST UTILITY BOXES. PRECAST UTILITY BOXES SHALL BE PER DISTRICT'S APPROVED MATERIALS LIST. ALL COVERS SHALL BE MARKED "SEWER". CLEANOUT BOXES SHALL BE REQUIRED FOR ALL CLEANOUTS IN PAVED AREAS.
- THE CLEAN-OUT NEAREST TO BUILDING/HOME SHALL HAVE AN BACKWATER PROTECTION DEVICE PER SD-31.



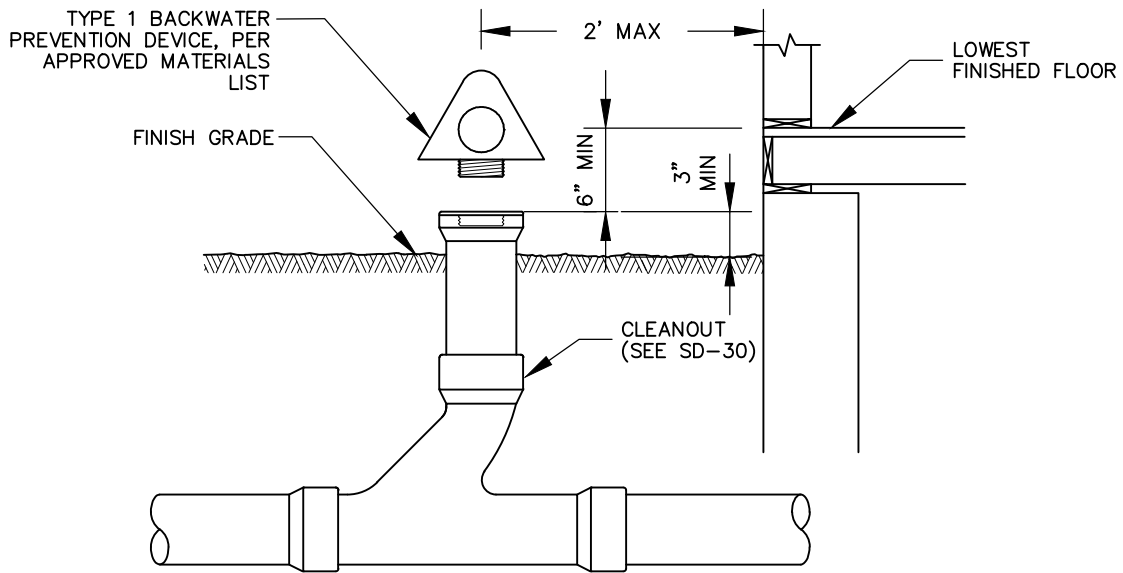
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**ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS**

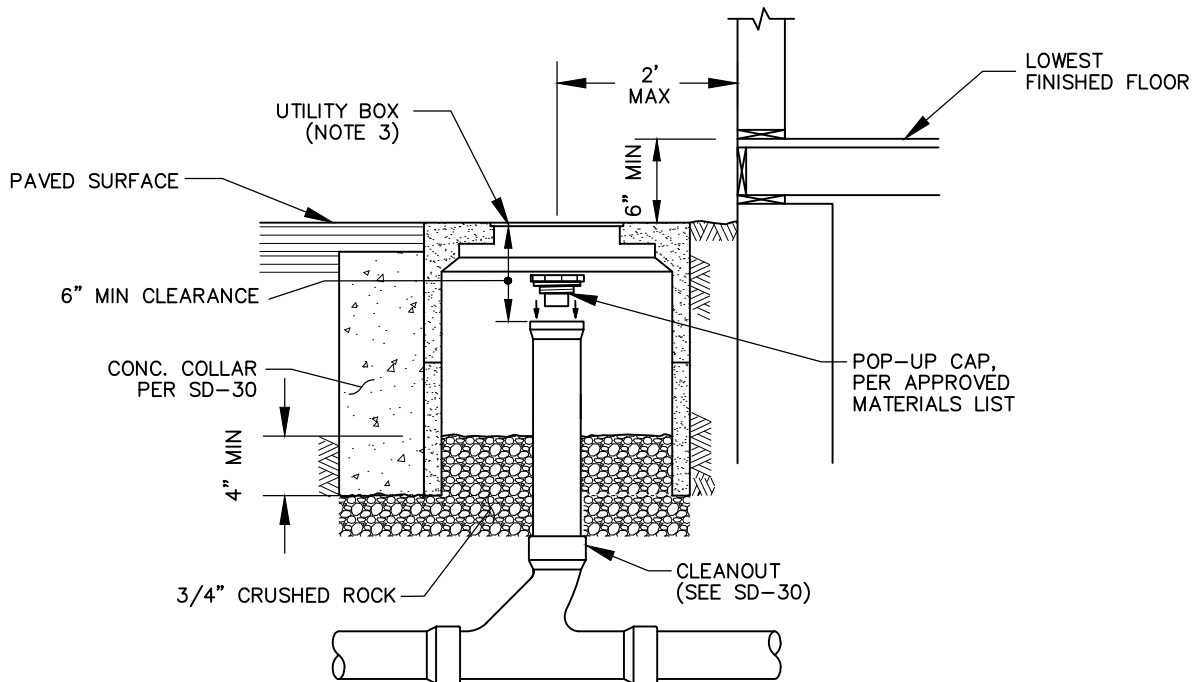
SIDE SEWER CLEANOUT

SD-30

2020



(TYPE 1)

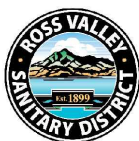


(TYPE 2)

NOTES:

1. A BACKWATER PREVENTION DEVICE, SHALL BE REQUIRED ON ALL SIDE SEWERS AT EVERY LOCATION WHERE SEWER PIPING EXITS A BUILDING/HOME. MULTIPLE BACKWATER PREVENTION DEVICES MAY BE REQUIRED FOR SOME BUILDINGS/HOMES.
2. TYPE 1 BACKWATER PREVENTION DEVICES WILL BE REQUIRED FOR MOST APPLICATIONS. TYPE 2 BACKWATER PREVENTION DEVICES SHALL ONLY BE USED IN AREAS WITH A POTENTIAL FOR FLOODING, WHERE TYPE 1 DEVICES CANNOT BE USED, WHERE BACKWATER CHECK VALVES ARE REQUIRED, OR WHERE REQUIRED BY DISTRICT. THE USE OF TYPE 1 CAPS WILL NOT BE ALLOWED IN AREAS WITH A POTENTIAL FOR FLOODING.
3. UTILITY BOXES SHALL BE PER DISTRICT'S APPROVED MATERIALS LIST.

