

**SAN RAFAEL SANITATION DISTRICT**

MARIN COUNTY, CALIFORNIA

**SPECIFICATIONS  
FOR SIDE SEWERS  
AND LATERALS**

2007

# SPECIFICATIONS FOR SIDE SEWERS AND LATERALS

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# SAN RAFAEL SANITATION DISTRICT

## SPECIFICATIONS FOR SIDE SEWERS AND LATERALS

All side sewers within the San Rafael Sanitation District (District) must conform to the District's Standard Specifications and Sanitary Code, copies of which are available from the District office. Following is a summary of the District's requirements regarding side sewers.

*Side Sewer.* The sanitary sewer line beginning at its point of connection with the main sewer and terminating at its point of connection to the building's sanitary or waste plumbing at the point the plumbing first extends outside the building's foundation, which location must be two feet or less from the building foundation. In this overview, the term side sewer includes the lateral sewer stub.

*Lateral Sewer.* That portion of the side sewer lying within a street or sewer right-of-way. (Normally that portion of the side sewer between the main sewer and property line.) The lateral sewer is privately owned and maintained.

*Main Sewer.* The public sewer which accommodates more than one side sewer, normally six inches or more in diameter. The District maintains the main sewer.

### Section 1. GENERAL INFORMATION

1-01 Jurisdiction. The District has jurisdiction over all property to receive sewer service within the District boundaries. District jurisdiction includes, but is not limited to: issuing permits to 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 the sewer ejector pump system if applicable, is owned and maintained by the owner of the building served thereby from the building to the connection with the sewer main.

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 Permits & Regulations. Following is a summary of the permits and regulations that are generally applicable to the installation of side sewers. This list is not intended to be all inclusive.

*Sewer Connection Permit.* No person shall construct a side sewer or make a connection with any main sewer without first obtaining a written permit from the District and paying all applicable fees and connection charges.

NOTE: Plumbing changes within the building are regulated by the building department of the jurisdiction in which the building is located.

*Building Permit.* For new buildings, a building permit issued by the building department of jurisdiction must be obtained prior to issuance of a sewer connection permit by the District.

*Encroachment Permit.* When side sewer construction extends into a street right-of-way, an encroachment permit must be obtained from the agency having jurisdiction over said street, and all construction must comply with the State, County, and City/Town laws, ordinances, rules and regulations pertaining to the cutting of pavement, opening, barricading, lighting, and protection of trenches, backfilling and paving. The encroachment permit and/or other permits required must be obtained prior to issuance of a sewer connection permit by the District.

*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.

1-05 Compliance with Regulations. A copy of all required permits must be kept at the job site when the side sewer is being constructed.

1-06 Plans Required. 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, floor plans showing plumbing fixtures, including any floor drains, and the location of the side 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; and/or b) that the proposed sewer installation is within the property line or easement.

1-07 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.

1-08 Time Limit on Permits. The sewer connection permit becomes void and the fees paid are forfeited under the following conditions: a) work is not commenced within one year from date of issue; or b) 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.

1-09 Prohibited Wastes. 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:

a) 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.

b) Swimming pool discharge water, except when the size of the pipe carrying the discharge water is less than two inches and under a head not to exceed twenty feet. If the water is discharged by pumping, the rate of flow cannot exceed one hundred (100) gallons per minute. The swimming pool discharge connection must be equipped with an approved separator to prevent the backflow of sewage into the swimming pool or piping system.

c) Septic tank sludge.

d) 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.

e) Liquid or vapor having a temperature higher than 150° F.

f) Water or waste which contains more than 100 parts per million, by weight, of fat, oil, or grease.

g) 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.

h) 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.

i) 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.

j) 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.

k) 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.

l) Noxious or malodorous gas or substance capable of creating a public nuisance.

## Section 2. Design Requirements

2-01 Separate Sewers. Each structure requiring sewer service must be separately and independently connected to the main sewer. Upon application, the District may grant an exception in the following situations: a) multiple structures on one lot that cannot be subdivided; or b) condominiums having CC&R's providing for sewer maintenance by the homeowner's association. Exceptions are granted at the discretion of the District.

2-02 Pipe Size. The minimum size of pipe for side sewers is: a) 4-inch inside diameter when serving less than one hundred-fifty (150) fixture units; and b) when serving over one hundred-fifty (150) fixture units, the pipe must conform to the size requirements for horizontal drainage based on fixture unit loading as set out in the Uniform Plumbing Code. In no event will a side sewer be permitted to connect to a main sewer of lesser size on the downstream side.

2-03 Pipe Slope. The minimum slope for a four-inch diameter side sewer is 1.5 foot per 100 feet (1.5%), unless specifically approved by the District. The minimum slope for a side sewer greater than four inches is 0.7 feet per 100 feet (0.7%).

2-04 Pipe Cover. The minimum cover over the top of a side sewer must be: a) See Table 1 when pipe is outside of street right-of-way; and b) three feet when pipe is in a street right-of-way. When the foregoing pipe cover cannot be maintained, special pipe bedding, rip-rap, and/or concrete cap may be required by the District.

2-05 Pipe Materials. See Table 1 - Approved Side Sewer/Lateral Pipe Materials List

2-06 Cleanouts. Cleanouts must be installed at the following locations: a) at the junction of the building plumbing and the side sewer (two feet or less, outside the building); b) at each bend or change in direction of the side sewer greater than 45° (1/8 bend); and c) where a run of pipe without bends exceeds ninety feet. All cleanouts, except the blowoff cleanout, must be brought to grade, properly capped, and completely watertight.

