

Design and Construction Standards
for
Public Sewage System Improvements
for



Santa Ynez
Community Services District

Santa Barbara County, California

January 2012

MASTER TABLE OF CONTENTS

ARTICLE I. GENERAL CONDITIONS

ARTICLE II. STANDARD SPECIFICATIONS

ARTICLE III. STANDARD DRAWINGS

APPENDIX

GENERAL CONDITIONS

CONTENTS

ARTICLE I - GENERAL CONDITIONS

PART		PAGE
1.	SCOPE	1
2.	DEFINITIONS, TERMS & ABBREVIATIONS	1
2.01	DEFINITIONS	1
2.02	TERMS	3
2.03	ABBREVIATIONS	3
3.	DESIGN CRITERIA AND PLAN CHECKING	4
3.01	GENERAL	4
3.02	PRELIMINARY INVESTIGATION	4
3.03	PRELIMINARY DESIGN CRITERIA	4
3.04	PLAN CHECKING	7
A.	PREPARATION	7
B.	PRELIMINARY ENGINEERING PLANS/PLAN CHECKING AND INSPECTION DEPOSIT	7
C.	PLAN APPROVAL/CONNECTION FEES	7
D.	COPIES OF THE PLANS	7
E.	TIME PERIOD - SIGNED PLANS VALID	7
F.	EASEMENTS	7
3.05	CONTRACT/PLAN APPROVAL	8
4.	CONSTRUCTION AND INSPECTION	8
4.01	GENERAL	8
4.02	GOVERNING SPECIFICATIONS	8
4.03	CONNECTION TO EXISTING FACILITIES	8
4.04	NOTICE	8
4.05	SURVEYS, PERMITS, LAWS, AND REGULATIONS	8
4.06	CONSTRUCTION STAKING	9
4.07	SHOP DRAWINGS	9
4.08	CONSTRUCTION WATER	10
4.09	INSPECTION	10
4.10	PLANS AND SPECIFICATIONS ACCESSIBLE	11
4.11	PROTECTION OF WORK, PROPERTY, AND SAFTY	11
4.12	EXISTING UTILITIES OR OBSTRUCTIONS	12
4.13	REPLACING IMPROVEMENTS	12
4.14	SUPERINTENDENCE AND SUPERVISION	12

4.15	RECORD DRAWINGS	13
4.16	SEPARATE CONTRACT: INTERFERENCE WITH OTHER DEVELOPERS	13
4.17	LOSS OF LATERAL SEWER MARKERS	13
5.	CONTROL OF MATERIAL	13
5.01	QUALITY OF MATERIALS	13
5.02	SAMPLES AND TESTS	13
5.03	DEFECTIVE MATERIALS	14
5.04	STORAGE OF MATERIALS	14
6.	USE OF COMPLETED PORTIONS	14
7.	LEGAL RELATIONS AND RESPONSIBILITIES	14
7.01	OBSERVING LAWS AND ORDINANCES	14
7.02	INVENTIONS, PATENTS AND COPYRIGHTS	15
7.03	PUBLIC CONVENIENCE AND SAFETY	15
7.04	RESONSIBILITY FOR LOSS, DAMAGE OR INJURIES	15
7.05	RESPONSIBILITY FOR THE WORK	15
7.06	PRESERVATION OF PROPERTY	16
7.07	SAFETY	16
7.08	PERSONAL LIABILITY	16
7.09	INDEMNITY	17
7.10	WARRANTY OF TITLE	17
7.11	TERMINATION FOR BREACH	17
7.12	NOTICE AND SERVICE THEREOF	18
7.13	GUARANTEES	18
8.	INSURANCE REQUIREMENTS	18
8.01	GENERAL	18
8.02	WORKER'S COMPENSATION INSURANCE	19
8.03	LIABILITY INSURANCE	19
9.	CONSTRUCTION SECURITY	20
9.01	GENERAL	20
9.02	PERFORMANCE BOND	20
9.03	PAYMENT BOND	20

SANTA YNEZ COMMUNITY DISTRICT
DESIGN AND CONSTRUCTION STANDARDS
FOR
PUBLIC SEWAGE SYSTEM IMPROVEMENTS
GENERAL CONDITIONS

PART 1 SCOPE

These are general conditions to all contracts for extension of the District sewer system by an Owner. Requirements or conditions that do not apply to any particular work need not be complied with.

The Owner shall furnish all tools, labor, equipment, materials and testing equipment in connection with the construction of all sewer lines, manholes, connections and other appurtenances and the placement of any fill in accordance with these Design and Construction Standards.

The Owner is responsible for grade, alignment, and location of sewer line, manhole structures, grade stakes, as well as the repair of, and resurfacing of all damaged street structures within the excavation zone caused by the work. Street structures damaged or caused to be damaged by the above within the construction zone shall also be repaired to prior existing conditions to the satisfaction of the District, the Engineer, and Santa Barbara County.

In cases where an Owner is undertaking an extension to the District's sewer system, the Owner is required to enter into a contract in the form provided by the District setting forth the requirements applicable to such work.

In cases where the District is undertaking a project and solicits competitive bids for the work, the requirements applicable to such work shall be set forth in the bid documents for the project.

Side sewers, as defined herein, are owned by the Owner of the property served by such side sewer and such Owner is responsible for the maintenance and repair thereof. The construction of a side sewer represents a private project that is generally not undertaken pursuant to a contract with the District. Side sewers shall nevertheless be constructed in accordance with the requirements of these Design and Construction Standards, except to the extent such requirements relate only to projects that are undertaken pursuant to a contract with the District. All side sewers shall conform to the ordinances, rules, regulations and other requirements of the District and shall be subject to District review, inspection, permit and approval requirements. Property owners may also be required to comply with requirements of the County of Santa Barbara and/or other agencies with respect to side sewers, but compliance with such other requirements shall not excuse or take the place of compliance with the requirements of the District.

PART 2 DEFINITIONS, TERMS, AND ABBREVIATIONS

2.01 DEFINITIONS

Whenever the following terms or abbreviations occur in these specifications, the meaning shall be as follows:

BOARD OF DIRECTORS OR BOARD - The Board of Directors of the Santa Ynez Community Services District.

BUILDING SEWER - The private sewer line extending from the foundation outside the building to the property line where it connects to the lateral sewer.

CONTRACT - The agreement executed between the Owner and the District covering the sanitary sewer system improvements to be constructed by the Owner.

CONTRACTOR - The person or company constructing the sanitary sewer system improvements for the Owner.

DAYS - When used to designate a period of time, shall be in reference to consecutive calendar days.

DESIGN AND CONSTRUCTION STANDARDS – These Design and Construction Standards, as they may be amended by the District from time to time, consisting of General Conditions (Article I), Standard Specifications (Article II), Standard Drawings (Article III) and Appendices.

DISTRICT – Santa Ynez Community Services District, Santa Barbara County, California.

DISTRICT MANAGER - The General Manager of Santa Ynez Community Services District as designated by the Board.

ENGINEER, DISTRICT'S ENGINEER, DISTRICT'S REPRESENTATIVE – The engineer or engineering company acting as agent for the District in the administration of the contract for the construction of the sanitary sewer system improvements by the Owner.

FINAL ACCEPTANCE - That formal action by the District accepting the work as fully completed after certification of full completion by the Inspector and/or Engineer and approval of the Board.

GREENBOOK – The Standard Specifications for Public Works Construction, latest edition, as published by BNi Building News.

INSPECTOR - The Inspector employed by the District to perform inspection during construction of the work undertaken by the Owner.

LABORATORY - The laboratory designated by the Engineer and/or District to test materials and work involved in the work undertaken by the Owner.

LATERAL SEWER - The private sewer line extending from a sanitary sewer main within a street or public right-of-way or easement to the property line where it connects to the building sewer.

OWNER - The person or company entering into an agreement with the District pursuant to which said person or company shall be responsible for installing or constructing sanitary sewer improvements for integration with the Santa Ynez Community Services District sanitary sewer system.

PERMIT - Authorization by the District in writing allowing the Owner to do work within the District on sanitary sewer facilities.

PLANS - The official plans, profiles, typical cross-sections, working drawings, detail drawings and supplemental drawings, or reproduction thereof, approved by

the District, which show the locations, character, dimensions and details of the work to be done.

SIDE SEWER - The entire private sewer line, including both the building sewer and the lateral sewer.

STANDARD SPECIFICATIONS – The Standard Specifications set forth under Article II of these Design and Construction Standards for Public Sewage System Improvements for the Santa Ynez Community Services District, which Standard Specifications set forth directions, provisions, and requirements of the District pertaining to the method and manner of performing the work, and the qualities and quantities of materials to be furnished for the work.

SUBCONTRACTOR - The person or company supplying labor, or labor and materials, at the site of the work as a part of the Contractor's obligation with the Owner.

SURETY - The bondsmen or party or parties who guarantee by bonds the completion of the work and the payment of all labor and materials costs associated with the work, and whose signatures are set forth on the bond.

WORK - The entirety of the sanitary sewer system improvements to be constructed by the Owner, including but not limited to sewer lines, manholes, connections and other appurtenances and associated grading, excavation, shoring compaction and paving.

2.02 TERMS

Whenever in the Design and Construction Standards or upon the plans the words *directed, required, permitted, ordered, designated, prescribed* or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Inspector and/or Engineer is intended. Similarly, the terms *acceptable, satisfactory, or equal*, or words of like import, shall mean acceptable to, or satisfactory to the Inspector and/or Engineer, unless otherwise expressly stated. The word *provide* shall be understood to mean furnish and install. It will be responsibility of the Owner to see that all provisions of these Design and Construction Standards are met either by the Owner or the Contractor.

2.03 ABBREVIATIONS

Whenever the following abbreviations are used, they shall have the meanings indicated.

ANSI	American National Standards Institute (formerly USASI, USAS, ASA)
ASA	American Standards Association (Now ANSI)
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association

PART 3 DESIGN CRITERIA AND PLAN CHECKING

3.01 GENERAL

The following, subject to applicable ordinances of the District, is the procedure for an Owner to obtain approval for construction of sewer facilities to be offered for dedication to the Santa Ynez Community Services District.

3.02 PRELIMINARY INVESTIGATION

It is recommended that the Owner meet with the District at the earliest possible date to determine whether the property to be developed is within the District boundaries. At that time, the availability of existing sewer lines can also be reviewed. In some areas, a preliminary feasibility investigation and report may be necessary to establish whether the District can serve the proposed development. All costs for such an investigation and report shall be borne solely by the Owner.

3.03 PRELIMINARY DESIGN CRITERIA

Flows Acceptable and Not Acceptable - The District shall accept flows from the following plumbing fixtures, unless unusual circumstances prevent the District from doing so:

Toilets, urinals, bidets, sinks for domestic faucets, showers, bathtubs, connections for dishwashers, drinking fountains, domestic washing machines and garbage disposals.

The following plumbing fixtures shall not be connected to the District's sewer system and the following sources of wastes shall not be allowed without specific written permission from the District Manager:

- All piping from commercial-industrial processing to the sewers.
- All floor or stall drains, other than domestic showers.
- Swimming pools, ponds, etc., which empty into the sewer system.