2020

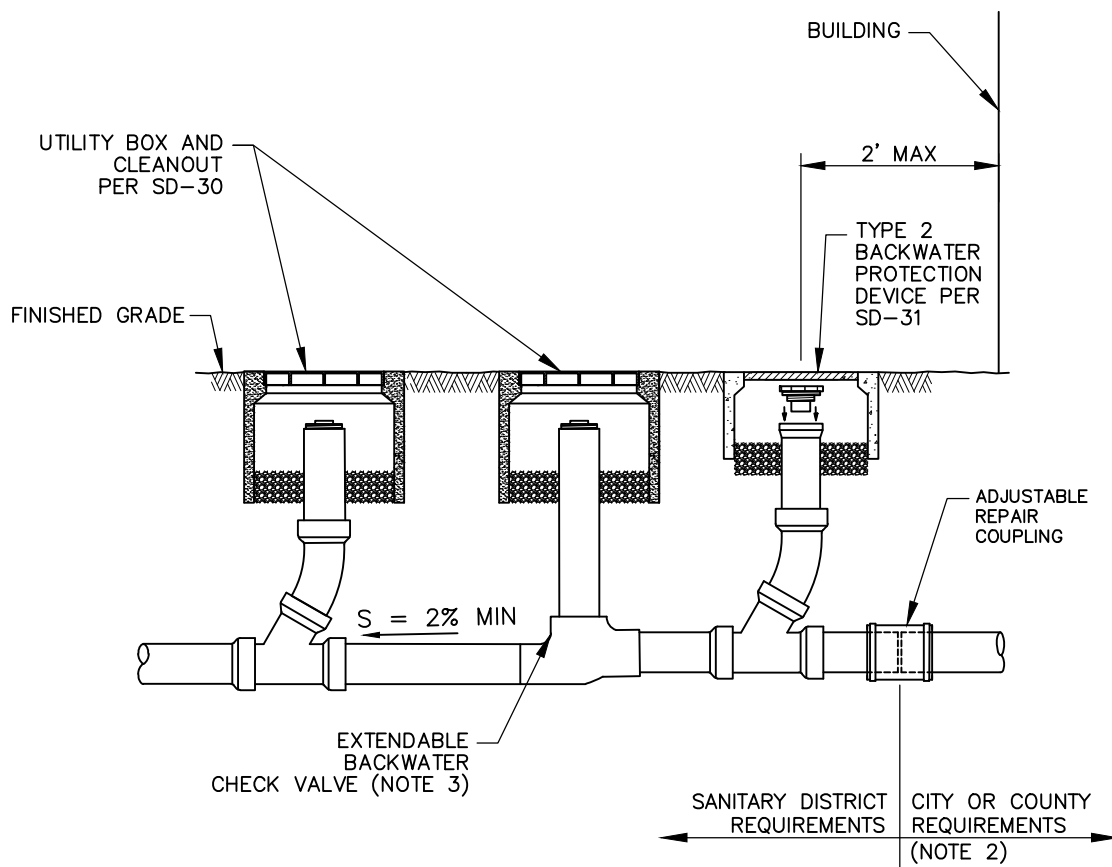


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**ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS**

**BACKWATER PREVENTION
DEVICE**

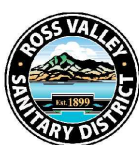
SD-31



NOTES:

1. EXTENDABLE BACKWATER CHECK VALVES SHALL BE INSTALLED IF THE DIFFERENCE IN ELEVATION OF THE LOWEST FIXTURE UNIT AND THE BACKWATER PROTECTION DEVICE IS LESS THAN 6 INCHES.
2. THE HOUSE PLUMBING MUST MEET THE BACKWATER VALVE MANUFACTURER'S RECOMMENDATIONS FOR MINIMUM SLOPE.
3. BACKWATER CHECK VALVES SHALL BE PVC EXTENDABLE TYPE AND PER THE DISTRICT'S APPROVED MATERIALS LIST.

2020

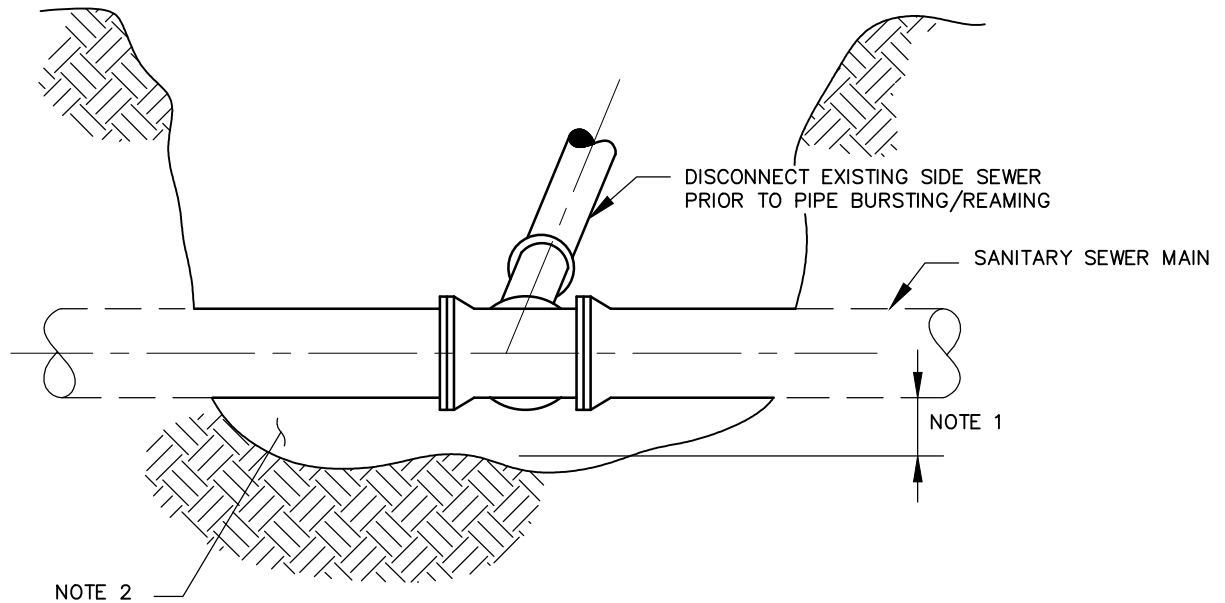


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**ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS**

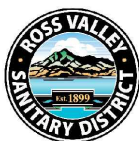
BACKWATER CHECK VALVE

SD-32

**NOTES:**

1. EXCAVATE COMPLETELY AROUND THE SS MAIN TO BE BURST. MAINTAIN 3" OF CLEARANCE FROM SOIL TO THE NEW PIPE OUTSIDE DIAMETER TO ENSURE THE BURSTING HEAD DOES NOT RAISE UP AT THESE LOCATIONS.
2. REMOVE ANY LOOSE AND/OR NATIVE SOIL FROM THE EXCAVATION AFTER BURSTING/REAMING OPERATIONS AND PRIOR TO BACKFILLING.
3. BACKFILL AND SURFACE RESTORATION SHALL BE PER SD-16.
4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROPERLY ADDRESS SIDE SEWER WASTE WATER FLOW DURING PIPE BURSTING AND/OR REAMING PROCESS.