2-07 Backwater Prevention Device (Blowoff Cleanout). All side sewers must be equipped with a backwater prevention device (blowoff cleanout) as shown in Standard Drawing SD-6. The elevation of the overflow rim of the backwater prevention device must be at least three inches above finish grade and at least six inches below the lowest plumbing fixture. In driveways or other paved areas, a line must be installed to the side from a wye to the backwater prevention device. If this installation is not feasible, a check valve must be installed in the side sewer ahead of the backwater prevention device in accordance with Standard Drawing SD-7.

2-08 Interceptors Required & Maintenance. Grease, oil, and sand interceptors must be installed in conjunction with commercial sewers when necessary, in the opinion of the District, for the proper handling of liquid wastes containing grease in excessive amounts, flammable wastes, sand, or other substances capable of causing: a) a public nuisance, or b) damage or

hazard to structures, equipment, and personnel of the sewage works. Interceptors must be: a) a type and capacity approved by the District, b) easily accessible for cleaning and inspection, and c) maintained in continuously efficient operation at all times by the property owner at the property owner's expense.

2-09 Residential Sewage Pump Systems. Where gravity service is not feasible, special application may be made to the District to allow installation of a residential sewage pump system in accordance with Standard Drawing SD-17. The District must approve the design of the system, and the District reserves the right to prohibit the installation of a residential sewage pump system. When installation of a residential sewage pump system is approved, the following general requirements must be met:

Installation of the sewer ejector pump, electrical work, and holding tank, must: a) meet the codes and regulations of the building department of jurisdiction issuing the building permit; and b) be inspected by an inspector from said building department.

The discharge line from the building outlet to the sewage pump must be gravity flow and be equipped with a blowoff cleanout. The pressurized discharge line from the holding tank must be equipped with a check valve as close as possible to the holding tank, followed by a gate valve. The pressurized discharge line must be installed for the shortest distance feasible, at which point the pressurized discharge line must be converted to gravity flow using a wye, and a cleanout must be installed on the gravity flow portion of the wye. A pressurized discharge line will not be permitted to connect to the main sewer unless no other alternative is possible AND, in the opinion of the District, the main sewer can facilitate the pressurized connection.

All gravity and pressure discharge lines must be inspected by a District Inspector before being covered.

2-10 Taps into Main Sewer. Tap connections to the main sewer, when permitted, must be made in the presence of a District Inspector. Subject to approval of the District, connections must be made as follows: a) 6-inch or less diameter main sewers - a wye or tee; b) 8-inch or more diameter main sewers - "Tap Tite" or equal pipe penetration type connection.

2-11 Old Side Sewers. A new structure is not permitted to connect to an old side sewer unless the old side sewer is tested in the presence of a District Inspector and found to meet all current District requirements, including installation of a backwater prevention device. All costs for examination and testing must be paid by the property owner. A sewer connection permit is required for the new structure and said permit will be issued after: a) the building department of jurisdiction issues the building permit; and b) payment of applicable fees to the District.

2-12 Abandoned or Unused Side Sewers. Any abandoned or unused side sewer connected to the main sewer, including side sewers from structures that are demolished, must be dug out to



the main sewer, and the wye, tee, or connection area must be cut away and spliced with a solid piece of pipe of the same size and dimension, i.e. plugged off. Plugging off must be done in the presence of a District Inspector.

2-13 Existing Septic Tanks. Septic tanks are under the jurisdiction of the County of Marin Environmental Health Department. The Health Department must be notified when a septic tank is abandoned or encountered during installation of a side sewer. The District's requirements are: a) all building plumbing outlets must connect to the side sewer and completely bypass the septic tank; and b) the septic tank must be abandoned following the Uniform Plumbing Code and the regulations of the County of Marin Environmental Health Department.

### Section 3. Construction

3-01 Location of Lateral Stub. It is the responsibility of the property owner or his contractor to locate and uncover the lateral stub or wye installed to serve the property. 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. The District does not guarantee the presence or location of lateral stubs or wyes.

3-02 Laying Pipe. Side sewers must be laid by the shortest route from the building plumbing outlet to connect to the main sewer. All pipe must be laid to line and grade. Each length of pipe must be laid on a firm bed as detailed in Standard Drawing SD-4 and must have full bearing for its entire length between bells. When applicable, an adequate bell hole must be dug at the end of each pipe length for making the joint. Blocking under the side sewer will not be permitted. The inside edge of any cut pipe must be beveled, and both bell and spigot must be marked for proper inspection and cleaned before the joint is made. Care must be taken to prevent foreign materials from entering the pipe. Water must be pumped from the trench while the pipes are laid and the joints made. Backfill must be carefully and uniformly placed around the pipe, with no rocks or clods touching the pipe. In rocky areas, imported bedding material may be required. Pipe must not be covered until inspected by a District Inspector.

3-03 Inspections. Prior to backfilling, side sewer installations and modifications must be inspected by a District Inspector. When required, tests for watertightness must be done in the presence of a District Inspector. Connections to the main sewer must be done in the presence of a District Inspector. Inspections must be scheduled with the District giving three working days advance notice. Inspections are not made on Saturdays, Sundays, or holidays.