Establishments included under the above restrictions include, but are not limited to:

- Gas stations, car washes, garages, laundromats, etc.
- Restaurants, hotels, motels and shopping areas.

The District may require traps, interceptors, pretreatment or other devices on all outlets which may discharge grease, oil, sand or waste material of any kind of a composition or quality deemed harmful by the District.

Flows which shall not be discharged into the sewerage system and are not acceptable to the District are flows other than sewage, which shall include, but shall not be limited to, any and all liquid or solid waste substance not sewage, from any producing, manufacturing, processing, commercial, or institutional operation of whatever nature.

Pipeline Criteria - Pipeline design shall be based on peak flows and on Manning's formula using coefficient of "n" = 0.013.

Average Dry Weather Flows (ADWF) shall be based upon an average of 100 gallons per person per day.

Peak Dry Weather Flows (PDWF) shall be calculated by multiplying the ADWF by a peak hourly flow factor of 2.

Peak Wet Weather Flows (PWWF) shall be calculated by multiplying the ADWF by an inflow & infiltration factor of 3.

PDWF in pipelines 12 inches in diameter and smaller shall be limited to a normal liquid depth to pipe diameter ratio of 0.50.

PDWF in pipelines 15 inches in diameter and larger shall be limited to a normal liquid depth to pipe diameter ratio of 0.75.

PWWF in all size pipelines shall be limited to a normal liquid depth to pipe diameter ratio of 0.90.

Minimum pipeline diameter shall be 8 inches.

Minimum pipeline grades shall be:

<u>Pipe Size</u> <u>Inches</u>	<u>Minimum Grade</u> <u>%</u>
8	0.40
10	0.28
12	0.22
15	0.16
18	0.12
21	0.10
24	0.08

Alignment - Sewer pipelines shall be designed so as to have a minimum of curvature both horizontal and vertical.

Whenever possible, sewer lines shall be laid out in a straight line between structures. Curved sewer lines will be allowed under the following conditions:

- All curve data shall be shown on the plans.
- Minimum radius of curvature and joint deflections shall be as recommended by the pipe manufacturer and approved by the District Engineer.
- All deflections shall be at the pipe joints or by specially manufactured mitered pipe sections.

Pipeline Location - Whenever possible the pipe is to be located 5 feet off the street centerline in the driving lane on the opposite side of the centerline from the water main. In major or secondary highways pipe shall be located in the center of the driving lane nearest to the center of the street. Pipe shall not be located in median strips or parking lanes. However, in all cases the pipeline location shall comply with applicable county and state requirements.

Minimum Depth - Minimum depth from finish street grade to top of sewer main pipe shall be 6 feet. If 6 feet of cover is not feasible due to the depth of the existing Main Connection Point, the District will consider lesser depths on a case-by-case basis and may require appropriate protective cover such as slurry.

Manhole Criteria - Manhole locations are at:

- Changes of slope in sewers.
- Changes of direction of sewers.
- Junctions of main sewers.
- Termination of sewers.
- Junction of main sewer and lateral sewer if lateral is same size as main sewer.
- Pipe size change.
- Other locations specified by the District.

Maximum manhole spacing shall be 400 feet.

Allowable head losses in manholes:

- Straight run through manholes based on 0.00 foot loss.
- Right angle turn in manholes based on 0.5 velocity head loss, or 0.10 foot, whichever is greater.

Miscellaneous - Invert elevation at manholes shall be calculated and shown projected to the centerline of the manhole. Should there be any drop in elevation, the invert elevation "IN" and the direction, N, S, E, or W, and invert elevation "OUT" and the direction shall be shown. Should the pipeline be joining a sewer of larger diameter, the smaller pipe shall have its crown elevation equal to or higher than the crown elevation of the larger sewer.

Selected material for bedding will be required by the District when siltstone, sandstone or rocky conditions are encountered in the pipe zone or as determined by the District.

Sewer line distance shown in profile is the horizontal distance measured from centerline of manhole to centerline of manhole. The Owner's surveyor shall stake the locations of all wye fittings. All building sewers not perpendicular to the main sewer in the street shall have the end of lateral at property line staked and tied to a property corner as shown on plans.

In order to prevent accidental use of the new sewer prior to completion, the inlet (or outlet) to existing tie-in manholes shall be sealed with broken brick and mortar. Installation of these plugs shall require prior approval by the District. Plugs shall be removed at the time of final inspection.

Horizontal and Vertical Separation - The District, in accordance with requirements of the State of California, Department of Health Services, requires minimum horizontal and vertical separation between sewer and water mains. The regulations in place at the time of construction shall apply to the work. Appendix A contains the current regulations titled "Guidance Criteria for the Separation of Water Mains and Non-Potable Pipelines".

3.04 PLAN CHECKING

A. PREPARATION

All sewer plans must be prepared under the direct supervision of a registered civil engineer licensed to practice in the State of California. This requirement must be attested to by the engineer's signature on the plans.

B. PRELIMINARY ENGINEERING PLANS/PLAN CHECKING AND INSPECTION DEPOSIT

Upon completion of the improvement plans, the Owner will submit three (3) copies of plans signed by the Owner's engineer to the District, to be forwarded to the District Engineer for plan checking. The Owner shall at that time make a deposit of the amount specified by the District to cover the cost of plan checking and inspection. These costs will be determined based on the District's current schedule of fees. In the event plan checking and inspection costs are less than such deposit, then the balance will be refunded to the Owner. If plan checking and inspection costs exceed the amount so deposited, the Owner shall forthwith deposit a sum sufficient to cover such deficiency.

C. PLAN APPROVAL/CONNECTION FEES

After approval of the final sewer plans by the District, and after the Owner has entered into a contract with the District for the construction of the work, the Owner shall pay the District's prescribed connection fees based on the number of sewer service connections.

D. COPIES OF THE PLANS

Prior to the start of construction, two (2) sets of approved plans shall be furnished to Santa Ynez Community Services District and one (1) set of same to District Engineer.

E. TIME PERIOD - SIGNED PLANS VALID

Approval of plans by the District will be valid for only one year from date of District approval. If construction has not started within one year from date of approval, the approval shall be "null and void." The District will then require the plans be rechecked.

F. EASEMENTS

In case an easement(s) is required for construction and/or maintenance of sewer lines, the minimum width shall be 20 feet unless otherwise determined in writing by the District Engineer. However, there may be instances where easements of a greater width are required which will be determined by the District.

The entire width of each easement shall be located entirely on one lot and in no case will the District accept an easement where the width is split between two lots. Easements in favor of the District or the public shall be

granted and executed prior to the District's acceptance of any sewer improvements constructed by the Owner. All easements shall be in the form prescribed by the District and shall be granted or obtained at no expense to District. The Owner shall, at the Owner's expense, arrange for the subordination of any prior encumbrances which could affect the enforceability of such easements.

3.05 CONTRACT/PLAN APPROVAL

The contract between the Owner and the District covering the sanitary sewer system improvements shall be executed after District approval of the sewer improvement plans.

PART 4 CONSTRUCTION AND INSPECTION

4.01 GENERAL

The Contractor shall furnish all transportation, materials, equipment, labor and supplies to complete excavation, backfills, street repairing and all other work incidental to the construction of the sanitary sewer mains and appurtenances.

4.02 GOVERNING SPECIFICATIONS

All facilities to be offered for dedication to the District shall be constructed in accordance with these District Design and Construction Standards and the rules and regulations of the District. The District's rules and regulations, as adopted from time to time, are hereby made a part of these Design and Construction Standards.

4.03 CONNECTION TO EXISTING FACILITIES

No connection shall be made to existing facilities of the District without prior approval and inspection by the District Inspector.

4.04 NOTICE

Notice shall be given to the District at least three working days in advance of commencement of work.

4.05 SURVEYS, PERMITS, LAWS, AND REGULATIONS

The Owner shall secure all excavation permits and all licenses, pay all charges and fees, and give all notices as necessary and required for the work. These shall be filed with the District prior to commencement of work.

The Owner shall furnish all property boundary surveys unless otherwise specified. Permits, permission under franchises, licenses, and bonds of a temporary nature necessary for and during the prosecution of the work, and inspection fees in connection therewith shall be secured and paid for by the Owner. Where the District is required to secure such permits, permission under franchises, licenses, and bonds, and pay the fees, the costs incurred by the District thereby shall be reimbursed to the District by the Owner.

The Owner shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the work required by the contract

documents. Before any public street opening is accomplished, the Owner or his or her duly authorized representative will present to the Engineer, for his or her viewing, a copy of the Road Excavation Permit granted by the Santa Barbara County Department of Public Works, Transportation Division. If the Owner observes that the contract documents or any part thereof are inconsistent or at variance therewith, he or she shall promptly notify the Engineer in writing and any necessary changes shall be made as provided in the contract for changes in the work. If the Owner performs any work contrary to such laws, ordinances, rules and regulations, or prior to obtaining permits, permission under franchises, licenses and/or bonds as required to be furnished by or obtained by the District, he or she does so at his or her own risk.

4.06 CONSTRUCTION STAKING

The Owner shall provide horizontal control in the form of road centerline stakes, property stakes, or easement centerline stakes. Construction staking will not begin until adequate horizontal control is in place in the field and at the time construction staking is to be commenced.

The Owner shall not proceed with any work until sewer construction staking has been completed and the surveyor's staking sheets (cut and/or fill to invert calculations) have been reviewed and approved by the Engineer.

Grade stakes and offset stakes shall be provided at each manhole and at even 25-foot stations. The Owner shall provide the Engineer with one set of final surveyor's staking sheets.

Additional construction staking which may be required includes:

- Location of easements, property lines, and road centerlines;
- Location of wye branches and ends of lateral sewers;
- Additional offset stakes and offset stakes other than those specified above;
- and,
- Replacement of stakes for any reason.

4.07 SHOP DRAWINGS

The Owner shall check and verify all field measurements. He or she shall submit with such promptness as to cause no delay in his or her own work, or in that of any other contractor, three (3) copies, checked and approved by the Owner, of all shop or setting drawings and schedules (all collectively herein referred to as "shop drawings") required for the work of the various trades in the performance of the work or where requested by the Engineer, and shall verify all field measurements or conditions to which the shop drawings are applicable. The Engineer shall review them with reasonable promptness making required corrections. The Owner shall make any corrections required by the Engineer and within one week after receipt of the required corrections, shall file with the Engineer two (2) corrected copies and furnish such other copies as may be needed by the Engineer. The Engineer's acceptance of such drawings or schedules shall not relieve Owner from responsibility for deviation from drawings or specifications, unless the Owner has, in writing, called the Engineer's attention to such deviation at the time of submittal and secured the Engineer's written approval, nor shall it relieve the Owner from responsibility for errors in shop drawings or schedules.

4.08 CONSTRUCTION WATER

Water needed for construction, testing and dust control shall be arranged for and furnished by the Owner at his or her expense. The Owner shall comply with all regulations of the local water purveyor relative to connection to fire hydrants.

4.09 INSPECTION

All work shall be subject to inspection by the District and shall be left open and uncovered until the installation is approved by appropriate District authority.

The Owner or his Contractor shall not proceed with any subsequent phase of work until the previous phase has been inspected and approved by the District and other public agencies having jurisdiction.