2020

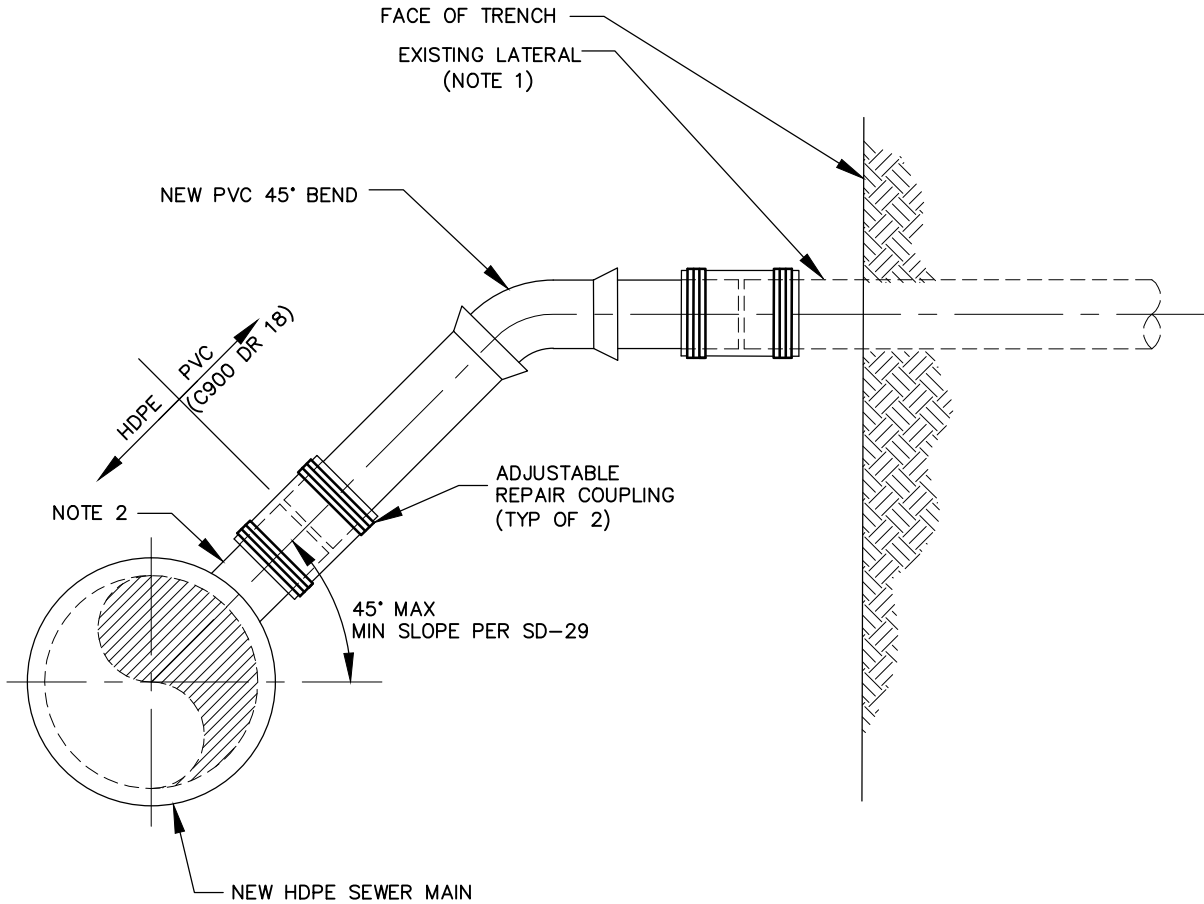


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**ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS**

**SIDE SEWER DISCONNECT FOR
PIPE BURSTING/REAMING**

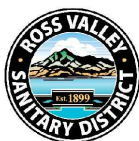
SD-33



NOTES:

1. EXTEND NEW LATERAL AS REQUIRED TO REMOVE DETERIORATED PIPE AND CONNECT TO PIPE IN GOOD CONDITION.
2. CONNECTION TO MAIN SEWER SHALL BE MADE WITH AN ELECTROFUSION SADDLE PER DISTRICT'S APPROVED MATERIALS LIST. SADDLE CONNECTIONS TO MAIN EQUAL TO OR LESS THAN 12" DIAMETER (NOMINAL) SHALL BE "WYE" TYPE. SADDLE CONNECTIONS TO MAINS LARGER THAN 12" DIAMETER (NOMINAL) MAY BE "TEE" TYPE.
3. TRENCH BACKFILL AND SURFACE RESTORATION SHALL BE PER SD-16.

2020



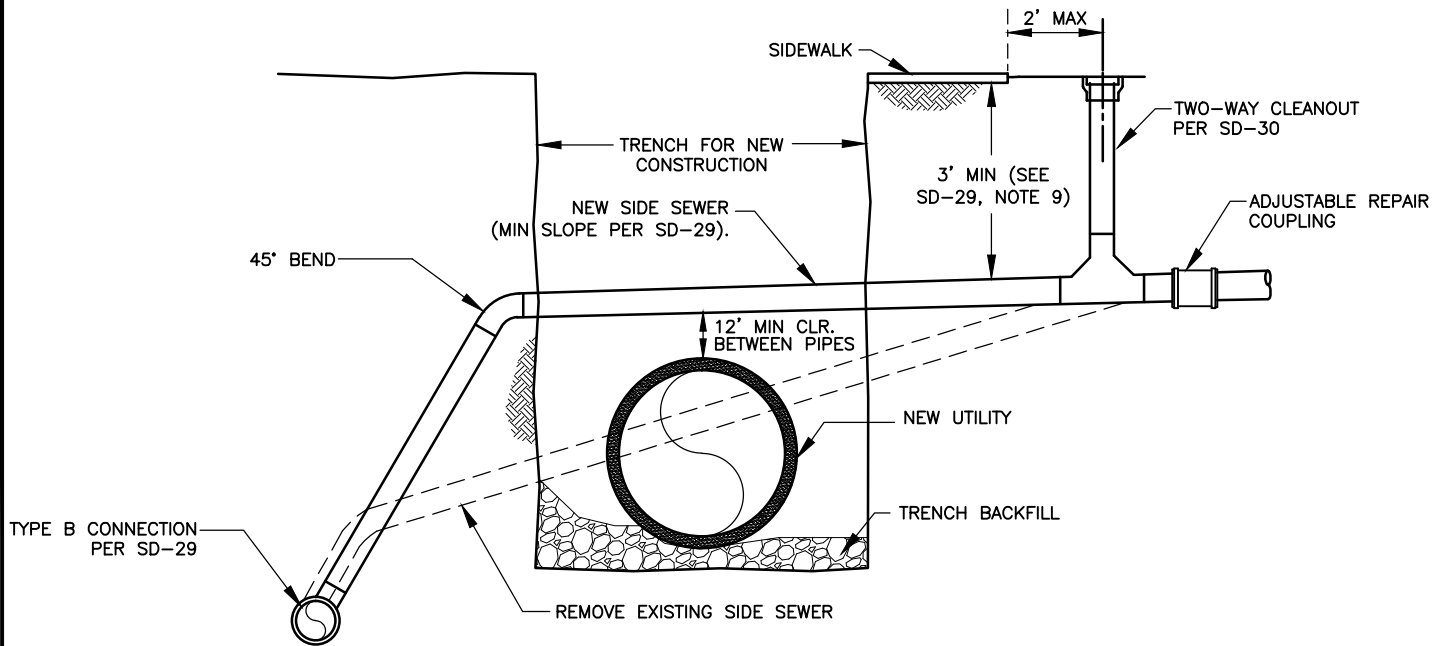
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ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS

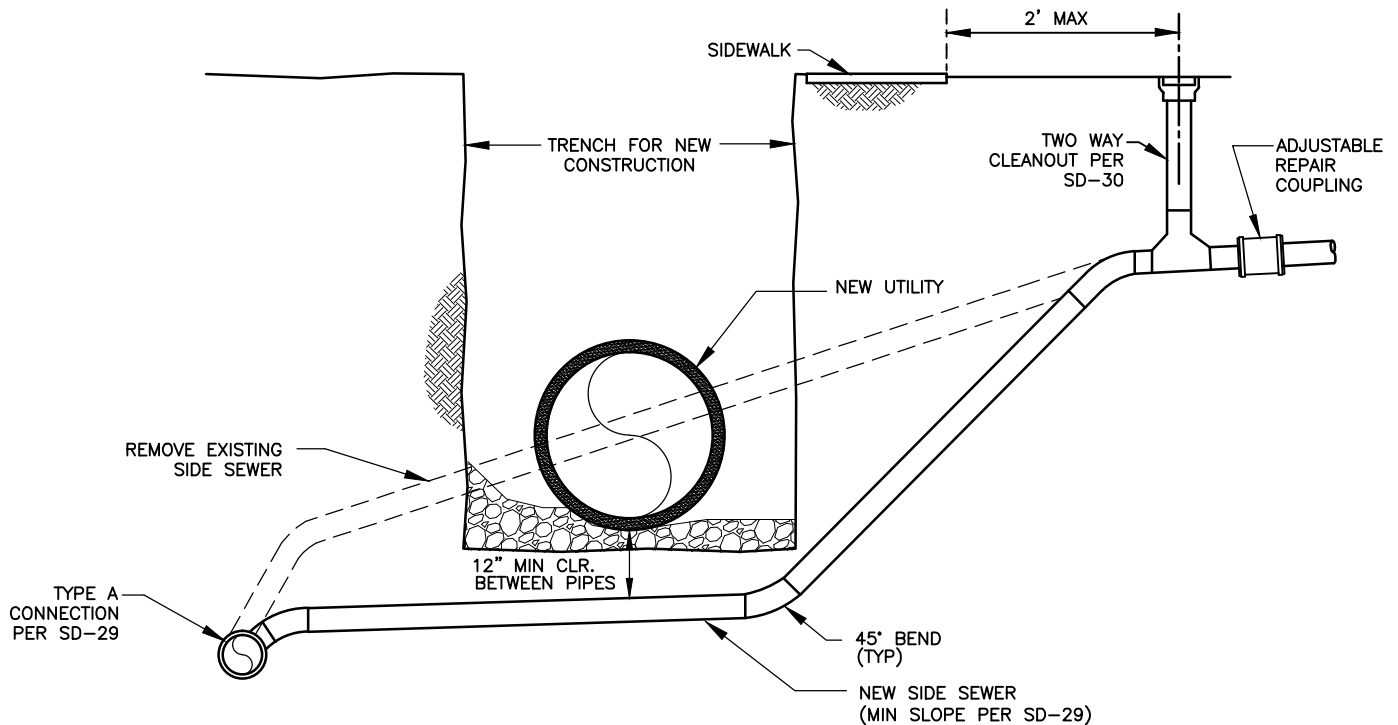
SIDE SEWER CONNECTION
TO HDPE MAIN

SD-34

APPENDIX A



EXISTING LOWER SIDE SEWER RELOCATION OPTION OVER NEW CONSTRUCTION



EXISTING LOWER SIDE SEWER RELOCATION OPTION UNDER NEW CONSTRUCTION

NOTES:

1. IF NEITHER OF THE OPTIONS SHOWN ARE FEASIBLE, THEN THE ELEVATION OF THE NEW FACILITY WILL NEED TO BE ADJUSTED AS REQUIRED.
2. SIDE SEWER CONSTRUCTION AND CLEANOUT PLACEMENT SHALL BE IN ACCORDANCE WITH SIDE SEWER DETAIL, SEE SD-29.
3. WHERE ADEQUATE COMPACTION CANNOT BE ACHIEVED BETWEEN UTILITIES, CLSM BACKFILL SHALL BE USED.

2020



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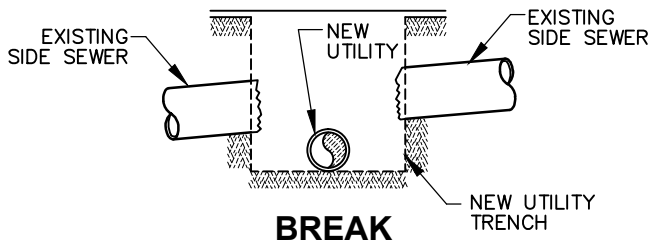
ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS

SIDE SEWER REPLACEMENT
FOR NEW UTILITIES

SD-35

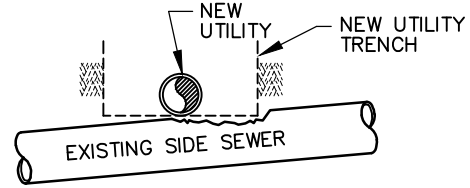
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SIDE SEWER BREAK NO CONFLICT IN GRADE

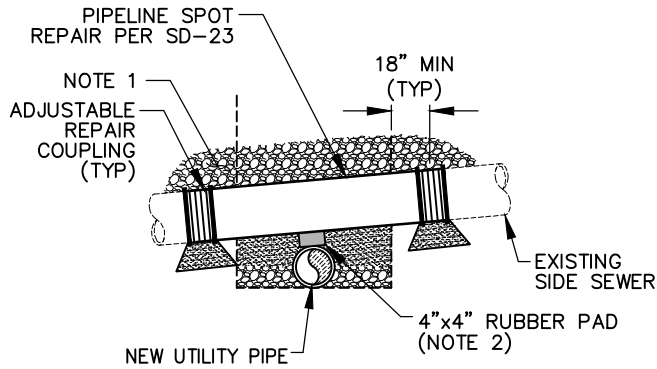


BREAK

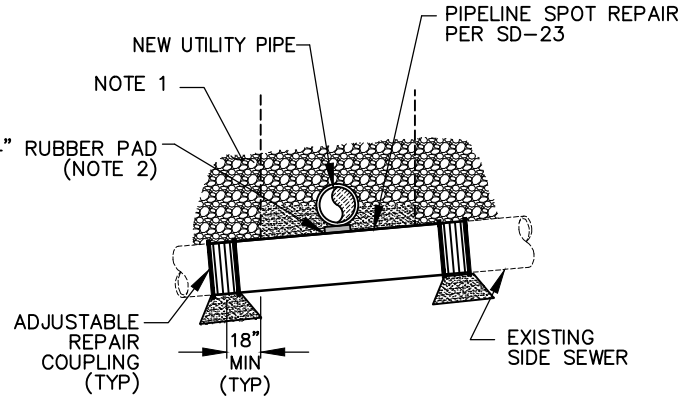
SIDE SEWER BREAK NO CONFLICT IN GRADE



BREAK

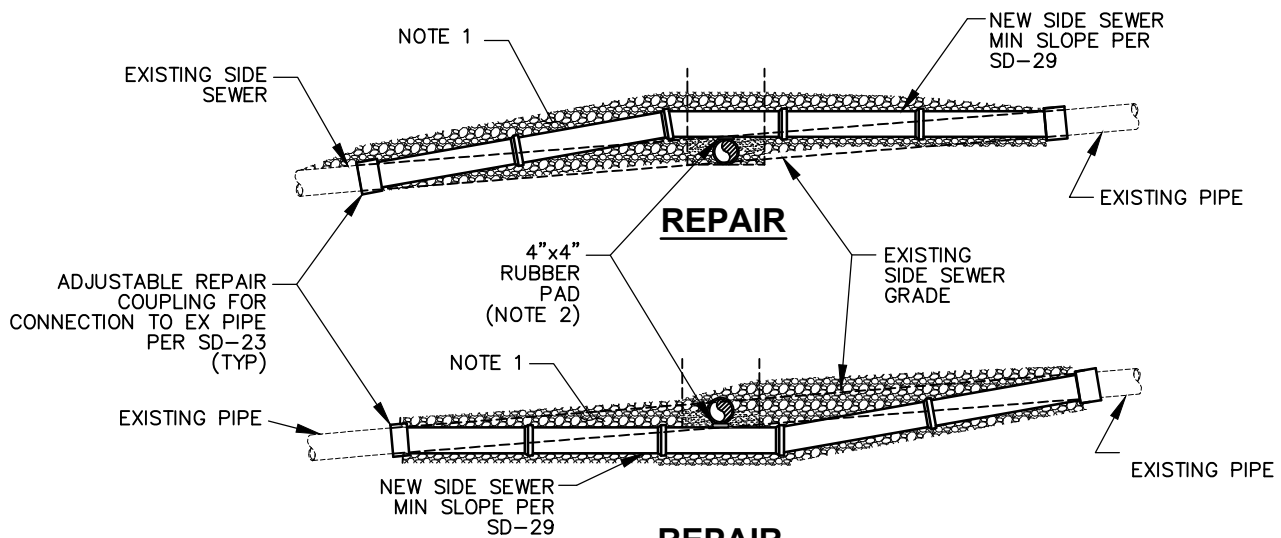


REPAIR



REPAIR

SIDE SEWER WITH CONFLICT IN GRADE

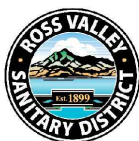


REPAIR

NOTES:

1. TRENCHING, BACKFILL AND SURFACE RESTORATION SHALL BE PER SD-16.
USE CLSM WHERE CLEARANCE BETWEEN UTILITIES PREVENTS ADEQUATE COMPACTION.
2. RUBBER PAD SHALL BE 35-45 DURO PLACED SNUGLY BETWEEN THE PIPES WHEN
O.D. OF CROSSING PIPES ARE WITHIN 1" OF EACH OTHER.
3. SIDE SEWER REPAIR PIPE MATERIALS SHALL BE PER APPROVED MATERIAL LIST.