3-04 Trenches Side Sewers - Excavation and Backfilling. Trenches for side sewers within public streets must be excavated and backfilled, and the pavement restored in strict accordance with the laws, ordinances, and regulations of the State of California, County of Marin, City of

San Rafael and/or agency having jurisdiction over said street. The District reserves the right to require compaction tests on trench backfill by a soils engineer. The cost of compaction tests must be paid by the contractor or property owner.

3-05 Clay Plugs. Impervious clay trench plugs must be constructed in the pipe zone backfill at intervals of approximately two hundred (200) feet, or as otherwise directed by a District Inspector. Impervious clay trench plugs must: a) consist of dense clay material free of rocks and vegetation, and b) be moisture-conditioned and mechanically compacted to the same density as the adjoining backfill material.

3-06 Trenches in Slopes. Trenches in ground sloping greater than thirty degrees (30°) from the horizontal must be protected from erosion by placing rip-rap in cement mortar or concrete laid flush with the slope over the backfilled trench, or other protective measures must be taken as directed by a soils engineer and approved by the District. Drains which are two inches in diameter must be installed in the concrete covering at five-foot intervals along the trench line.

For trenches in slopes less than thirty degrees (30°), the District may require the use of redwood trench dams or other types of erosion control.

3-07 Testing of Gravity Sewers. Unless otherwise directed by the District, side sewers must be tested by plugging and filling with either water or compressed air to four psi. For water tests, leakage must not exceed fifty gallons per day per inch of internal diameter per mile of sewer line being tested (0.16 gallons per hour per 100 feet of 4-inch diameter pipe). For air tests, the pressure must not drop more than one psi over a three-minute period. Tests must be performed in the presence of a District Inspector.

3-08 Testing of Pressure Sewers. Pressure sewers must be tested under a pressure of not less than 50 psi without leakage for a period of fifteen minutes.

3-09 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.

References:

Table 1 - Approved Side Sewer/Lateral Pipe Materials List  
Standard Drawing SD-4 - Typical Trench Section  
Standard Drawing SD-5 - Typical Side Sewer Details  
Standard Drawing SD-6 - Standard Cleanout and Backwater Prevention Device  
Standard Drawing SD-7 - Backwater Check Valve and Shutoff System  
Standard Drawing SD-17 - Residential Sewerage Pumping System