The District shall at all times have access to the work during construction and shall be furnished with every reasonable facility for ascertaining full knowledge respecting the progress, workmanship and character of materials used and employed in the work.

No pipe, fittings or other material shall be installed until inspected and approved by the District. Installations which are to be backfilled shall be inspected and approved by the District prior to backfilling, and the Owner shall give due notice in advance of backfilling to the District so that proper inspection may be provided.

The inspection of the work by the District shall not relieve the Owner of his obligation to complete the work as prescribed by these Design and Construction Standards. Defective work shall be made good, and unsuitable materials may be rejected notwithstanding the fact that such defective work and unsuitable materials have been previously overlooked by the District and approved. The installation and inspection of unsuitable materials shall not be construed as approval, and modification to these Design and Construction Standards shall only be made by the District in writing.

All construction shall be done in compliance with the standards as established by the Occupational Health and Safety Act (OSHA) and applicable State of California regulations.

Inspection of the work by the District and its authorized agents shall be strictly for the benefit of the District and nothing contained herein shall be construed to relieve the Owner of his or her obligations under the contract.

The District and its authorized agents shall, at all times, have access to the work for the purpose of inspecting and testing wherever it is in preparation or progress, and the Owner shall provide proper facilities for such access and for such inspection and testing.

If any work should be covered up without approval or consent of the District or its authorized agents, it must, if required by the District, be uncovered for inspection at the Owner's expense.

Re-examination of questioned work may be ordered by the District and, if so ordered, the work shall be uncovered by the Owner. If such work is found by the

District to be in accordance with the approved plans, the District shall pay the cost of re-examination and replacement. If such work is found not in accordance with the approved plans, the Owner shall pay such costs.

The Owner shall make reasonable tests of the work at the Owner's expense upon the District's request and shall maintain a record of such tests.

For a performance test to be observed by the District, the Owner shall make whatever preliminary tests are necessary to assure that the material and/or equipment are in accordance with these Design and Construction Standards. If, for any reason, the test observed by the District is unsatisfactory, the Owner shall pay all costs incurred by the District for the inspection and supervision of all further testing.

Where these Design and Construction Standards, the District's instructions, laws, ordinances, or any government authority require any work to be specially tested or inspected, the Owner shall give the Engineer timely notice that such test or completed work is ready for inspection. If the inspection is by an authority other than the District, the Owner shall give the District timely notice of the date fixed for such inspection. Required certificates of inspection by an authority other than the District shall be secured by the Owner.

Written notice of deficiencies, adequately describing the same, shall be given to the Owner upon completion of each inspection and the Owner shall correct these deficiencies within seven (7) days of notice thereof and before final inspection will be made by the District.

A representative of the Contractor shall arrange a time with and accompany the District on the final inspection and subsequent inspections, if required, thereafter.

Deficiencies discovered at the final inspection shall be corrected within seven (7) days of notice thereof, and in no instance shall service be provided until said deficiencies are corrected and the extension passes re-inspection.

All costs incurred by the District for inspection shall be at the Owner's expense and a deposit for this may be required in advance by the District.

4.10 PLANS ACCESSIBLE

The Owner shall keep at least one copy of the plans accessible at the construction site at all times.

Where shop drawings are required to be submitted for approval, one copy of the approved shop drawings shall be kept accessible at the construction site at all times.

4.11 PROTECTION OF WORK AND PROPERTY AND SAFETY

The Owner shall continuously maintain adequate protection of the work from damage and shall protect the District property from injury or loss arising in connection with or during the existence of the contract. He or she shall make good any such damage, injury, or loss, except as may be directly caused by agents or employees of the District. The Owner shall adequately protect adjacent property from damage or loss occasioned by performance of the work. The Owner shall

provide and maintain all passageways, guard fences, lights, and other facilities for protection required by public authority or local conditions.

The Owner shall bear the risk of loss or damage for all finished or partially finished work until the entire work is accepted by the District.

The Owner shall take all necessary precautions for the safety of employees on the job and shall comply with all applicable provisions of Federal, State, and local safety laws and building codes. He or she shall erect and properly maintain, at all times, as required by the conditions and progress of the work, all necessary barricades, lighting and other safeguards for protection of workers and the public, shall post danger signs warning against known or unusual hazards, and he or she shall designate a responsible person on the construction site whose duty shall be the prevention of accidents. The name and position of such person so designated shall be reported in writing to the District by the Owner.

4.12 EXISTING UTILITIES OR OBSTRUCTIONS

The Owner shall not enter upon or place materials on other private premises except by written consent of the individual owners and the Owner shall save the District harmless from all suits and actions of every kind and description that may result from the Owner's use of private property.

The Owner shall assure that all utility facilities are shown on the plans with reasonable accuracy. To the extent that they are not so shown, and the District would be deemed responsible to a Contractor under Government Code Section 4215, the Owner shall hold the District harmless therefor.

The Owner shall take adequate precautions to protect existing lawns, trees, shrubs, sidewalks, curbs, pavements, utilities, adjoining property, and structures, and to avoid damage thereto. The Owner shall, at his or her own expense, completely repair any damage thereto caused by the Owner's operations to the satisfaction of the Engineer, except as otherwise provided in other sections of these Design and Construction Standards.

4.13 REPLACING IMPROVEMENTS

Whenever it is necessary, in the course of construction, to remove or disturb culverts, driveways, roadways, pipelines, monuments, property stakes, or other existing improvements, without limiting the generality thereof and whether on private or public property, they shall be replaced to a condition equal to that existing before they were so removed or disturbed, all at the expense of the Owner.

4.14 SUPERINTENDENCE AND SUPERVISION

The Owner shall keep on the construction site during the progress of the work a competent superintendent and any necessary assistants, all satisfactory to the District. The superintendent shall not be changed except with the consent of the District unless the superintendent proves to be unsatisfactory to Owner and ceases to be in his or her employ. The superintendent shall represent the Owner in his or her absence and all directions given to the superintendent shall be as binding as though given to the Owner. Instructions given to the superintendent shall be

confirmed in writing upon the Owner's request in each case. The Owner shall give efficient supervision to the work, using his or her best skill and attention.

4.15 RECORD DRAWINGS

The Owner shall provide one (1) complete set of record drawings in black water proof drawing ink on reproducible film (3-mils double matte) of the size 22 inches by 36 inches to the District upon completion of construction. The record drawings shall show all changes in work constituting departures from the original approved plans. In addition, the Owner shall provide one (1) complete set of record drawings in electronic format, acceptable to the District.

4.16 SEPARATE CONTRACT: INTERFERENCE WITH OTHER DEVELOPERS

The District reserves the right to perform projects with its own forces or to let other contracts for projects under similar general conditions in connection with the Owner's work or other projects. Owner shall afford the District and other contractors reasonable opportunity for the execution of their respective projects and shall properly connect and coordinate the Owner's work with theirs.

4.17 LOSS OF LATERAL SEWER MARKERS

The District shall not be responsible for costs to relocate lateral sewer ends in the event of removal or destruction by parties other than the District itself.

PART 5 CONTROL OF MATERIAL

5.01 QUALITY OF MATERIALS

All equipment, materials and supplies to be incorporated in the work shall be new unless otherwise specified. Unless otherwise specifically provided for in these Design and Construction Standards, all workmanship, equipment, material and articles incorporated in the work covered by the contract are to be of the best available grade of their respective kind. Whenever in these Design and Construction Standards any material, process or article is indicated or specified by grade, patent or proprietary name, or by name of manufacture, such specification shall be deemed to be used for the purpose of facilitating description of the materials, process or articles desired, and shall be deemed to be followed by the words "or equal", and the Owner may offer any material or process which shall be substantially equal or better in every respect to that so indicated or specified; however, that if the material or process or article offered by the Owner is not, in the opinion of the Engineer, substantially equal or better in every respect to that specified, then the Owner must furnish the material, process or article specified or one that in the opinion of the Engineer is the substantial equal or better thereof in every respect.

5.02 SAMPLES AND TESTS

All tests of materials furnished by the Owner shall be made in accordance with commonly recognized standards of national organizations and such special methods and tests as are prescribed in these Design and Construction Standards. The Owner shall furnish such samples of materials as are requested by the Inspector without charge. No material shall be used until it has been approved by the Inspector. Samples will be secured and tested whenever necessary to determine the quality of material.

The Owner shall furnish the District in triplicate, certified copies of all required factory and mill test reports. Any materials shipped by the Owner from a factory or mill prior to having satisfactorily passed such testing and inspection by a representative of the District shall not be incorporated in the work, unless the Inspector shall have notified the Owner in writing that such testing and inspection will not be required.

5.03 DEFECTIVE MATERIALS

All materials not conforming to the requirements of these Design and Construction Standards shall be considered as defective and all such materials, whether in place or not, shall be rejected and shall be removed immediately from the site of the work unless otherwise permitted by the Inspector or Engineer. No rejected material, the defects of which have been subsequently corrected, shall be used until approved in writing by the Inspector or Engineer. Upon failure on the part of the Owner to comply with any order of the District made under the provisions of this article, the District shall have authority to remove and replace defective material at the expense of the Owner.

5.04 STORAGE OF MATERIALS

All materials for use in the work shall be stored in such a manner as to prevent damage from exposure to the elements or from any other cause. The Owner shall be fully responsible for any damage incurred to the materials for the work while being stored, including damage resulting from storing of material in public right-of-way and District acquired easements. The Owner shall also be fully responsible for the preservation of public and private property while storing materials for the work.

PART 6 USE OF COMPLETED PORTIONS

When the work or any portion of it is sufficiently complete to be utilized or placed into service, the District shall have the right upon written notification to the Owner to utilize such portions of the work and to place the operable portions into service.

Nothing in this article shall be construed as (i) relieving the Owner of the full responsibility for completing the work in its entirety, for making good defective work and materials, for protecting the work from damage, and for being responsible for damage, or (ii) relieving the Owner, his sureties or insurers of the insurance requirements under Part 8 or the construction security requirements under Part 9 hereof.

PART 7 LEGAL RELATIONS AND RESPONSIBILITIES

7.01 OBSERVING LAWS AND ORDINANCES

The Owner shall keep himself fully informed of all existing laws, ordinances and regulations which in any manner affect those engaged or employed in the work or the materials used in the work or which in any way affect the conduct of the work and of all such orders and decrees of bodies or tribunals having any jurisdiction or authority over same.

If the Owner discovers any discrepancy or inconsistency in the plans, specifications or contract for the work in relation to any such law, ordinance, regulation, order or decree, he shall immediately report the same to the District Manager.

The Owner shall at all times observe and comply with and shall cause all his agents, employees, contractors and subcontractors, and their employees, and suppliers to observe and comply with all such existing and future laws, ordinances, regulations, orders and decrees and shall hold harmless, indemnify and defend the District, the Engineer and each of their directors, officers, employees and agents against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree by the Owner, his agents, employees, contractors and subcontractors, and their employees and suppliers.

7.02 INVENTIONS, PATENTS AND COPYRIGHTS

The Owner shall pay all royalties and assume all costs arising from the use of any invention, design, process, materials, equipment, product or device which is the subject of patent rights or copyrights.