2020



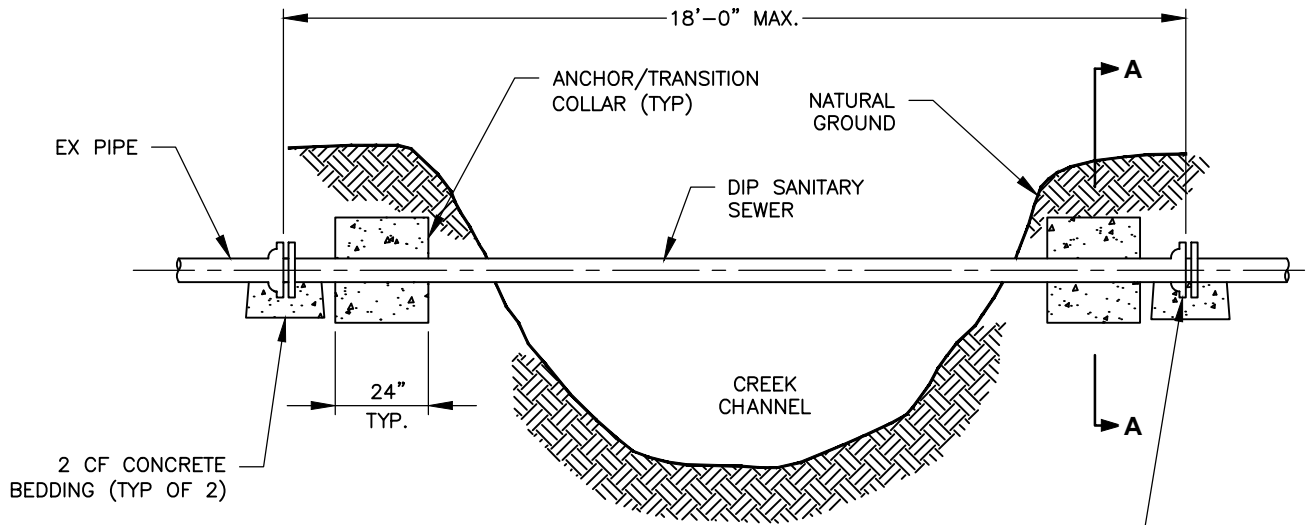
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ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS

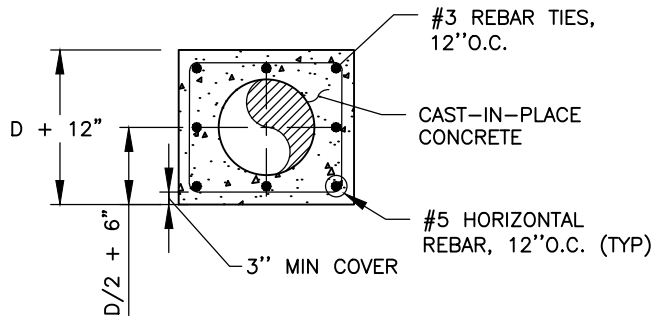
SIDE SEWER REPAIRS

SD-36

APPENDIX A



INSTALL APPROVED FLEXIBLE COUPLING OR
TRANSITION GASKET WHERE APPROPRIATE TO MAKE
JOINT WATER TIGHT BEFORE POURING CONCRETE

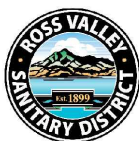


SECTION A-A

NOTES:

1. ALL AERIAL CROSSING MUST BE APPROVED BY THE DISTRICT.
2. SPANS EXCEEDING 18'-0" REQUIRES DESIGN TO BE DONE BY REGISTERED ENGINEER AND APPROVAL BY THE DISTRICT.

2020

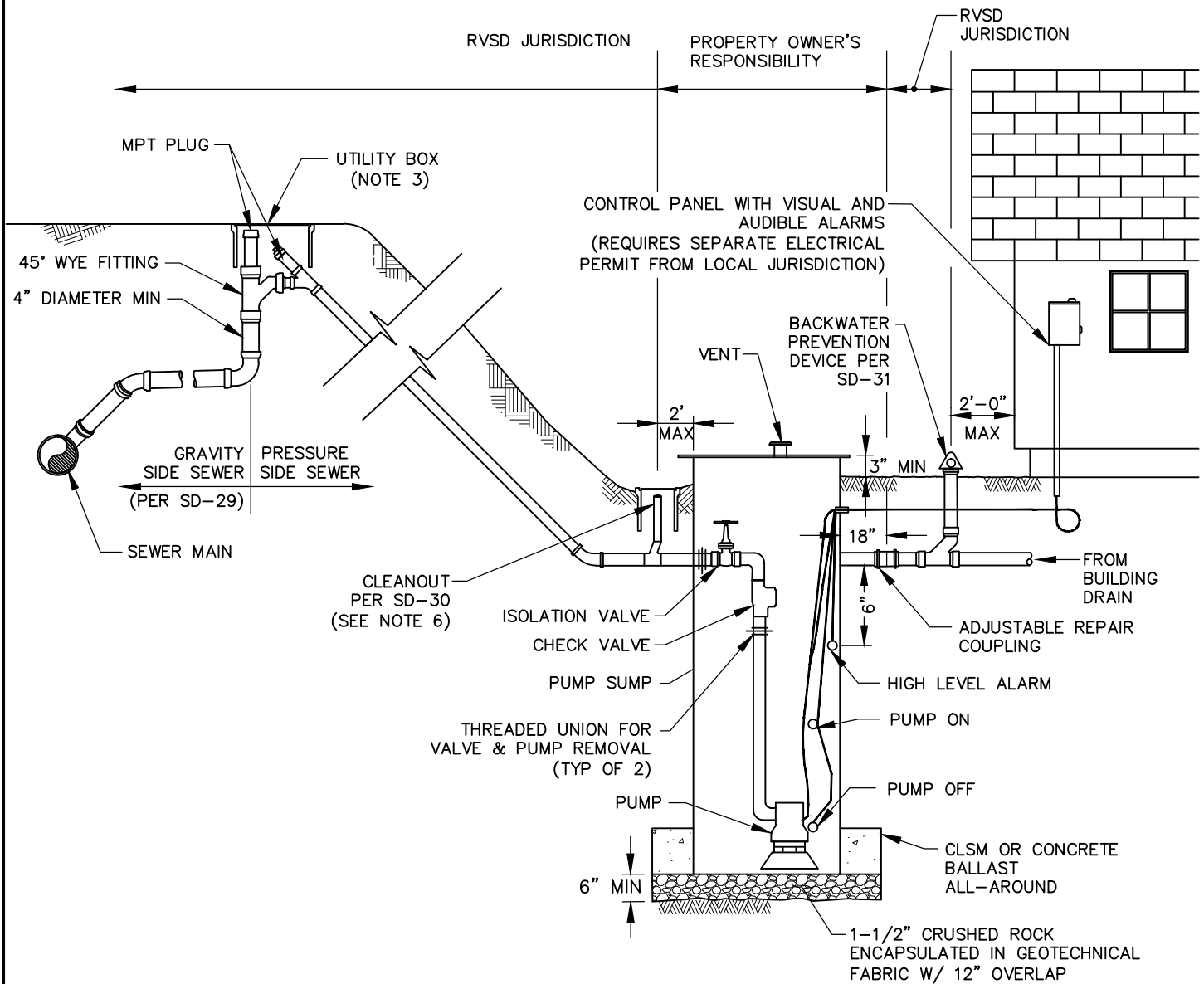


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ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS

TYPICAL NARROW WIDTH
CREEK PIPE CROSSING

SD-37

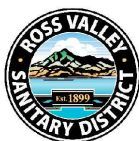


SECTION (N.T.S.)