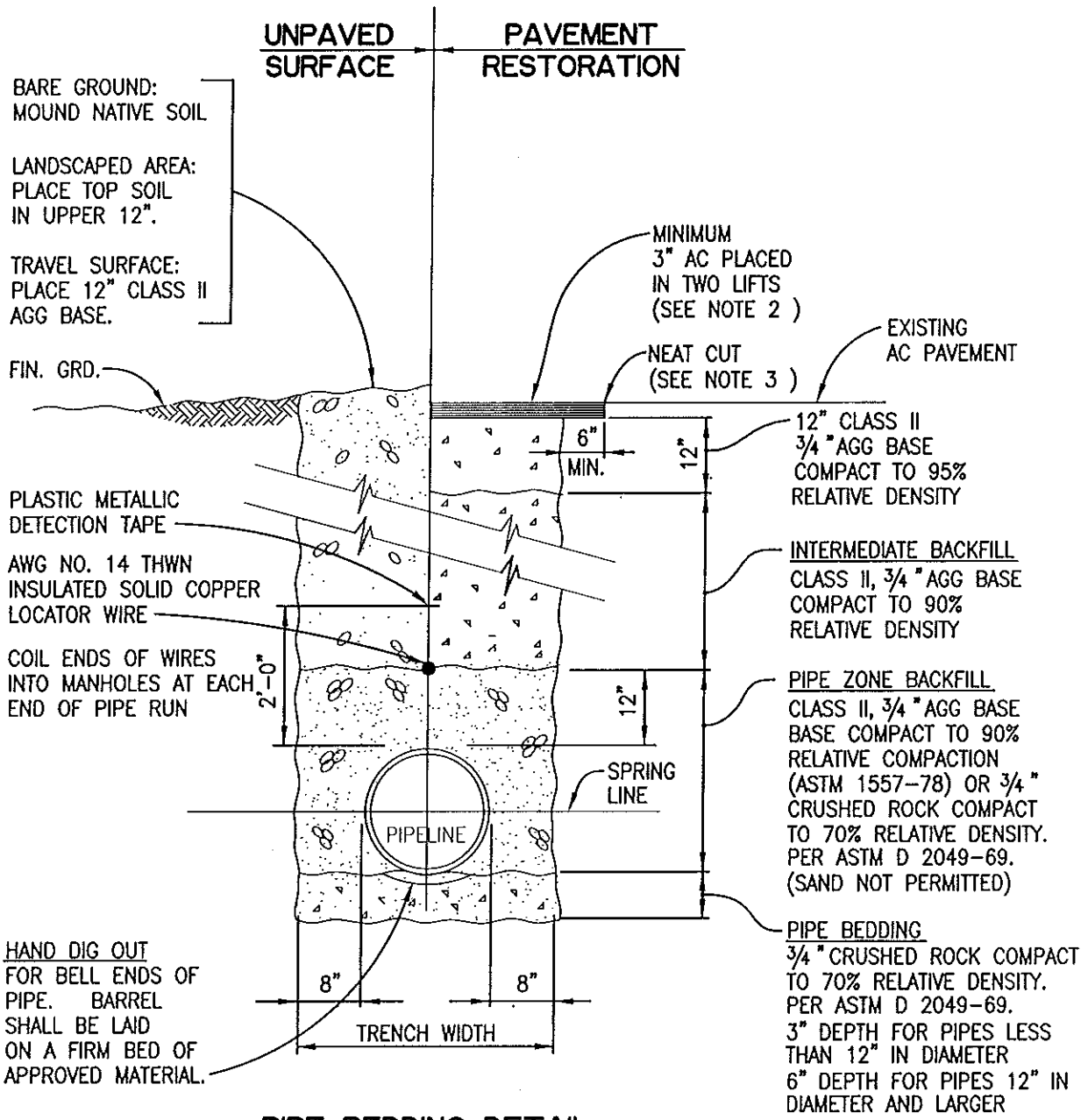
## SAN RAFAEL SANITATION DISTRICT

**TABLE 1  
PRIVATE SIDE SEWER/LATERAL  
(Specific Use Subject to District Approval)**

Pipe Specifications	Can Be Used for Gravity Sewers	Can Be Used for Ejector Pump Discharge Pipelines
Vitrified Clay Pipe (No Hub), VCP	No	No
Cast Iron Soil Pipe (No Hub), CIP	Yes <sup>2</sup>	No
Ductile Iron Pipe w/Rubber Ring Joints, DIP	Yes <sup>2</sup>	No
PVC ASTM D-2241, SDR=26	Yes <sup>1</sup>	Yes <sup>1</sup>
PVC AWWA C-900, SDR=21	Yes <sup>2</sup>	Yes <sup>2</sup>
PVC Sch 40	Yes <sup>1</sup>	Yes <sup>1</sup>
PVC Sch 80	Yes <sup>2</sup>	Yes <sup>2</sup>
Polyethylene, min SDR=17	Yes <sup>1</sup>	Yes <sup>1</sup>

<sup>1</sup> Requires minimum 3-foot cover with imported bedding and pipe zone backfill.

<sup>2</sup> Requires minimum 18-inch cover on private property with imported bedding and pipe zone backfill or shaded with select native material containing rocks no larger than 1" sieve size.