The Owner shall hold harmless, indemnify and defend the District, the Engineer, and their consultants, and each of their directors, officers, employees and agents from and against all claims, damages, losses, expenses and other costs, including costs of defense and attorney's fees, arising out of any infringement of patent rights or copyrights incident to the use in the performance of the work or resulting from the incorporation in the work of any invention, design, process, materials, equipment, product or device and shall defend all such claims in connection with any alleged infringement of such rights.

7.03 PUBLIC CONVENIENCE AND SAFETY

The Owner shall so conduct his operations as to offer the least possible obstruction and inconvenience to the public, and shall have under construction no greater length or amount of work than he can prosecute properly with due regard to the rights of the public.

Convenient access to driveways, houses and buildings along the line of work shall be maintained and temporary crossings shall be provided and maintained in good condition. Not more than one crossing or intersecting street or road shall be closed at any one time.

The Owner shall provide and maintain such fences, barriers, directional signs, lights and flagmen as are necessary to give adequate warning to the public at all times of any dangerous conditions to be encountered as a result of the construction work and to give directions to the public.

7.04 RESPONSIBILITY FOR LOSS, DAMAGE OR INJURIES

The Owner shall be responsible for all claims, demands or liability from any cause arising out of or resulting from or in connection with the performance of the work, excepting only those as may be caused solely and exclusively by the fault or negligence of the District, the Engineer, or their consultants, or their directors, officers, employees and agents. Such responsibility shall extend to claims, demands, or liability for loss, damage or injuries occurring after completion of the work as well as during the progress of the work and shall include claims by the contractor's employees, or subcontractors or their employees.

7.05 RESPONSIBILITY FOR THE WORK

Until the final acceptance of the work by the District, the Owner shall have the responsible charge and care of the work and of the materials to be used therein (including materials which have been furnished by the District) and shall bear the risk of injury, loss or damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution or from the nonexecution of the work.

The Owner shall rebuild, repair, restore and make good all injuries, losses or damages to any portion of the work or the materials occasioned by any cause before its completion and final acceptance and shall bear the expense thereof. Where necessary to protect the work or materials from damage, the Owner shall at his expense, provide suitable drainage and erect such temporary structures as are necessary to protect the work or materials from damage. The suspension of the work or the granting of an extension of time from any cause whatever shall not relieve the Owner of his responsibility for the work and materials as herein specified.

7.06 PRESERVATION OF PROPERTY

All trees, shrubbery and landscaping that are not to be removed, and pole lines, fences, signs, survey markers and monuments, buildings and structures, conduits, pipelines under or above ground, sewer and waterlines, all highways or street facilities, and any other improvements or facilities within or adjacent to the work shall be protected from injury or damage, and the Owner shall exercise due care and provide and install suitable safeguards to protect such objects from injury or damage. If such objects are injured or damaged by reason of the Owner's operation, they shall be replaced or restored at the Owner's expense to a condition as good as when the Owner entered upon the work or as good as required by the plans and specifications if any such objects are a part of the work being performed. The fact that any such pipe or other underground facility is not shown on the plans shall not relieve the Owner of his responsibility under this article.

In addition to any requirements imposed by law, the Owner shall shore up, brace, underpin and protect as may be necessary, all foundations and other parts of all existing structures adjacent of and adjoining the site of the work which are in any way affected by the excavations of other operations connected with the performance of the work.

7.07 SAFETY

In accordance with generally accepted construction practices, the Owner and Contractor shall be solely and completely responsible for conditions of the jobsite, including safety of all persons and property during performance of the work, and the Owner and Contractor shall full comply with all state, federal and other laws, rules, regulations and orders relating to safety of the public and workers.

The right of the Engineer and/or Inspector to conduct construction review or observation of the Owner and Contractor's performance will not include review or observation or the adequacy of the Owner and Contractor's safety measures in, on or near the construction site.

7.08 PERSONAL LIABILITY

Neither the Board of Directors, the District Manager, Inspector and the Engineer, nor any other officers or agents of the District shall be personally responsible for

any liability arising under or by virtue of any agreement or contract between the Owner and the Contractor.

7.09 INDEMNITY

To the fullest extent permitted by law, the Owner shall indemnify, defend and hold harmless the District, the Engineer and their consultants, and each of their directors, officers, agents and employees from and against all claims, damages, losses, expenses and other costs, including costs of defense and attorney's fees, arising out of or resulting from or in connection with the performance of the work, both on and off the jobsite, provided that any of the foregoing (1) is attributable to personal injury, bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself), including the loss of use resulting therefrom and (2) is caused in whole or in part by any act or omission of the Owner, the Contractor, if different from the Owner, any subcontractor, any supplier, anyone directly or indirectly employed by any of them or anyone for whose acts or omissions any of them may be liable, except to the extent it is caused by an act or omission of a party indemnified hereunder.

7.10 WARRANTY OF TITLE

The Owner warrants clear and good title to all materials, supplies and equipment installed and incorporated in the work and agrees upon completion of all work to offer the same to the District free from any claims, liens, encumbrances or charges. Nothing contained in this article, however, shall defeat or impair the right of persons furnishing materials or labor under any bond given by the Owner for their protection, or any right under any law permitting such persons to look to funds due the Owner in the hands of the District.

7.11 TERMINATION FOR BREACH

If the Owner refuses or fails to prosecute the work or any separable part thereof with such diligence as will insure its completion within the time specified in the permit, or any extension thereof, or fails to complete such work within such time, or if the Owner should be adjudged bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he or any of his subcontractors should violate any of the provisions of the permit, the District may serve written notice upon the Owner and his surety of its intention to terminate the permit, said notice to contain the reasons for such intention to terminate the Contract, and unless within ten (10) days after the service of such notice such violations shall cease and satisfactory arrangements for the corrections thereof be made, the permit shall, upon the expiration of said ten (10) days, cease and terminate.

In the event of any such termination, the District shall immediately serve written notice thereof upon the surety and the Owner. The surety shall have the right to take over and perform the work, provided, however, that if the surety within fifteen (15) days after the serving upon it of a notice of termination does not give the District written notice of its intention to take over and perform the work, or does not commence performance thereof within thirty (30) days from the date of serving said notice, the District may take over the work and prosecute the same to completion by contract or by any other method it may deem advisable for the account and at the expense of the Owner, and his surety shall be liable to the District for any cost or other damage occasioned the District, and in such event the District may, without liability for so doing, take possession of and utilize in

completing the work such materials, equipment and other property belonging to the Owner that may be on the site of the work and be necessary therefor.

The foregoing provisions are in addition to and not in limitation of any other right or remedies available to the District and shall not be construed as requiring any action whatsoever on the part of the District.

7.12 NOTICE AND SERVICE THEREOF

Any notice required or permitted under this article shall be in writing and be served as follows:

If to the District, by personal delivery or by deposit in the United States mail.

If to the Owner, by personal delivery to the Owner or to his authorized representative at site of the project or by deposit in the United States mail.

If to the Owner's surety or any other person, by personal delivery or by deposit in the United States mail.

All mailed notices shall be in sealed envelopes, shall be sent by certified mail with postage prepaid and shall be addressed to the addresses in the contract documents or such substitute addresses which a party designates in writing.

7.13 GUARANTEES

Upon final acceptance of the sewer system, the Owner shall be responsible for all repairs for any portion of said system which requires repair within one year from the date of acceptance whether repairs are completed during said period so long as the Owner is notified of the necessity of said repairs during the period. The Owner shall repair and replace any and all such work that may prove defective in materials or workmanship without expense whatsoever to the District, ordinary wear and tear and unusual abuse or neglect expected. In the event of failure to comply with the aforementioned conditions, the District is hereby authorized to proceed to have the defects repaired and made good at the expense of the Owner, who shall pay the cost and charges therefor immediately upon demand. The foregoing does not in any way limit the guarantee on any items for which a longer guarantee is specified or on any items for which a manufacturer or supplier gives a guarantee for a longer period. The Owner shall act as a co-guarantor with such manufacturer or supplier and shall furnish the District all appropriate guarantee or warranty certificates upon completion of the project. No guarantee period, whether provided for herein or elsewhere, shall in any way limit the liability of the Owner or his sureties or insurers under the indemnify or insurance provisions of these hereof.

PART 8 INSURANCE REQUIREMENTS

8.01 GENERAL

Construction shall not commence, or continue, until and unless there is in full force and effect all required insurance. The Owner shall not permit any Contractor or subcontractor to perform work unless the Worker's Compensation, Performance and Payment Bond and Liability Insurance requirements have been complied with.

Worker's Compensation Insurance and Liability Insurance shall be maintained in effect until the work is accepted by the District.

Insurers must be authorized to do business and have an agent for service of process in California and have an "A" policyholder's rating and a financial rating of at least Class XI in accordance with the most current Best's Rating.

As evidence of specified insurance coverage, the Owner shall provide certificates of insurance and endorsements to the District in accordance with and on the form set forth in the appendix hereto. No alteration or substitution of said form will be allowed.

8.02 WORKER'S COMPENSATION INSURANCE

The Owner shall provide a certificate(s) of insurance certifying that the Owner and his Contractor have obtained for the period of the work full Worker's Compensation Insurance coverage for all persons employed in carrying out the work. This insurance shall be in strict accordance with the requirements of the most current and applicable state Worker's Compensations Insurance laws.

8.03 LIABILITY INSURANCE

The Owner shall provide a certificate(s) of insurance showing that the Owner and his Contractor have the Liability Insurance coverage required by the District.

Included in such insurance shall be contractual coverage sufficiently broad to insure the Owner's indemnity obligations to the District.

Included in such insurance shall be a "Cross Liability" or "Severability of Interest" clause.

The Liability Insurance coverage shall include each of the following types of insurance:

A. General Liability

- (1) Comprehensive Form
- (2) Premises-Operations
- (3) Explosion and Collapse Hazard
- (4) Underground Hazard
- (5) Products/Completed Operations Hazard
- (6) Contractual Insurance
- (7) Broad Form Property Damage Including Completed Operations
- (8) Independent Contractors
- (9) Personal Injury

B. Automobile Liability

- (1) Comprehensive Form Including Loading and Unloading
- (2) Owned
- (3) Hired
- (4) Non-Owned

The Liability Insurance shall include as additional insureds: the District, the District's Engineer and their consultants, all other District consultants, and each of

their directors, officers, agents and employees. The insurance afforded to these additional insureds shall be primary insurance. If the additional insureds have other insurance which might be applicable to any loss, the amount of the insurance provided under this article shall not be reduced or prorated by the existence of such other insurance.

PART 9 CONSTRUCTION SECURITY

9.01 GENERAL

All bonds, when required by the District and/or by ordinance, shall be secured from a surety company or companies satisfactory to the District and whose name is on file with the County Clerk of Santa Barbara County as an approved and financially sound surety company, authorized to transact business in this state. The performance and payment bond shall continue in full force and effect for the guarantee period.

The Owner shall submit copies of proposals received from Contractor(s) for the construction of the improvements or other evidence satisfactory to the District to establish the project construction costs for purposes of bonding.

9.02 PERFORMANCE BOND

The Owner shall furnish a performance bond in the amount of one hundred percent (100%) of the construction cost to the benefit of the District, as security for the faithful performance of the work in compliance with the District ordinances, regulations, plans and specifications. Said bond shall be in the form set forth in the appendix to these Design and Construction Standards.