NOTES:

1. REFER TO THE DISTRICT'S APPROVED MATERIALS LIST FOR PRE-APPROVED PUMP PACKAGES. PUMP INSTALLATION SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
2. PRESSURE PIPING AND FITTINGS SHALL BE SCH 80 PVC WITH SOLVENT WELDED JOINTS TESTED FOR A MINIMUM 10 MINUTES AT 150% OF DESIGN PRESSURE OR 50 PSI, WHICHEVER IS GREATER. THREADED CONNECTIONS SHALL BE PROVIDED AS REQUIRED FOR CONNECTIONS OF VALVES, PUMPS, AND UNIONS.
3. IN NON-PAVED AREAS THAT ARE NOT SUBJECT TO VEHICLE LOADS, UTILITY BOX SHALL BE CHRISTY B16 WITH PRECAST CONCRETE COVER. IN PAVED AREAS OR AREAS SUBJECT TO VEHICLE LOADS, UTILITY BOX SHALL BE CHRISTY B1324 WITH STEEL COVER. LIDS SHALL BE MARKED "SEWER".
4. AT THE PROPERTY OWNER'S OPTION, ISOLATION VALVE(S) AND BRASS CHECK VALVE(S) MAY BE INSTALLED IN A PRECAST CONCRETE VALVE VAULT FOR MAINTENANCE PURPOSES. VALVE VAULTS. (NO BALL CHECK VALVE(S) SHALL BE ALLOWED). COVERS SHALL BE IN ACCORDANCE WITH THE DISTRICTS STANDARD SPECIFICATIONS.
5. CONTRACTOR SHALL LOCATE SUMP PUMPS AND CONFIRM NO STORM DRAINS PIPES ARE CONNECTED.
6. A THREAD PVC CAP SHALL BE USED IN THE PRESSURE SEWER PIPE SYSTEM.

2020

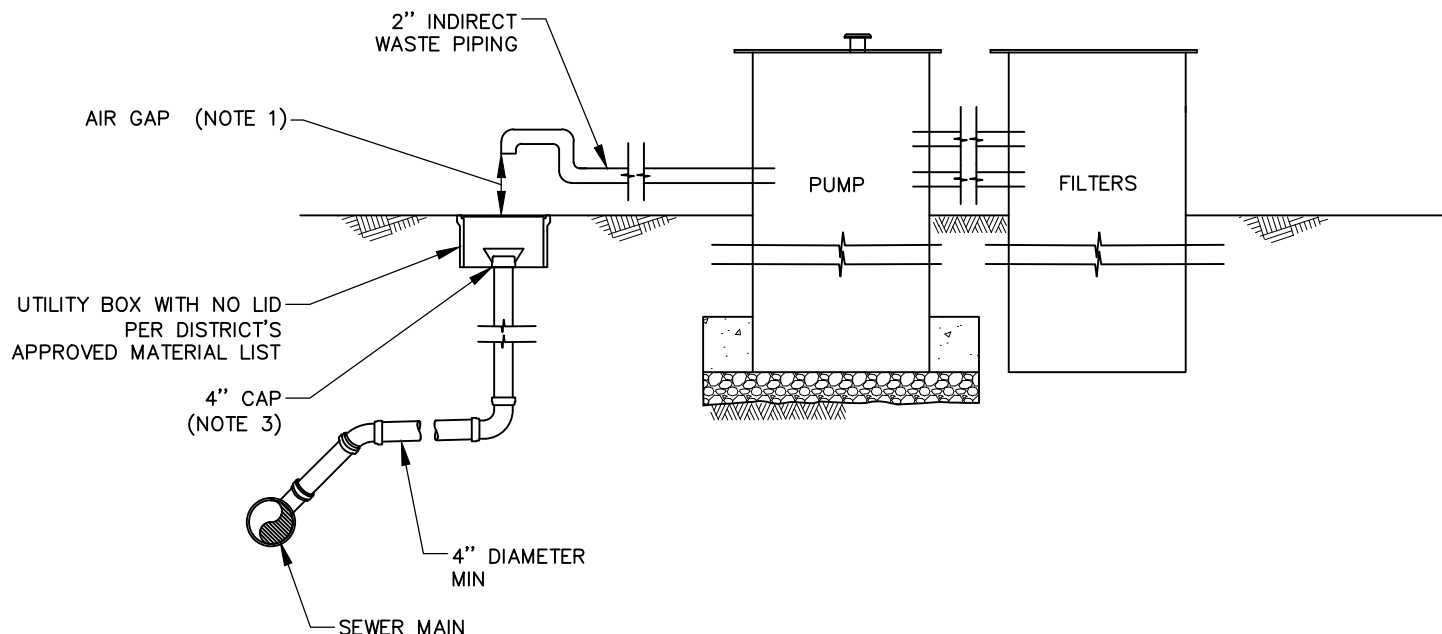


NO.	BY	DATE	REVISION

ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS

RESIDENTIAL LOT
PUMPING SYSTEM

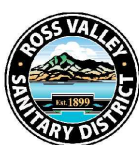
SD-40



NOTES:

1. INDIRECT WASTE PIPING SHALL DISCHARGE INTO SEWER THROUGH AN AIR GAP. AIR GAP REQUIREMENTS SHALL BE PER CALIFORNIA PLUMBING CODE.
2. MOST INDIRECT WASTE DISCHARGES ARE LOCATED WITHIN THE BUILDING ENVELOP AND ARE IN THE LOCAL BUILDING DEPARTMENT'S JURISDICTION. THE DISTRICT REGULATES THESE DISCHARGES WHEN THEY ARE DISCHARGED INTO A SIDE SEWER.
3. THE DISTRICT PREFERS A "BOWL" SHAPE FITTING TO BE USED FOR 4" CAP.
4. AIR GAP SHALL BE USED ONLY WHEN APPROVED BY THE DISTRICT.

2020



NO.	BY	DATE	REVISION

**ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS**

**RESIDENTIAL INDIRECT
WASTE PIPING DISCHARGE**

SD-41

SIDE SEWER
DISTRICT APPROVED MATERIALS

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SIDE SEWER PIPING SCHEDULE

Side sewer piping shall be the following, unless otherwise approved, specified, or directed by the District:

Gravity Side Sewers			
Installation Method and Conditions	Pipe Material	Joint type	Spec Section
Open Trench. Typical, unless otherwise required below	PVC C900/C905, DR 18 or thicker, Or High Density Polyethylene, DR17	Bell and Spigot, Or Butt-Fusion Welded, de- beaded	Section 15064, POLYVINYL CHLORIDE (PVC) PIPE , Or Section 15066, HIGH DENSITY POLYETHYLENE (HDPE) PIPE
Open Trench. w/ District Approval	PVC Schedule 80	Solvent Welded, Threaded as required	Section 15064, POLYVINYL CHLORIDE (PVC) PIPE
Open Trench. <3 ft cover in ROW w/o pipe protection, or at utility crossings	Ductile Iron Pipe, Min Class 53	Push-On	Section 15061, DUCTILE IRON PIPE (DIP)
Pipe Bursting, Reaming, and/or HDD (min 3 ft cover in ROW)	High Density Polyethylene	Butt-Fusion Welded, de-beaded	Section 15066, HIGH DENISTY POLYETHYLENE (HDPE) PIPE
Exposed Piping	Ductile Iron Pipe, or Cast Iron Pipe, Or, UV Rated HDPE, DR17	Push-on/bell & Spigot, or stainless steel shear banded coupling* Or, Butt-Fusion Welded, de-beaded	Section 15061, DUCTILE IRON PIPE Cast Iron Pipe per ASTM A74, Or Section 15066, HIGH DENSITY POLYETHYLENE (HDPE) PIPE

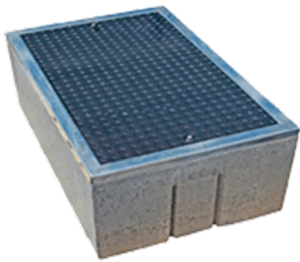
*Exposed SS shear band is acceptable, and shall be approved by the District in the rare case where burial is not possible, i.e. in laterals suspended on the side of or under bridges.