**PIPE BEDDING DETAIL**

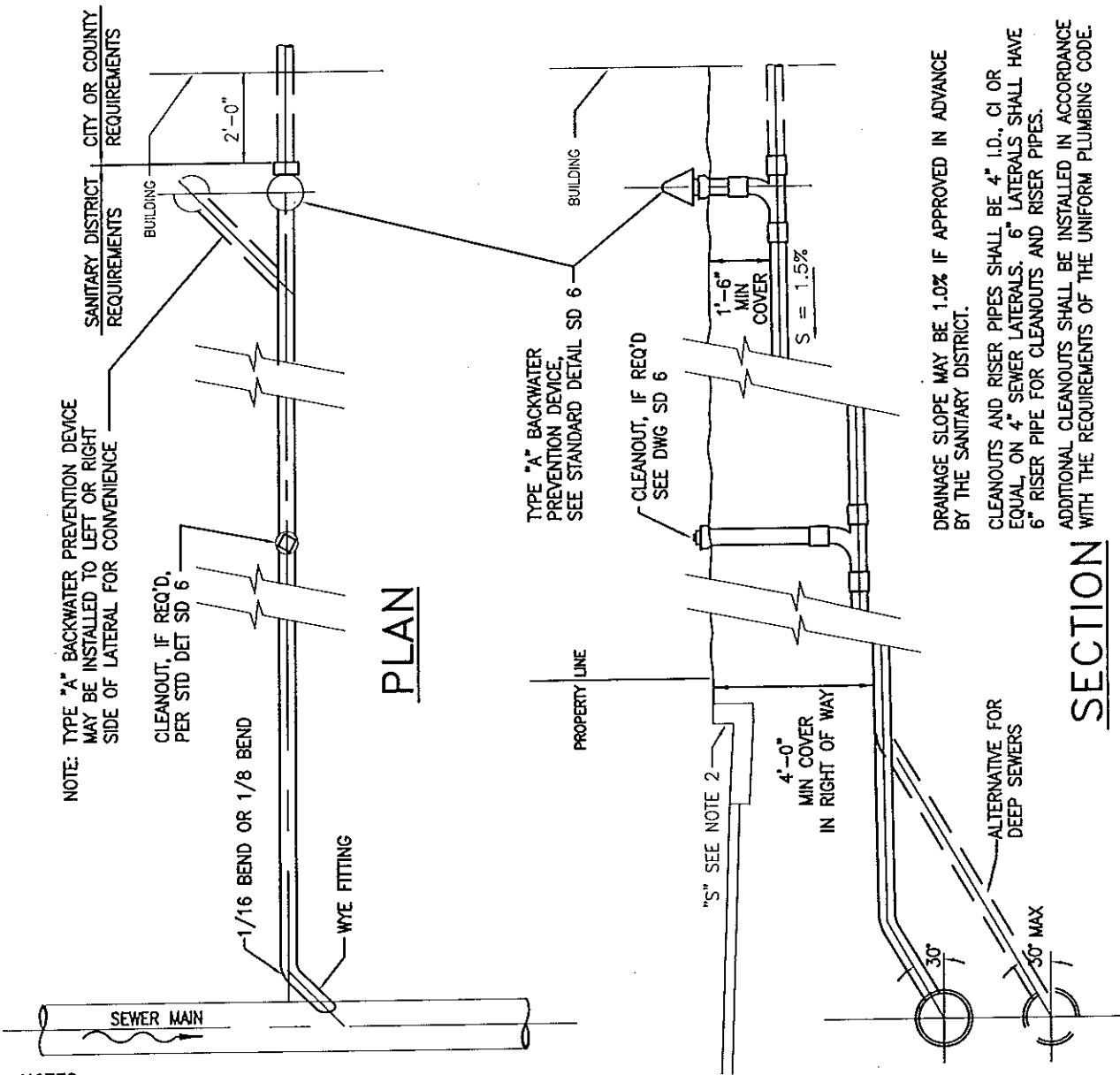
**NOTES:**

1. INSTALL 4' LONG COMPACTED IMPERVIOUS CLAY OR SLURRY CEMENT PLUGS IN PIPE ZONE BACKFILL AND PIPE BEDDING AT 400' INTERVALS.
2. ASPHALT THICKNESS SHALL CONFORM TO THE REQUIREMENTS OF THE AGENCY WITH JURISDICTION OVER STREET.
3. CONSULT LOCAL JURISDICTION FOR ASPHALT CUTTING REQUIREMENTS.

**MARIN COUNTY  
SANITARY DISTRICTS  
CALIFORNIA**

**TYPICAL TRENCH SECTION**

1995		SD 4
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NOTE: TYPE "A" BACKWATER PREVENTION DEVICE MAY BE INSTALLED TO LEFT OR RIGHT SIDE OF LATERAL FOR CONVENIENCE

CLEANOUT, IF REQ'D. PER STD DET SD 6

1/16 BEND OR 1/8 BEND

WYE FITTING

**PLAN**

TYPE "A" BACKWATER PREVENTION DEVICE, SEE STANDARD DETAIL SD 6

CLEANOUT, IF REQ'D SEE DWG SD 6

"S" SEE NOTE 2

4'-0" MIN COVER IN RIGHT OF WAY

ALTERNATIVE FOR DEEP SEWERS

DRAINAGE SLOPE MAY BE 1.0% IF APPROVED IN ADVANCE BY THE SANITARY DISTRICT.

CLEANOUTS AND RISER PIPES SHALL BE 4" I.D., CI OR EQUAL, ON 4" SEWER LATERALS. 6" LATERALS SHALL HAVE 6" RISER PIPE FOR CLEANOUTS AND RISER PIPES.

ADDITIONAL CLEANOUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE UNIFORM PLUMBING CODE.