9.03 PAYMENT BOND

If not covered by the performance bond referenced above, the Owner shall furnish a separate bond in an amount at least to hundred percent (100%) of the project construction cost to the benefit of the District, as security for the payment of all persons performing labor and furnishing materials in connection with the work. Said bond shall be in the form set forth in the appendix to these Design and Construction Standards.

STANDARD SPECIFICATIONS

CONTENTS

ARTICLE II - STANDARD SPECIFICATIONS

EARTHWORK

GRAVITY SEWER PIPE AND FITTINGS

PRESSURE SEWER PIPE AND FITTINGS

LATERAL SEWERS

BUILDING SEWERS

SEWER CLEANOUTS

PRECAST CONCRETE MANHOLES

CONNECTIONS TO EXISTING WORK

CONCRETE CONSTRUCTION

REMOVAL AND RESURFACING OF STREET PAVEMENT AND SURFACES

STEEL CASING PIPE

USE OF COMPLETED FACILITIES

INSPECTION OF WORK

CLEANUP

PERMITS, LICENSES & NOTIFICATIONS

STANDARD SPECIFICATIONS
FOR
EARTHWORK

PART 1 GENERAL DESCRIPTION

Earthwork shall consist of performing operations necessary to complete all excavation, bracing and shoring, preparation of subgrade, ditching, structural excavation, trenching, backfill compacting, sloping, trimming the subgrade, and finish grading; all as shown on the plans or contained in the Standard Specifications. Earthwork shall also include all clearing and grubbing, removal and disposal of paving, removal of water, excavation of all classes of earth and rock regardless of character and subsurface conditions and disposal of all excess excavation.

1.01 SCOPE OF WORK

The work includes furnishing all services, labor, materials, and equipment and performing all operations in connection with all earthwork necessary for the construction of the improvements indicated on the plans and in the Standard Specifications.

1.02 EARTHWORK IN STATE, COUNTY AND CITY RIGHTS-OF-WAY

Earthwork within the rights-of-way of the State of California, Department of Transportation; the County Road Department; and Santa Ynez Community Services District property shall be done in accordance with requirements and provisions of the permits issued by those agencies for the construction within their respective right-of-way(s). Such requirements and provisions, where applicable, shall take precedence and supersede the provisions of these Standard Specifications contained herein.

1.03 SAFETY PRECAUTIONS

All excavations shall be performed, protected and supported as required for safety and in the manner set forth in the operating rules, orders and regulations prescribed by the Division of Industrial Safety of the State of California. Barriers shall be placed at each end of all excavations and at such places as may be necessary along excavations to warn all pedestrian and vehicular traffic of such excavations.

1.04 BRACING EXCAVATIONS

All excavations shall be properly supported in the manner prescribed by the rules, orders and regulations of the Divisions of Industrial Safety of the State of California. Excavations shall be so braced, sheeted and supported that they will be safe and the ground alongside the excavation will not slide or settle, and all existing improvements of any kind, either on public or private property, will be fully protected from damage. If any damage does result to such improvements, the Owner, at his own expense, shall make the necessary repairs or reconstruction required as directed by the Engineer.

Excavations shall be so braced or sheeted so as to provide conditions under which workmen may work safely and efficiently at all time. The sheeting, shoring and bracing shall be so arranged as not to place any stress on portions of the completed work until the general construction thereof has proceeded far enough

to provide ample strength. Any damage to structures occurring through settlements, water or earth pressures, slides, caves or other causes due to failure or lack of sheeting or bracing or improper bracing or through negligence or fault of the Owner or his Contractor in any other manner, shall be repaired before acceptance by the District.

Where timber sheeting extends below the invert of the pipe, it shall be cut off at the top of the pipe and the upper portion removed without harming the support conditions. This requirement will not be necessary where steel sheeting is used for shoring below the invert of the pipe.

Care shall be exercised in the drawing or removing of sheeting, shoring, bracing and timbering to prevent the caving or collapsing of the excavation faces which are being supported. All expenses of sheeting and shoring as herein specified shall be included in the various contract prices and no additional allowance will be made therefore.

1.05 OPEN EXCAVATIONS AND STOCKPILING

Open excavations and stockpiles shall be controlled in a manner to prevent water running into excavations. Obstruction of surface drainage shall be avoided and means shall be provided whereby storm and wastewater can flow uninterruptedly in existing or established flowage courses, other surface drains, or temporary drains. Material for backfill or for protection of excavation in public roads from surface drainage shall be neatly placed and kept shaped so as to cause the least possible interference with public travel. Free access must be provided to all fire hydrants, water valves, meters, private drives, roads or existing access routes. Adequate barricades and lighting shall be provided by Owner to protect all persons from said open excavations.

1.06 SELECTED MATERIAL FOR PIPE BEDDING AND PIPE ZONE

Selected material for pipe bedding and pipe zone backfill shall be selected native material free from clods, sticks, vegetation, chunks of asphalt paving, or other deleterious materials and shall be free of rocks or stones which are larger than 3/4-inch in greatest dimension.

1.07 SAND

If sand is to be used for pipe bedding or pipe zone, it shall be free from foreign materials such as rocks, sticks, vegetation, etc., and shall meet the following gradation:

<u>Sieve Size</u>	<u>Percentage Passing (By Weight)</u>
3/8-inch	100
No.47	5 - 100
No. 30	12 - 50
No. 100	5 - 20
No. 200	0-10

1.08 AGGREGATE FOR PIPE BEDDING FOUNDATION

If aggregate is required for pipe bedding foundation, it shall be No. 67 crushed aggregate as defined by ASTM D 448 and shall be free from foreign and organic matter.

1.09 OBSTRUCTIONS

All underground improvements may or may not be shown on the plans. The Owner and his Contractor shall preserve and protect any such improvements whether shown on the plans or not. Where it is necessary to remove and replace or to relocate such improvements in order to prosecute the work, they shall be removed, maintained in operation, and permanently replaced by the Owner at his expense.

1.10 COMPACTION TESTS

Compaction shall be tested in accordance with the methods specified by the ASTM D1557 when the Inspector and/or Engineer feel it is necessary. All costs associated with compaction testing shall be the responsibility of the Owner or his Contractor.

Backfill of excavations within the rights-of-way of City streets, County streets and State highways shall be done in accordance with the requirements and to the satisfaction of the Road Department of the City, County and the State Division of Highways, respectively.

The Owner or his Contractor shall make all necessary excavations for compaction tests as directed by the Inspector and/or Engineer.

1.11 CORRECTION OF FAULTY GRADES

Where excavation is inadvertently carried below subgrade and/or foundation elevations due to the Contractor's actions, suitable provision shall be made at the expense of the Contractor for adjustment of the subgrade. It shall be the responsibility of the Contractor to restore the subgrade or foundation to a condition similar to the condition existing prior to the over-excavation and be means acceptable to the Engineer.

1.12 CLEARING AND GRUBBING

All trees, brush, roots and other perishable and objectionable material shall be removed from the project.

The ground surface of all areas where material is to be excavated or where embankments, stockpiles, fills or structures are to be placed, shall be cleared of all vegetation and rubbish, and all brush, roots and tree roots shall be grubbed and removed from such areas. All cleared and grubbed areas shall be maintained free from vegetal growth.

Organic material from clearing and grubbing operations will not be incorporated in pipe backfill.

1.13 DEWATERING

The Contractor shall provide and maintain at all times during construction ample means and devices with which to promptly remove and properly dispose of all water from any source entering the excavations or other parts of the work. Dewatering shall be accomplished by methods which will ensure a dry excavation and preservation of the final lines and grades of the bottoms of excavations. Said methods may include well points, sump pumps, suitable rock or gravel placed below the required bedding for drainage and pumping purposes, temporary pipelines and other means, all subject to the approval of the Engineer.

Dewatering for structures and pipelines shall commence when groundwater is first encountered and shall be continuous until such times as water can be allowed to rise in accordance with the provisions of this section. No concrete footings or floors shall be laid in water nor shall water be allowed to rise over them until the concrete or mortar has set at least eight hours. Water shall not be allowed to rise unequally against walls for a period of 28 days.

Water from the work shall be disposed of in a suitable manner without damage to adjacent property. No water shall be drained into work built or under construction without prior consent of the Engineer. Water shall be disposed of in such a manner as not to be a menace to the public health.

PART 2 PIPELINE AND TRENCH EARTHWORK

2.01 GENERAL

Work in connection with pipeline and trench earthwork shall include but not be limited to any or all of the following described operations: clearing; excavation of all classes and of whatever substance encountered; backfilling; fine grading; preparation of right-of-way; subgrade for pipe and structures; and paving and performing any other similar, incidental, or appurtenant earthwork operation which may be necessary to properly complete the work indicated.

2.02 EXCAVATION FOR PIPE TRENCHES

Trenches for pipelines shall be excavated to the lines and grades shown on the drawings, as provided in these specifications.

2.03 TRENCH WIDTH

The overall trench width shall not be more than 16 inches or less than 12 inches wider than the largest outside diameter of the pipe to be laid therein, measured at a point 12 inches above the top of the pipe. Excavating and retrenching shall be true to line so that a clear space of not more than 8 inches or less than 6 inches in width is provided on each side of the largest outside diameter of the pipe in place. For the purpose of this article, the largest outside diameter shall be the outside diameter of the bell, on bell and spigot pipe, and outside diameter of coupling for sleeve coupling pipe.

Where the trench width, measured at a point 6 inches above the top of the bell or sleeve of the pipe is wider than the maximum set forth above, the trench area around the pipe shall be reworked to restore a trench condition acceptable to the Engineer. The reworking may result in one or more of the following operations, subject to the approval of the Engineer: (1) Shaping the bottom of the trench to fit the pipe; (2) Placing sand around the pipe and to a point 6 inches above the top of

the pipe; (3) Lowering the grade of the pipe until the trench condition can be met; (4) Installing a concrete cradle for the pipe; and (5) Providing concrete encasement for the pipe to a point 3 inches above the top of the pipe.

2.04 LIMIT OF EXCAVATION

Except by special permission of the Engineer, the maximum length of open trench shall not exceed 600 feet in the aggregate at anyone location including excavation, construction, pipe laying and backfilling. In addition, at locations where access may be somewhat limited, requiring rerouting of traffic unnecessarily, the Engineer may reduce the maximum length of open trench permitted.

2.05 TRENCH BOTTOM FOR PIPE

The trench bottom shall be graded to provide a smooth, firm foundation at every point throughout the length of the pipe.

The trench shall be excavated to the established grade line of the outside bottom of the pipe. The bottom of the trench shall be scarified to a minimum depth of 3 inches below the bottom of the pipe and uniformly graded to produce a firm but yielding subgrade which will provide uniform support of the pipe along the full length of each section. The bedding materials so prepared throughout a minimum depth of 3 inches shall meet the requirements of Section 1.06 of these Standard Specifications.

If it becomes necessary to excavate below the established grade line in order to remove boulders or other interfering objects, the voids shall be filled with material meeting Section 1.06 requirements densified in the manner specified for bedding materials.

Where excavation is in rock, hardpan, shale, or other similar hard and unyielding materials, the trench shall be excavated to a depth at least 6 inches below the established grade line of the outside bottom of the pipe and filled with material as specified in Section 1.06 to grade line. The subgrade shall then be completed as previously stated. The material so placed shall be compacted to 90% relative compaction.