Pressure Side Sewers (Discharge from Individual Lot Pump Stations)			
Installation Method and Conditions	Pipe Material	Joint type	Spec Section
Open Trench. Typical	PVC Schedule 80,	Solvent Welded, Threaded as required,	Section 15064, POLYVINYL CHLORIDE (PVC) PIPE
	Or High Density Polyethylene, DR17	Or Butt-Fusion Welded, de-beaded	Section 15066, HIGH DENSITY POLYETHYLENE (HDPE) PIPE
Pipe Bursting, Reaming, and/or HDD (min 3 ft cover in ROW)	High Density Polyethylene, DR17	Butt-Fusion Welded, de-beaded	Section 15066, HIGH DENISTY POLYETHYLENE (HDPE) PIPE

UTILITY BOXES

All lids shall be **marked/labeled "Sewer"** as available, unless otherwise noted.

LOCATION	ITEM DESCRIPTION	PRODUCT
Traffic Areas (including all paved areas and driveways)	Cleanout Boxes	Christy B16 (Only used if it is not for H20 load rated) Christy B1017
	Backwater Prevention Devices (Type 2)	Christy V12 Box w/ V12-71W grate.
	Backwater Check Valves	Christy B1017
	Box at end of pressure side sewer (for private pump stations)	Christy B1324 w/ steel cover
Non-Traffic Areas	Cleanout Boxes	Christy B09 Box, w/ precast concrete lid
	Backwater Prevention Devices (Type 2)	Christy V09 Box (Christy B09 box w/ V09-71C Grated Cast Iron Lid)
	Box at end of pressure side sewer (for private pump stations)	Christy B16
	Backwater Check Valves	Christy B09 Box, w/ precast concrete lid



Christy B1017



Christy V12 Box w/ V12-71W Grate



Christy B09



Christy V09

GEOTEXTILE FABRIC

Geotextile fabric for laying and wrapping/separating backfill materials shall be manufactured by, or approved equal:

1. Mirafi, 140N
2. US Fabrics, US 135NW
3. Carthage Mills, FX-45HS

ADJUSTABLE REPAIR COUPLINGS

Use for connecting Ductile Iron pipelines, Cast Iron Side Sewers pipelines, and dissimilar pipe materials. Banded rubber couplings shall have four (4) clamps and metal shear bands.

All hardware shall be Type 316 Stainless Steel, including shear bands.

Adjustable repair couplings shall be manufactured by, or approved equal:

1. Fernco, 5000 Series RC Coupling, w/ all type 316 SS hardware
2. Mission Rubber Company, Adjustable Repair Coupling



Fernco, 5000 Series RC Couplings



Mission Rubber Co, Adjustable Repair Coupling

The following are not allowed:



Mission® Band Seal



Joints® Calder Coupling



Anaco – Husky Couplings



Fernco, Proflex Coupling



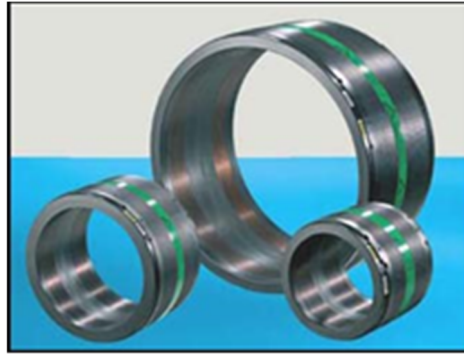
Mission Clay Band-Seal (Type 1 or 2)

HDPE COUPLINGS

Use for field closure of HDPE pipe, as required.

Electrofusion couplings, manufactured by, or approved equal:

1. Ipex USA LLC, Friatec Couplings
2. Central Plastics



Friatec - Electrofusion Coupling

Backwater Prevention Devices (BPDs)

Required at every location where sanitary sewer piping exits a building/home to prevent sewage from entering homes and businesses and reroute the spill outside the building.

BPD Type	MANUFACTURER	PRODUCT NAME
Type 1 or "Mushroom" Type	Genplex	Kelly Backwater Device (No-Hub & IPS)
	DDF	Sewer Relief Device (SRD)
Type 2	Stephens Corp	Sewer Popper™ Model S62-304

Type 1



Mushroom Type



SRD

Type 2



Sewer Popper™ OPD

BACKWATER CHECK VALVES

Backwater check valves shall be extendable type. Manufactured of PVC

Manufactured by the following, or approved equal

1. Rector Seal, Clean Check Backwater Valve
2. Mainline Backflow Products, Adapt-A-Valve Inspector chamber w/ Test-Eze Gate Feature



PVC Extendable Backwater Check Valve

TAP CONNECTIONS TO EXISTING SEWER MAINS

All connections to new mains shall be with new wye fittings matching the main pipe material, or electrofusion saddles for new HDPE mains.

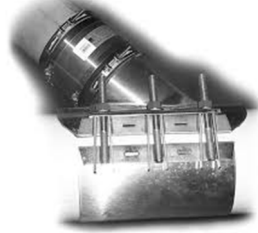
Tap connections will only be allowed for connection to existing mains 10-inch and larger and will require District approval. However, all new connections to existing mains with an existing CIPP liner shall be with a tap connection (new wye fittings will not be allowed on existing CIPP).

Tap connections shall be **“Wye type”** where is feasible.

EX MAIN PIPE MATERIAL	MAINLINE TAP
ACP	Cascade Waterworks MNFR Co, CSWRY Stainless Steel Sewer Saddle –Wye
HDPE	Electrofusion saddles: ≤ 12 " main wye type, > 12 " main may be tee type, manufactured by, or equal: <ul style="list-style-type: none"> Central Plastics Industrial Pipe Fittings, LLC – Plasson Or, Sidewall (Saddle) Fusion fittings. Manufactured by, or equal: Faction Fusion
Ex Pipe Lined w/ CIPP	Remove host pipe at connection and install directly to CIPP. <ul style="list-style-type: none"> Inserta Tee (For large diameter sewer pipes ≥ 12" Only) Cascade Waterworks MNFR Co, CSWRY Stainless Steel Sewer Saddle – Tee QwikSeal (For large diameter sewer pipes ≥ 10")
VCP, PVC, DIP, Cast Iron	Connection material shall match the main materials Or, QwikSeal (For large diameter sewer pipes ≥ 10 ")



Cascade CSWRY Tee



Cascade CSWRY Wye



Inserta Tee



QwikSeal



HDPE – IPF Plasson

SIDE SEWER FITTINGS

Side sewer fitting material shall match side sewer pipe material (either lower or upper lateral), unless otherwise directed or allowed by the District.