**SECTION**

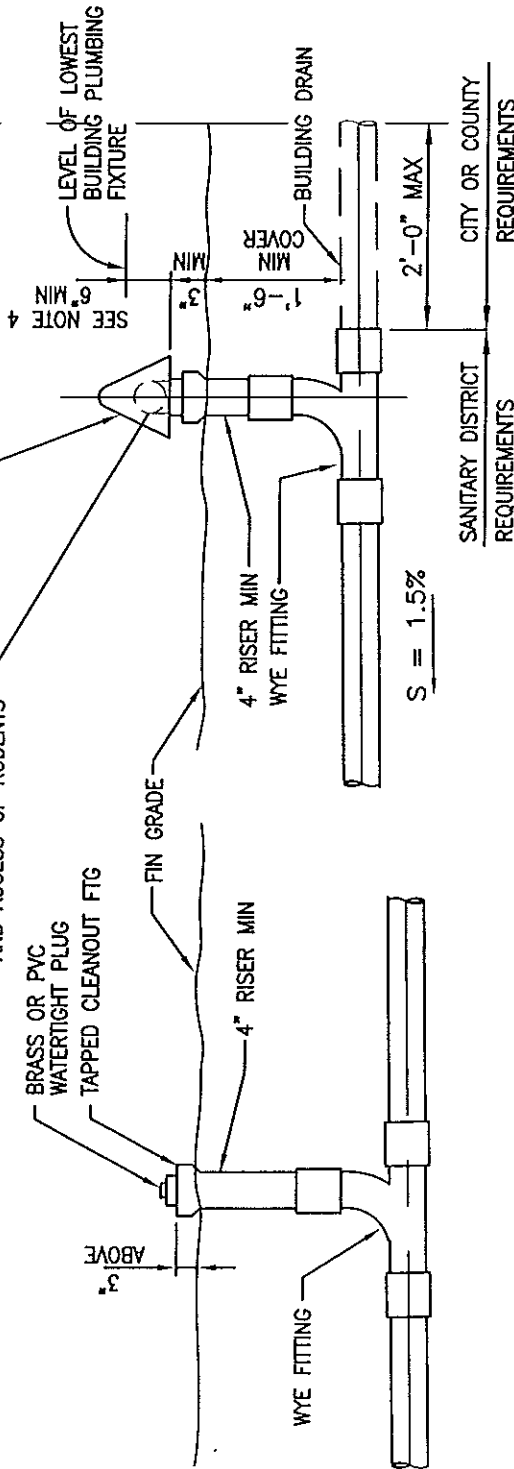
**NOTES:**

1. WHEN A LATERAL SEWER IS INSTALLED IN ADVANCE OF THE BUILDING SEWER, IT SHALL BE TERMINATED AT OR NEAR THE PROPERTY LINE. THE END OF THE LATERAL SHALL BE MARKED WITH A 4" x 4" REDWOOD STAKE.
2. WHERE CONCRETE CURBS AND GUTTERS EXIST OR ARE TO BE A PART OF AN IMPROVEMENT, EACH SIDE SEWER SHALL BE PERMANENTLY LOCATED BY IMPRINTING OR CHISELING AN "S" ( 3" size) IN THE FACE OF THE CURB VERTICALLY ABOVE THE SEWER PIPE.
3. BACKFILL SHALL NOT BE PLACED UNTIL PIPE INSTALLATION HAS BEEN INSPECTED AND APPROVED BY THE DISTRICT.
4. LATERAL TRENCHES SHALL BE THE SAME AS TYPICAL TRENCH DETAIL SD4.
5. THE SIZE OF THE SEWER LATERAL OR MAIN MUST BE EQUAL TO OR LARGER THAN THE SIZE OF THE BUILDING DRAIN.

<b>MARIN COUNTY SANITARY DISTRICTS CALIFORNIA</b>		
<b>TYPICAL SIDE SEWER DETAILS</b>		
1995		SD 5

CLEANOUTS LOCATED UNDER PAVED DRIVEWAYS, WALKWAYS, ETC. SHALL BE RAISED TO GRADE AND INSTALLED IN PRECAST CONC METER BOXES FLUSH FITTED TO PAVING W/ GALVANIZED STEEL CHECKERED PLATE TRAFFIC LIDS MARKED "SEWER". CHRISTY B9 W/ 61D15 LID, OR EQUAL, AS DIRECTED BY THE DISTRICT.

TYPE A BACKWATER PREVENTION DEVICE SHALL BE AS MANUFACTURED BY REAM MACHINE SHOP, LAFAYETTE, CA, OR APPROVED EQUAL  
BALL TO ELIMINATE EMISSION OF ODORS AND ACCESS OF RODENTS