When excavation is in soft, unstable or excessively wet material which is unsuitable as a foundation for the pipe, such material shall be removed as directed by the Engineer and replaced with aggregate (Section 1.08) to a depth approximately 3 inches below the grade line. The subgrade shall then be completed to the underside of the pipe using trench side native material if suitable, or imported sand if so directed by the Engineer.

At each joint in the pipe, the bottom of the trench shall be recessed in such a manner as to relieve the bell of the pipe or the pipe coupling of all load and to ensure continuous bearing along the pipe barrel upon the bedding material.

2.06 TRENCH BACKFILL

All trenches shall be backfilled after pipe, fittings and appurtenances have been installed. Whenever a relative compaction requirement value is specified herein, it shall be a percentage of the maximum density as determined hereafter. Optimum moisture content and maximum density shall be determined in accordance with ASTM D 1557 and density of soil in place shall be determined using methods approved by the Engineer.

All wood and waste material shall be removed from excavation preparatory to backfilling. Backfilling material shall be approved in all cases by the Engineer and shall be free of trash, wood, large rock, or other objectionable debris. Backfilling shall include the refilling and compaction of the fill in trenches of excavations up to the subgrade of the street or to the existing ground surface.

2.07 PIPE BEDDING

The pipe shall be carefully bedded during initial pipe zone backfill operations by hand placing, slicing with a shovel and tamping or "walking in" the material under the lower sector of the pipe to produce firm support for the full length of the barrel with full bearing on said bottom segment of the pipe equal to a minimum of five-tenths of the outside diameter of the barrel.

2.08 PROCEDURE AT PIPE ZONE

Subsequent backfill in the pipe zone shall consist of placing material as specified in Section 2.06 simultaneously on each side of the pipe for the full width of the trench and compacting said material to a relative compaction of 90% within the limits of the pipe zone. The pipe zone shall be considered to extend 12 inches above the top of the outside diameter of the pipe.

The pipe shall be carefully bedded by hand placing and compacting selected backfill material or clean imported sand as provided herein from the pipe foundation and/or subgrade to the springline for the pipe prior to backfilling above the pipe within the "pipe zone". Clean imported sand shall be used for the pipe bedding when excavated materials are not suitable for pipe bedding or required by the detail plans.

The pipe bedding, using either selected material or clean imported sand, shall be compacted by approved methods to a relative compaction of 90%. The pipe bedding backfill shall be brought to optimum moisture content and shall be placed in layers not exceeding 6 inches in thickness and each layer shall be solidly tamped with the proper tools so as not to injure, damage or disturb the pipe. Backfilling shall be carried on simultaneously on each side of the pipe to assure proper protection of the pipe. Water settling for compaction may be approved by the Engineer in the event the foundation and bedding materials are sufficiently granular and sandy in nature that the required compaction will be obtained.

Where pipe is not very deep and the pipe zone extends into the street zone, that portion of the pipe zone within the street zone shall be compacted as set forth in Section 2.11, Procedure at Street Zone, of these Standard Specifications.

2.09 PROCEDURE ABOVE PIPE ZONE

The remaining portion of the trench to within 2-1/2 feet of the finished roadway surface or ground surface, as the case may be, shall be backfilled, compacted and/or consolidated by approved methods to obtain a relative compaction of 90%. Backfilling may be done with native trench side material except that no oil cake, bituminous pavement, concrete, rock or other lumpy material shall be used in the backfill, unless these materials are scattered and do not exceed 3 inches in any dimension. Material or perishable, spongy, or otherwise improper nature shall not be used in backfilling and no material greater than 3 inches in any dimension shall be placed within 1 foot of any pipe, manhole or structure.

2.10 COMPACTION IN OPEN FIELDS

In open fields, where paving or structures will not be above the excavated area, backfill and compaction as specified in Section 2.09 hereinbefore shall extend to the top of the trench, leaving the top slightly mounded.

2.11 PROCEDURE AT STREET ZONE

The top 2-1/2 feet of the trench within roadbed area shall be compacted in horizontal layers not exceeding 8 inches in thickness, using approved hand, pneumatic or mechanical type tampers to obtain a relative compaction of 95% with a moisture content within 2% of optimum. Flooding and jetting will not be permitted within roadbed areas. Compaction requirements in the street zone may be modified by the backfill requirements of other government agencies in areas where these agencies have jurisdiction.

The roadbed area as used herein shall be considered as extending two feet beyond the curbs, gutters or paved shoulders.

From existing street grade to 2-1/2 feet below street grade, the material for backfill may contain stones ranging in size up to 2 inches in diameter in quantity, but not exceeding 20% of the volume where said coarse materials are well distributed throughout the finer material and the specified compaction can be obtained.

2.12 EXCESS EXCAVATED MATERIAL

All surplus material not required for backfill shall be disposed of by the Owner outside the limits of the public right-of-way and/or easements.

No excavated material shall be deposited on private property, unless written permission is secured by the Contractor. Before the Owner will accept the work as being completed, the Contractor shall file a written release signed by all property owners with whom he has entered into agreements for disposal of excess excavated material, absolving the District from any liability connected therewith.

2.13 IMPORTED PIPE BACKFILL MATERIAL

Whenever the excavated material is not suitable for backfill, in the opinion of the District, suitable imported material shall be by the Owner at his expense.

PART 3 STRUCTURES EARTHWORK

3.01 GENERAL

Structure excavation shall include the removal of all material of whatever nature necessary for the construction of structures and foundations in accordance with the plans and Standard Specifications.

The sides of excavation for structures where all vertical surfaces are formed shall be sufficient to leave at least 2 feet in the clear as measured from the extreme outside of formwork or the structure, as the case may be. Where excavation is inadvertently carried below designated elevations, suitable provision shall be made for adjustment of construction, as directed by the Engineer, to meet requirements incurred by the deeper excavation beneath structures, and overdepth

excavation in such locations shall be rectified by backfilling with sand, graded gravel, or concrete as directed by the Engineer. All overdepth excavation for footings shall be backfilled with Class C concrete.

3.02 SUBBASE FOR STRUCTURES

Where required and as approved by the District, a crushed rock subbase shall extend from firm ground undisturbed by construction operations to the structure base slab for all concrete structures. Any remaining disturbed or loose material shall be removed before the crushed rock subbase is placed. The subbase shall be compacted to the specified compaction, 90% minimum or as approved by the District, by means of a vibratory compactor.

3.03 SUBBASE MATERIALS

Mineral aggregate shall conform with the following gradation requirements:

<u>Sieve Size</u>	<u>Percentage Passing Sieves</u>
3/4-inch	90 - 100
No.4	40 - 60
No. 30	13 - 23
No. 200	0-2

3.04 BACKFILLING

After completion of foundation footings and walls of the structure and of other construction below the elevation of the final grade and prior to backfilling, all forms shall be removed, and the excavation shall be cleared of debris. Backfilling shall not be commenced until the structure and excavation involved shall have been inspected and approved by the Engineer. Material for backfilling shall consist of selected excavation material, imported sand, gravel or other material approved by the Engineer and shall be free of trash, lumber or other debris. No material of a perishable or spongy nature and no stone or piece of rock greater than 4 inches in the greatest dimension shall be used in backfilling.

Compaction shall be obtained by means of mechanical tamping. Backfill of excavated material shall be placed in horizontal layers not exceeding 9 inches in thickness and shall have a moisture content such that the required degree of compaction may be obtained. Each layer shall be compacted by hand or machine tampers or by other suitable equipment or means to the specified relative compaction.

Where backfill or fill is against only one side of a concrete structure, no fill shall be placed until the concrete in place has obtained an acceptable seven-day strength based upon a concrete cylinder test, unless otherwise directed by the Engineer.

Particular care shall be exercised when backfilling at the various structures to obtain adequate compaction beneath pipes connected thereto and to avoid injury or displacement of such pipes or projections of the structure.

STANDARD SPECIFICATIONS
FOR
GRAVITY SEWER PIPE AND FITTINGS

PART 1 GENERAL DESCRIPTION

These specifications include the requirements for furnishing, installing and testing Polyvinyl Chloride (PVC) sewer gravity flow pipe, fittings and appurtenances of the dimensions and to the lines and grades as shown on the plans and herein specified or as covered under the contract. Pipe of other material may be installed when in the opinion of the District polyvinyl chloride pipe would not be suitable for the intended purpose. Approval must first be received from the District to use other materials and shall be installed according to requirements specified by the Engineer. Pipe shall not be stored on the roadways or parkway of residential streets for more than ten days or upon business streets for more than three days.

All materials shall be new and undamaged. Unless otherwise approved by the Engineer, the same manufacturer of each item shall be used throughout the work.

Where reference is made to an American National Standards Institute (ANSI), American Society of Testing Materials (ASTM), or American Water Work Association (AWWA) designation, it shall be the latest revision at the time of construction, except as noted on the plans or special provisions of the plans.

PART 2 PRODUCTS

2.01 Polyvinyl Chloride (PVC) Pipe and Fittings

Pipe and fittings shall be JM Ring-Tite PVC gravity sewer pipe, or equal. All PVC sewer pipe and fittings shall conform to ASTM specification D-3034 for SDR35 and shall be made of materials conforming to the ASTM designation D-1784 Type 1, Grade 1, for rigid PVC compounds. The resistance to acids and other reagents shall be established in accordance with ASTM D-543.

An integral part of the pipe section, the bell and spigot pipe joint, shall be used with a "locked-in" twin rubber sealing ring meeting the requirements of ASTM D-3212 and installed as recommended by the manufacturer.

2.02 Pipe stiffness values for PVC

<u>Pipe Size</u>	<u>Pipe Stiffness/ IcPA (psi)</u>
4"	320 (46)
6 – 15"	320 (46)

PART 3 EXECUTION

3.01 EXCAVATION AND BACK FILL

Excavation and backfill, including the pipe bedding, shall conform to provisions of the Standard Specifications for Earthwork.

3.02 IDENTIFICATION MARKS

All pipe or fittings shall be clearly marked with the name of the manufacturer or with a trademark of a size and type.

3.03 LAYING OF PVC

Trenches shall be kept free of water during the laying operation. All pipe shall be laid without break, upgrade from structure to structure, with the socket (bell) ends of the pipe upgrade. Pipe shall be laid to the line and grade as shown on the plans and in such a manner as to form a close concentric joint with the adjoining pipe and prevent sudden offsets of the flow line. The interior of the sewer pipe shall be cleaned of all dirt and superfluous materials of all description as the work progresses. The provisions of Standard Specifications for earthwork shall apply to the installation of the pipe.

3.04 PREVENTING FOREIGN MATTER FROM ENTERING THE PIPE

At times when the pipe laying is not in progress, the open end of the pipe shall be closed with a tight-fitting cap or plug to prevent the entrance of foreign matter into the pipe. These provisions shall apply during the noon hour as well as overnight. In no event shall the sewers be used as drains for removing water which has infiltrated into the trenches.

PART 4 TESTS FOR LEAKAGE AND INFILTRATION

It is the intent of these Standard Specifications that the completed sewer pipes of all types, along with manholes and other appurtenances, shall be watertight. Each section of sewer between two successive manholes shall be tested for leakage and/or, at the option of the Inspector and/or Engineer, for infiltration. Where groundwater is encountered, the infiltration test shall also be made.