Property line cleanouts shall be a two-way, wye or a "Tee" as specified below:

- PVC C900: Two-way
- HDPE: "Wye" (facing sewer main)
- Sch 80: "Wye" (facing sewer main)
- CIP/DIP: "East Bay" Two-way
- Blowoff: Tee
- BPD: Tee

SIDE SEWER MATERIAL	SIDE SEWER FITTINGS
PVC C900 DR-18	PVC C900, min DR-18 thickness, bell and spigot. Tee, Wye, or 45° fitting,. White color where feasible. Manufactured by, or equal: <ul style="list-style-type: none"> • Specified Fittings, C900 Gasketed • Multi Fittings, Sewer Brute
HDPE	HDPE, SDR 17 min thickness. <ul style="list-style-type: none"> • Butt fusion Tee, Wye, 11.25°, 22.5° or 45° fitting. Fuse directly to side sewer, or use couplings as required. Manufactured by: Performance Pipe, Agru America, or equal. • Electrofusion tees. Manufactured by Central Plastics, Harrington Corp, or equal. • Electrofusion taps (for cleanout risers). Manufactured by Central Plastics Harrington Corp, or equal. • Sidewall (Saddle) fusion fittings. Manufactured by: Faction Fusion, or equal.
SCH 80 PVC	Schedule 80 PVC. Tee, Wye, or 45° fitting, fittings. Solvent welded, threaded, or flanged joints.
CIP, or DIP	Push-on

PVC FITTINGS AND HDPE FITTINGS



Butt Fusion Tee



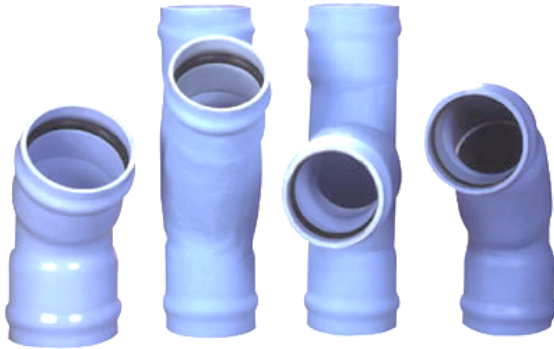
Butt Fusion Wye



Electrofusion Tee



Electrofusion Tap



PVC C900 fittings



Schedule 80 PVC fittings

Cured-in-Place Pipe (CIPP) Products

Chemical Grout

For sealing side sewer connection to mains and/or pipe connections to manholes. Manufacturer shall be, or approved Equal

- Avanti, AV-100

CIPP Main to Side Sewer Seals

For repairing side sewer connection to mains 8-inch or larger where main is in suitable condition, as Determined by the District. Manufactured by, or approved equal:

- Pro Pipe Professional Pipe Services, Top Hat Lateral Seals

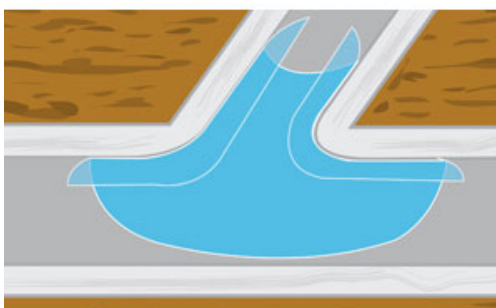
Main to Side Sewer CIPP Connection Liners

For repairing side sewer connection to mains 8-inch or larger where the main is in suitable condition, as Determined by the District. Manufactured by, or approved equal:

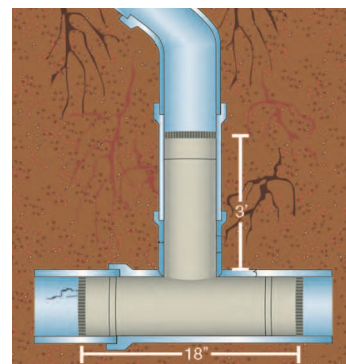
- LMK Technologies, T-Liner/Shorty



Avanti, AV-100



Top Hat

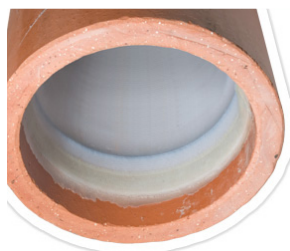


T-Liner/Shorty

CIPP Point Repairs

Use only where approved by the District. Manufacture by, or approved equal:

- LMK Technologies, Mainline Sectional Repair



LMK Mainline Sectional Repair

CIPP for Side Sewers

Use only where approved by the District. Installer must be certified by the manufacturer. CIPP Manufacturer shall be, or approved equal:

- Perma-Liner Industries, LLC
- MAXLINER LLC

DUCTILE IRON PIPE (DIP) PRODUCTS

AWWA C150 and AWWA C151, Class 53 wall thickness

Ductile Iron Pipe

Manufactured in the USA, by one of the following, or approved equal:

1. U.S. Pipe and Foundry Co.
2. American
3. McWane Ductile

Ductile Iron Fittings

Manufactured in the USA, by one of the following, or approved equal:

1. Tyler Union
2. Mueller Company
3. American

Protective Lining

Interior surfaces of all ductile iron pipe and fittings shall be lined with one of the following:

1. Protecto 401 Ceramic Epoxy,
2. Tnemec 431 Perma-Shield, or approved equal.

The dry film thickness shall be no less than 40 mils.

Protective Coating

Buried DIP: asphaltic coating with polyethylene encasement (polywrap)

Exposed DIP: Coat per Standard Spec Section 09800, Protective Coatings

Exposed DIP in Wet Wells, one of the following:

1. Tnemec 141, at min dry film thickness of 16 mils
2. US Pipe Ceramawrap, at min Dry film thickness 20 mils

Polywrap

For all buried ductile iron pipe. Polywrap shall be manufactured by, or approved equal:

1. T. Christy Enterprises.

General purpose adhesive tape to connect plastic film shall be two inches wide by 10 mils thick. Adhesive tape shall be manufactured by, or equal:

1. Scotchwrap No. 50
2. Polyken No. 900
3. Tapecoat CT



DIP: Asphaltic coated with Polywrap

Flange Gaskets

EPDM, suitable for use with wastewater service.

Grooved Couplings and Adapters

Rigid type, manufactured by, Victaulic, or approved equal.

INDIVIDUAL LOT PACKAGED PUMP SYSTEMS

Material Type(s): Pre-Approved Pump Systems, Pipe

Description:

VENDOR	SYSTEM
E-One	D-Series, W-Series, I-Series and G-Series
Liberty	2448- Series, Pro370 Series, Pro380 Series
Aqua Pro Pump Systems	E-Series, EDP Series, ESP-Series, SG-Series, DG-Series

Note: Complete packages are required for Pre-Approved Pump Systems. This includes a pump, alarm panel, isolation and check valves, sump and sump extensions (as required). Individual parts of Pump System are not pre-approved by the District. Models include but are not limited to the ones below, contact the District for special approval of all others.



**E-One Model
D-H071**



**Liberty
2448 Series**



**E-One®
Model Gator**



Liberty® Pro370 Series
(2" discharge system,
required Access Driver)



Liberty® Pro380 Series
(2" discharge system,
required Access Driver)



**Aqua Pro
SG-1182-2**

MISCELLANEOUS APPROVED MATERIALS

MATERIAL	MANUFACTURER	PRODUCT
Epoxy Adhesive Anchors	Sika	FI System with Sikadur® Injection Gel Epoxy
	Hilti	HIT HY150 Adhesive Anchors
	BASF	Concresive® 1420 Gel Epoxy Adhesive
	BASF	Concresive® Paste LPL
Expanding Type Anchors	ITW	Red Head®, Trubolt Wedge Anchor
	Hilti	Kwik-Bolt 3 Expansion Anchor
Glass Capsule Polyester Resin Adhesive Anchors	Hilti	HVU Adhesive Capsule
Solvent Cements (for Sch 80 PVC)	Weld-On	700 Series, PVC Solvent Cement
	Oatey	Hercules, PVC Solvent Cement

Miscellaneous Approved Materials



Trubolt, Wedge Anchor



HVU Adhesive Capsule



HIT HY150 Adhesive Anchor



Oatey, PVC Cement



Weld-On, PVC Cement