**STANDARD CLEANOUT**

**TYPE A BACKWATER PREVENTION DEVICE**

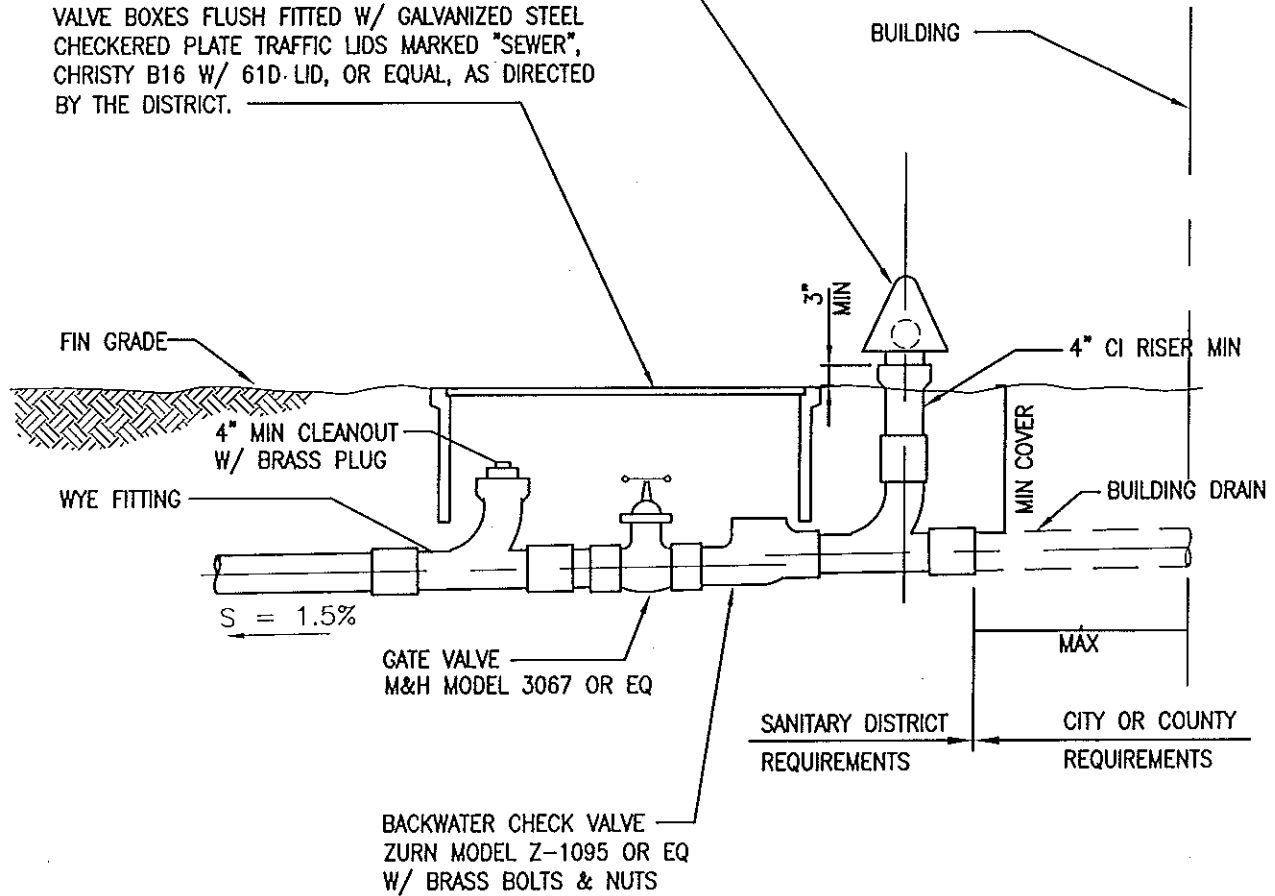
**NOTES:**

1. A STANDARD 4" C.I. CLEANOUT IS THE MINIMUM DISTRICT REQUIREMENT.
2. A BACKWATER PREVENTION DEVICE IS REQUIRED AND SHALL BE INSTALLED ON ALL SIDE SEWERS.
3. A TYPE "A" BACKWATER PREVENTION DEVICE SHALL BE INSTALLED IN A LOCATION WHERE SEWAGE CAN OVERFLOW ON THE SURROUNDING AREA WITHOUT DAMAGE TO PROPERTY.
4. IF THE DIFFERENCE IN ELEVATION OF THE LOWEST FIXTURE AND THE TYPE "A" BACKWATER PREVENTION DEVICE IS LESS THAN SIX (6) INCHES, A BACKWATER CHECK VALVE SHALL BE INSTALLED AS SHOWN IN STANDARD DETAIL SD 7.

<b>MARIN COUNTY SANITARY DISTRICTS CALIFORNIA</b>		
<b>STANDARD CLEANOUT AND BACKWATER PREVENTION DEVICE</b>		
1995		SD 6

TYPE "A" BACKWATER PREVENTION DEVICE,  
SEE STANDARD DETAIL SD 6

VALVES SHALL BE INSTALLED IN PRECAST CONCRETE  
VALVE BOXES FLUSH FITTED W/ GALVANIZED STEEL  
CHECKERED PLATE TRAFFIC LIDS MARKED "SEWER",  
CHRISTY B16 W/ 61D LID, OR EQUAL, AS DIRECTED  
BY THE DISTRICT.



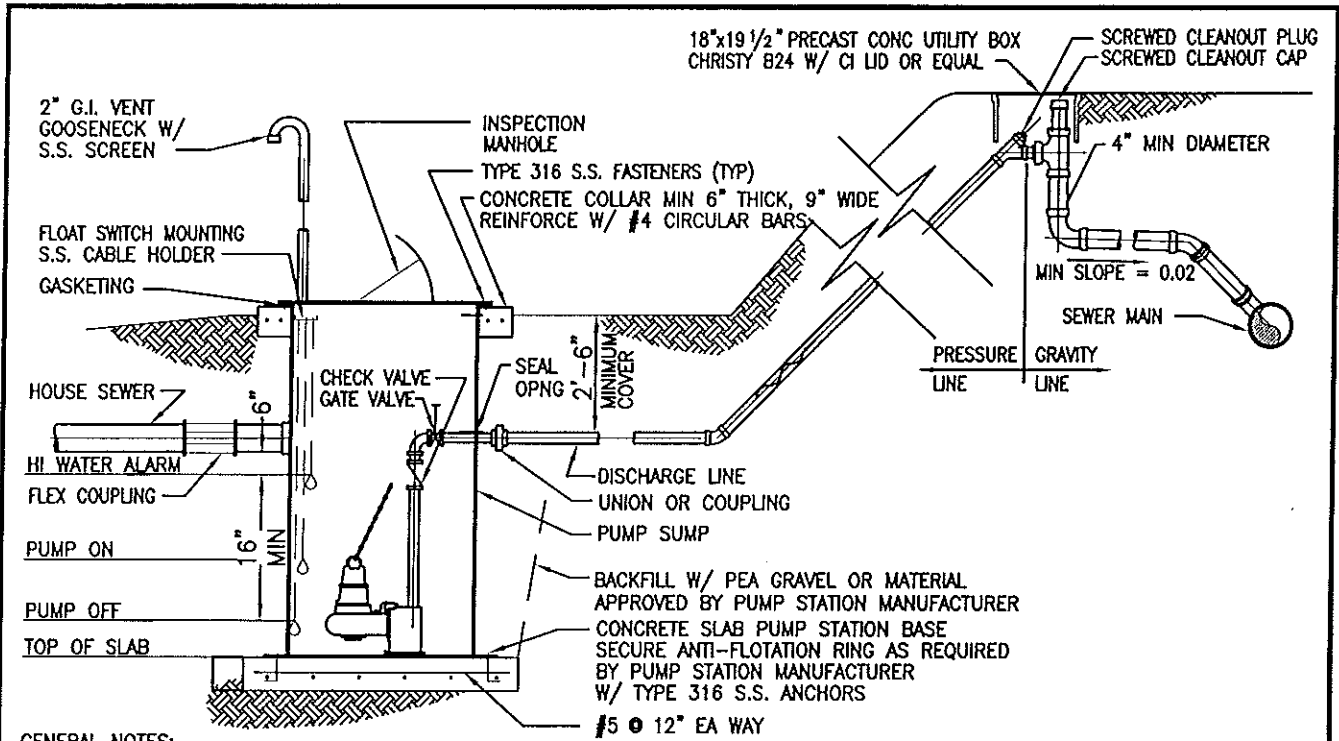
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**MARIN COUNTY  
SANITARY DISTRICTS  
CALIFORNIA**