Even though a section may have previously passed the leakage or infiltration test, each section of sewer shall be tested subsequent to the last backfill compacting operation in connection therewith, wherein, in the opinion of the Inspector and/or Engineer, heavy compaction equipment of any of the operations or may have damaged or affected the required watertight integrity of the pipe, structure and appurtenances. The Owner or his Contactor shall furnish all materials required for the tests and bear all costs in connection therewith. Tests shall be made in the presence of the Inspector and/or Engineer.

If the leakage and/or infiltration rate, as shown by the tests specified herein, is greater than the amount specified, the pipe joints shall be repaired or, if necessary, the pipe shall be removed and relaid, at the Owner's expense. The sewer will not

be considered acceptable until the leakage and/or infiltration rate, as determined by test, is less than the allowable.

4.01 LEAKAGE TEST

The Owner may, at his option, air test or water test for leakage, except where the difference in elevation between the invert of the upper structure and the invert of the lower structure is more than 10 feet where the air test shall be made.

Water Test: Each section of sanitary sewer between two successive structures shall be tested by closing the lower end of the sewer to be tested and the inlet sewer of the upper structure with plugs or stoppers and filling the pipe and structure with water to a point 4 feet above the invert of the open sewer in the upper structure or to a height of 10 feet above the invert of the sewer in the lower structure, whichever gives the least hydrostatic pressure on the lower structure.

The total leakage shall be the decrease in volume of water in the upper structure. The leakage shall not exceed 0.1 gallon per minute per inch of nominal diameter of pipe per 1,000 feet of sewer pipe being tested. The length of building sewers shall not be used in computing the length of sewer main being tested.

If the leakage, as shown by the test, is greater than allowed, the pipe shall be overhauled and, if necessary, replaced and relaid until the joints and pipe shall hold satisfactorily under this test. All tests must be completed before street or trench is resurfaced, unless otherwise determined by the Inspector and/or Engineer. The Owner shall furnish all labor and materials for making the tests required at his own expense.

Air Test Procedure: Each section of sewer between two successive manholes shall be tested by plugging all pipe outlets with suitable test plugs. Air shall be slowly added until the internal pressure is raised to 4.0 pounds per square inch gage (psig). The compressor used to add air to the pie shall have a blowoff valve set at 5 psig to ensure that at no time the internal pressure in the pipe exceeds 5 psig. The internal pressure of 4 psig shall be maintained for at least two minutes to allow the air temperature to stabilize, after which the air supply shall be disconnected and the pressure allowed to decrease to 3.5 psig. The time in minutes that is required for the internal air pressure to drop from 3.5 psig to 2.5 psig shall be measured and the results compared with the values tabulated below:

Pipe Diameter. (Inches)	Test Time (Minutes), (Seconds)	Minimum Distance Between Manholes (Feet)	K Value
8	3, 46	320	0.704
10	4, 43	260	1.10
12	5, 40	215	1.58
15	7, 5	170	2.47
18	8, 30	145	3.56
21	9, 55	125	4.85
24	11, 20	105	6.34

The above-tabulated values shall be used for the respective diameter pipes, except where the distance between successive manholes is less than the above tabulated values, in which case the following formula will be used to determine the test time:

$T = KL$ where: T = test time in seconds; L = distance between successive manholes in feet; and K = appropriate value from above table

If the pressure drop from 3.5 psig to 2.5 psig occurs in less time than the above-tabulated or calculated values, the pipe shall be overhauled and, if necessary, replaced and relaid until the joints and pipe shall hold satisfactorily under this test.

4.02 TEST FOR INFILTRATION

If in the construction of a section of the sewer between structures groundwater is encountered, the end of the sewer at the upper structure shall be closed sufficiently to prevent the entrance of water and pumping of groundwater shall be discontinued for at least three days after which the section shall be tested for infiltration. The infiltration shall not exceed 0.1 gallon per minute per inch of diameter per 1,000 feet of main line sewer being tested and does not include the length of lateral sewers entering that section. Where any infiltration in excess of this amount is discovered before completion and acceptance of the sewer, the sewer shall be immediately uncovered and the amount of infiltration reduced to a quantity within the specified amount of infiltration, before the sewer is accepted, at the expense of the Owner. Should, however, the infiltration be less than the specified amount, the Owner or his Contractor shall stop any individual leaks that may be observed when ordered to do so by the Inspector and/or Engineer. The Owner shall furnish all labor and materials for making the tests required at his own expense. All tests must be completed before street or trench is resurfaced, unless otherwise determined by the Inspector and/or Engineer.

4.03 TESTS FOR ALIGNMENT AND GRADE, AND DAMAGED OR DEFECTIVE PIPE IN PLACE

After the pipe has been installed, tested for leakage and/or infiltration, backfilled to existing grade, manholes raised to grade and resurfaced, the pipe shall be "balled" from manhole to manhole with a sewer scrubbing ball of type and size to be approved by the Inspector and/or Engineer. In addition to and after balling the pipe, all straight sewers and inlet/outlet ends of curvilinear sewers shall be "mirrored" by the Inspector and/or Engineer with the assistance of the Owner or his Contractor. All balling and mirroring shall be done in the presence of the Inspector and/or Engineer and shall constitute tests for alignment, grade, damaged or defective pipe in place, or any other type of faulty installation. Should balling and mirroring indicate any faulty installation of the pipe, repairs or replacements shall be made at the Owner's expense, as determined by the Inspector and/or Engineer.

PART 5 CONNECTING TO EXISTING SEWER FACILITIES AND
TEMPORARY SEWAGE DIVERSION

Connections to the existing sewers shall be made at the locations and in accordance with the plans and these Standard Specifications and/or as covered by the contract.

The Inspector and/or Engineer shall be given notice in writing at least 72 hours in advance of the date on which he intends to start work on any portion of the connection to the existing sewer facilities. No work of a nature that would interfere with the operation of the work of a nature that would interfere with the operation of the existing sewer facilities will be permitted until all materials, equipment, labor and supervision as determined by the Inspector and/or Engineer necessary for the orderly prosecution of the work are at the site. All of the work at a connection to existing sewer facilities must be accomplished during the period and at the time and day established by the District Manager.

Existing sewers shall be cut and plugged, sections removed, connected to manholes or new sewers, plugs removed, cleanouts removed, and all other work of whatever nature in connection therewith as the case may be. Any damage to existing sewers shall be repaired to the satisfaction of the Inspector and/or Engineer.

Certain work in connection with tying into existing sewers and manholes may require the temporary handling of sewage either by pumping, bulkheading at low flows or other means to be approved by the Inspector and/or Engineer. Sewage so diverted shall be handled in a manner so as not to create a public nuisance or health hazard. Sewage flow in existing sewer lines will be maintained until a new line is completed.

STANDARD SPECIFICATIONS
FOR
PRESSURE SEWER PIPE AND FITTINGS

PART 1 GENERAL DESCRIPTION

These specifications include the requirements for furnishing, installing and testing Polyvinyl Chloride (PVC) sewer force main pipe, fittings and appurtenances of the dimensions and to the lines and grades as shown on the plans and herein specified or as covered under the contract. Pipe of other material may be installed when in the opinion of the District polyvinyl chloride pipe would not be suitable for the intended purpose. Approval must first be received from the District to use other materials and shall be installed according to requirements specified by the Engineer and per the manufacturer's recommendations. Pipe shall not be stored on the roadways or parkway of residential streets for more than ten days or upon business streets for more than three days.

All materials shall be new and undamaged. Unless otherwise approved by the Engineer, the same manufacturer of each item shall be used throughout the work. Where reference is made to an AWWA designation, it shall be the latest revision at the time of construction, except as noted on the plans or special provision of the plans.

Pressure sewer mains shall be laid so that no high point exists except at the discharge manhole or an air release assembly, unless otherwise approved by the Engineer. Valves with "O" ring seals shall be set vertically and shall be opened and shut under pressure to check operation without leakage. Two-piece cast iron valve boxes shall be set as directed by the Engineer.

PART 2 PRODUCTS

2.01 PVC (POLYVINYL CHLORIDE) PIPE AND DUCTILE IRON FITTINGS

PVC pipe shall be unplasticized polyvinyl chloride pressure class pipe with integral bell and spigot joints or gasketed separate couplings for the conveyance of water/wastewater and other fluids. Solvent cement joints shall not be used. PVC class water/wastewater pipe shall be Certaineed "VINYL iron," JohnsManville "Blue Brute," or owner approved equal. The pipe shall meet the requirement of AWWA C900 Polyvinyl Chloride (PVC) Pressure Pipe, 4-inch through 12-inch, latest edition. The pipe shall be made to cast iron pipe O.D.'s. All pipe shall be minimum pressure Class 150, DR18.

All pipe shall be suitable for use as pressure conduit. Provision must be made for expansion and contraction at each joint with a rubber ring. The bell shall consist of an integral wall section with a solid cross-section elastomeric ring which meets the requirements of ASTM 01869, and E-477.

Standard laying lengths shall be 20 feet (+1 inch) for all sizes. Random lengths shall not be less than 10 feet in length. At least 85 percent of each class and size of pipe furnished shall be standard laying length.

Fittings for PVC shall meet the requirements for short body Class 250 fittings of the "American National Standard for Gray-Iron and Ductile Iron Fittings," ANSI Standard A21.10 (AWWA C100). All flanged fittings shall conform to American Standards Association, Inc. (ASA) Standard B-16.1, Class 125 flanges. Use of short-short body fittings will not be allowed.

All fittings shall have an outside bituminous coating. The insides shall have a cement mortar lining and have a bituminous seal coating over the cement mortar lining per AWWA C104 (ANSI A21.4). Any damage to the protective coating of fittings shall be carefully repaired by the Contractor with coal tar pitch varnish to the satisfaction of the District.

Requirements for fittings, pipe embedment, thrust, anchorage, and installation shall comply with AWWA C-900.

2.02 PRODUCT MARKINGS

The pipe shall be legibly marked at 5-foot intervals with the following information: nominal diameter, outside diameter, material code, dimension ratio, AWWA designation, and the seal of the testing agency that verified the suitability of the material for its intended use.

PART 3 EXECUTION

3.01 EXCAVATION AND BACKFILL

Excavation and backfill, including the pipe bedding, shall conform to provisions of the Standard Specifications for Earthwork.

3.02 HANDLING

Care shall be taken during transportation of the pipe such that it will not be cut, kinked or otherwise damaged.

Ropes, fabric or rubber protected slings and straps shall be used when handling pipes. Chains cables or hooks inserted into the pipe end shall not be used. Two lines spread apart shall be used for lifting each length of pipe. Pipe or fittings shall not be dropped onto rocky or unprepared ground.

Pipe shall be stored on level ground, preferably turf or sand, free of sharp objects which could damage the pipe. Stacking of the PVC pipe shall be limited to a height that will not cause excessive deformation of the bottom layer of pipes under anticipated temperature conditions. Where necessary due to ground conditions the pipe shall be stored on wooden sleepers, spaced suitably and of such width as not to allow deformation of the pipe at the point of contact with the sleeper or between supports. The handling of PVC pipe shall be in such a manner that the pipe is not damaged by dragging it over sharp and cutting objects.