**BACKWATER CHECK VALVE  
AND SHUTOFF SYSTEM**

1995

SD 7



**GENERAL NOTES:**

THE MINIMUM REQUIREMENTS FOR A RESIDENTIAL SEWAGE PUMPING SYSTEM CONNECTING A SINGLE RESIDENCE OR EQUIVALENT TO THE DISTRICT'S SYSTEM ARE SPECIFIED BELOW. THE DISTRICT ACCEPTS NO RESPONSIBILITY FOR THE DESIGN, OPERATION OR MAINTENANCE OF SUCH PRIVATELY OWNED AND OPERATED SYSTEMS. ALL WORK SHALL COMPLY WITH THE UNIFORM PLUMBING AND BUILDING CODES. MANUFACTURERS:

ALL EQUIPMENT AND ACCESSORIES SHALL BE INDUSTRY STANDARD MANUFACTURED ITEMS AND THOSE COMING IN DIRECT CONTACT WITH SEWAGE SHALL BE SPECIFICALLY MANUFACTURED FOR SEWAGE USE.

**PUMPS:**

PUMPS SHALL BE SUBMERSIBLE SOLIDS HANDLING OR GRINDER TYPE SEWAGE PUMPS. PUMP MOTORS FOR RESIDENTIAL SERVICE SHALL BE EXPLOSION PROOF OR MEET CLASS 1, DIVISION 2 REQUIREMENTS PER NEC. ALL COMMERCIAL INSTALLATIONS SHALL CONSIST OF DUPLEX EXPLOSION PROOF PUMPS EACH RATED FOR TOTAL LOADING. ALL PUMP MOTORS SHALL BE UL LISTED.

**PUMP SUMP:**

THE PUMP SUMP SHALL BE CONSTRUCTED OUT OF NON-CORROSIVE MATERIAL OF SUITABLE STRENGTH TO WITHSTAND HYDRAULIC AND EARTH LOADS. THE PUMP SUMP SHALL BE A MINIMUM 36" DEEP WITH A MINIMUM CAPACITY OF 100 GALLONS AND SHALL BE PROVIDED WITH A FOUR (4) INCH MINIMUM INLET. IN ANY CASE THE INLET I.D. SHALL BE EQUAL TO OR GREATER THAN THE BUILDING PLUMBING STUB. THE TOP OF THE PUMP SUMP SHALL BE GASKETED AND SECURELY ANCHORED TO THE PUMP SUMP BY BOLTS. ALL JOINTS BETWEEN THE COMPONENT PARTS SHALL BE SEALED WITH A WATERPROOF MASTIC.

**ELECTRIC POWER SERVICE:**

THE POWER REQUIREMENTS SHALL BE AS RECOMMENDED BY PACIFIC GAS AND ELECTRIC COMPANY.

**ELECTRICAL WORK AND CONTROLS:**

ALL ELECTRICAL WIRING AND INSTALLED CABLING, CONDUIT AND CONTROLS SHALL MEET NEC CLASS 1, DIVISION 2 REQUIREMENTS AND CONFORM TO THE REQUIREMENTS OF THE CITY OR COUNTY. THE ELECTRICAL CONTROLS SHALL PROVIDE ADEQUATE PROTECTION FOR MOTOR AND EQUIPMENT. THE ELECTRICAL CONTROL PANEL SHALL MEET NEC AND UL STANDARDS FOR SAFETY. OUTDOOR PANELS SHALL BE WEATHER TIGHT NEMA 4X. INDOOR PANELS SHALL BE NEMA 1.

**FLOAT SWITCH ASSEMBLY AND HIGH-WATER ALARM:**  
A VISIBLE RED LIGHT AND AUDIBLE HIGH WATER ALARM SHALL BE PROVIDED. THE HIGH WATER ALARM SHALL BE ACTIVATED BY A DEDICATED FLOAT AND SHALL HAVE BATTERY BACKUP. ALL FLOAT SWITCHES SHALL HAVE GAS-TIGHT MOUNTINGS.

**VENT FOR PUMP SUMP:**

WHERE SYSTEM IS LOCATED WITHIN THE DWELLING, A VENT TWO (2) INCHES OR LARGER SHALL BE PROVIDED. WHERE SYSTEM IS LOCATED OUTSIDE THE DWELLING, A TWO (2) INCH OR LARGER VENT SHALL BE EXTENDED TO A POINT TEN (10) FEET ABOVE THE PUMP SUMP COVER.

**DISCHARGE LINE:**

THE PRESSURE PORTION OF THE DISCHARGE LINE SHALL INCLUDE A CHECK VALVE, GATE VALVE AND FLEXIBLE COUPLINGS AND SHALL BE A MINIMUM 1/2" DIAMETER LARGER THAN THE PUMP DISCHARGE. ALL PIPE, VALVES AND COUPLINGS SHALL CONFORM TO THE STANDARD SPECIFICATIONS. THE GRAVITY PORTION OF THE DISCHARGE LINE SHALL BE FOUR (4) INCH MINIMUM DIAMETER PIPE, SHALL MEET THE DISTRICT REQUIREMENT FOR SIDE SEWERS AND SHALL PROVIDE A MINIMUM TWELVE (12) INCH VERTICAL DROP AT THE JUNCTION WITH THE PRESSURE LINE.

<b>MARIN COUNTY SANITARY DISTRICTS CALIFORNIA</b>		
<b>RESIDENTIAL SEWAGE PUMPING SYSTEM</b>		
1995		SD 17