3.03 LAYING PIPE

Installation of pipes and fittings shall be performed in accordance with the pipe manufacture's recommendations as to equipment and technique. Care shall be exercised when lowering pipe into the trench to prevent damage or twisting of the pipe. Trenching, backfilling and compaction shall conform to Standard Specifications, Earthwork.

PART 4 HYDROSTATIC TESTING

All hydrostatic testing shall be performed by an independent certified District-approved testing company, who will be required to provide the District with certified testing

results. Testing company shall provide gauges and meters which have been calibrated and certified annually. Pressure and leakage testing shall be performed in accordance with the applicable requirements of ANSI/AWWA C600 and as specified herein.

All labor, materials, tools, and equipment for testing shall be furnished by the Contractor. The test shall not be conducted against a closed valve. Ends of each test section, open ends of pipes, and fittings shall be suitably closed.

Prior to hydrostatic testing, all pipelines shall be flushed or blown out using a flushing ball or Pig as appropriate. The Contractor shall test all pipelines either in sections or as a unit. No section of the pipeline shall be tested until all field-placed concrete or mortar has attained an age of 14 days. The test shall be made by placing temporary bulkheads in the pipe and filling the line slowly with water. Test bulkheads, and other appurtenances shall be located and installed in a manner to provide air gap separation between existing potable water pipelines and the pipeline being tested. The Contractor shall be responsible for ascertaining that all test bulkheads are suitably restrained to resist the thrust of the test pressure without damage to, or movement of, the adjacent pipe. Any unharnessed sleeve-type couplings, expansion joints, or other sliding joints shall be restrained or suitably anchored prior to the test, to avoid movement and damage to piping and equipment. The Contractor shall provide sufficient temporary air tapplings in the pipelines to allow for evacuation of all entrapped air in each pipe segment to be tested. After completion of the tests, such taps shall be permanently plugged. Care shall be taken to see that all air vents are open during filling.

The pipeline shall be filled at a rate which will not cause any surges or exceed the rate at which the air can be released through the air valves at a reasonable velocity and all the air within the pipeline shall be properly purged. The pipeline shall be filled at a rate such that the average velocity of flow is no greater than 1 fps. At no time shall the maximum velocity of flow exceed 2 fps. All air should be purged from the pipeline before checking for leaks or performing pressure tests on the system. To accomplish this, if air valves or hydrants or other outlets are not available at high points, taps shall be made to expel the air, and these taps shall be tightly plugged after testing. After the pipeline or section thereof has been filled, it shall be allowed to stand under a slight pressure for at least 72 hours to allow the mortar lining (where applicable), to absorb water and to allow the escape of air from any air pockets. During this period, bulkheads, valves, and connections shall be examined for leaks. If leaks are found, corrective measures satisfactory to the District shall be taken. If a large quantity of water is required to increase the pressure during testing, entrapped air, leakage at joints, or a broken pipe may be suspected TESTS SHOULD BE DISCONTINUED until the source of trouble is identified and corrected.

For the hydrostatic and leakage test, the pipeline shall then be brought up to the test pressure specified and this pressure shall be maintained on the section under test for a period of not less than eight hours. The test pressure for sewer forcemains shall be 1.25 times greater than the maximum working pressure as indicated by pipe class shown on the drawings measured at the lowest point of the pipeline section being tested. All visible leaks shall be repaired in a manner acceptable to the District.

If additional water is required to maintain the test pressure during the test period, then leakage of the system is occurring. The faulty work shall be located and corrected and the test repeated. The work shall be restored, and all damage resulting from leaks repaired. All unacceptable leakage shall be eliminated.

The maximum allowable leakage for sewer forcemains shall be 10 U.S. gallons per inch of diameter per mile of pipe per 24 hours for pipe with 40-ft or greater lengths between joints and with rubber-gasketed joints and 20 U.S. gallons per inch of diameter per mile of pipe per 24 hours for pipe with 20-ft or less lengths between joints and with rubber-gasketed joints. Pipe with welded joints shall have no leakage. In the case of pipelines

that fail to pass the prescribed leakage test, the Contractor shall determine the cause of the leakage, shall take corrective measures necessary to repair the leaks, and shall again test the pipelines.

After satisfactory test, water shall be drained, test bulkheads and other test facilities removed, and pipe coatings restored.

PART 5 CONNECTING TO EXISTING SEWER FACILITIES AND TEMPORARY SEWAGE DIVERSION

Connections to the existing sewers shall be made at the locations and in accordance with the plans and these Standard Specifications and/or as covered by the contract.

The Inspector and/or Engineer shall be given notice in writing at least 72 hours in advance of the date on which he intends to start work on any portion of the connection to the existing sewer facilities. No work of a nature that would interfere with the operation of the work of a nature that would interfere with the operation of the existing sewer facilities will be permitted until all materials, equipment, labor and supervision as determined by the Inspector and/or Engineer necessary for the orderly prosecution of the work are at the site. All of the work at a connection to existing sewer facilities must be accomplished during the period and at the time and day established by the District Manager.

Existing sewers shall be cut and plugged, sections removed, connected to manholes or new sewers, plugs removed, cleanouts removed, and all other work of whatever nature in connection therewith as the case may be. Any damage to existing sewers shall be repaired to the satisfaction of the Inspector and/or Engineer.

Certain work in connection with tying into existing sewers and manholes may require the temporary handling of sewage either by pumping, bulkheading at low flows or other means to be approved by the Inspector and/or Engineer. Sewage so diverted shall be handled in a manner so as not to create a public nuisance or health hazard. Sewage flow in existing sewer lines will be maintained until a new line is completed.

STANDARD SPECIFICATIONS
FOR
LATERAL SEWERS

PART 1 GENERAL

Lateral sewers shall be constructed of the type and size and at the locations shown on the plans and/or permit and in conformance with these Standard Specifications.

PART 2 MATERIALS AND WORKMANSHIP

2.01 EARTHWORK

Earthwork for lateral sewers shall conform to the provisions of the Standard Specifications for Earthwork.

2.02 QUALITY OF PIPE AND FITTINGS

All lateral sewers and fittings shall be constructed of PVC sewer pipe and shall conform in all respects to the provisions of the Standard Specifications for PVC Sewers and Fittings.

2.03 SIZE OF PIPE

Lateral sewers shall be not less than 4 inches internal diameter. If the number of persons to be served is more than 10, a pipe size not less than 6 inches in diameter shall be installed.

2.04 DEPTH OF PIPE

Lateral sewers shall be placed at such depth to give a minimum of 48 inches of cover to the top of the bell at the property line or to edge of the easement. A minimum of 12 inches of clearance shall be maintained at all times between the lateral sewer and any domestic water pipe.

2.05 CONSTRUCTION

Lateral sewers and "wye" branch fittings shall be of the diameter and of the form shown on the plans.

"Wye" branch fittings for lateral sewers shall be installed as may be designated on the plans or as covered by the permit. Each "wye" branch fitting shall have its barrel diameter equal to the diameter of the sanitary sewer main and the spur (or branch) diameter as indicated on the plans. The spur pipe of "wye" branch fittings shall be inclined at an angle of 45 degrees from a horizontal line and shall be supported with compacted clean sand, crushed rock or other material approved by the Inspector and/or Engineer in accordance with the details shown on the plans. All "wye" branch fittings that are to be left unconnected shall be plugged with a District-approved watertight stopper equal in diameter to the outside of the pipe barrel and affixed securely in place.

PART 3 SPECIAL REQUIREMENTS

3.01 LOCATION OF LATERAL SEWERS

The location of each shall be marked at its upper end by marking a letter "S" 1-1/2-inches high on the top of the curb. If the terminal point of the sewer lateral is more than 8 feet beyond the curb line or curb improvements do not exist, the 1/2" steel rebar shall be furnished and installed at the end of the lateral sewer in conformance with the detail drawings.

3.02 PRESERVATION OF PROPERTY

Any and all damage to improvements, whether in private property or public right-of-way, which occurs as a result of the Owner or his Contractor's operations in connection with the installation of lateral sewers shall be repaired and/or restored to the original condition to the satisfaction of the Inspector and/or Engineer. Improvements shall include but not limited to curbs, gutters, paving, driveways, lawns, shrubs, trees, fences, retaining walls and any or all improvements. This provision shall apply whether such obstructions are shown on the plans or not.

3.03 TESTING

All piping of lateral sewers shall be tested in accordance with the Standard Specifications for Gravity Sewer Pipe and Fittings and in the presence of the Inspector and/or Engineer before the line is backfilled and before the final Certificate of Inspection is issued.

If the lateral sewer has been previously tested prior to the last backfill operation such as an installation and compaction of a crossing waterline, the lateral shall be retested.

All openings in the pipe shall be tightly closed except at the highest point and the piping filled with water; but all parts of its length shall be tested with not less than a 4-foot head of water. All dead ends shall be relieved of air during the process of filling. Under this test condition, the water pressure shall remain constant without showing any addition of water or showing any leaks. The Owner shall furnish all materials for making the tests required at his own expense under the direction of the Inspector and/or Engineer.

STANDARD SPECIFICATIONS
FOR
BUILDING SEWERS

PART 1 GENERAL

Building sewers shall be constructed of the type and size and at the locations shown on the plans and as covered by the permit and in conformance with these Standard Specifications. The term "building sewer" is used in these Standard Specifications and on the plans, permit and Standard Drawings to designate the sewer line extending from the foundation outside the building to and including its connection with the lateral sewer at the property line including all necessary fittings as shown on the detail drawings.

Building sewers shall be installed as specified by the most recent revision of the Uniform Plumbing Code adopted by Santa Barbara County.

PART 2 MATERIALS AND WORKMANSHIP

2.01 EARTHWORK

Earthwork for building sewers shall conform to the provisions of the Standard Specifications for Earthwork.

2.02 QUALITY OF PIPE AND FITTINGS

Building sewers shall be constructed of the following material subject to the approval of the District Manager for the specific situation:

PVC Pipe - SDR 35 (ASTM 3034)
ABS Plastic Sewer Pipe
Cast Iron Pipe - Asphaltic Coated

2.03 SIZE OF PIPE

Building sewers shall be not less than 4 inches internal diameter. If the number of persons to be served is more than ten (10), a pipe size not less than 6 inches in diameter shall be installed.

2.04 DEPTH OF PIPE

Building sewers shall not be laid less than 18 inches below ground surface in open areas, under driveways, porches and steps, whether covered or uncovered, breezeways, roofed porte-cocheres, carports, covered walks, covered driveways and similar structures or appurtenances.

PART 3 CONSTRUCTION

3.01 LAYING PIPE

All pipe shall be laid upgrade on an unyielding foundation true to line and grade and with a uniform bearing under the full length of barrel of the pipe. Bell and spigot pipe shall be laid with the bell upgrade. Suitable excavations shall be made to receive the bells or collars of the pipe. All adjustments to bring the pipe to line and grade shall be made by scraping away or filling in under the body of the pipe and not be wedging or blocking. The grade of all sewers covered by this

specification shall not be less than 1/4-inch to the foot towards the outlet except where otherwise permitted in writing by the District Manager.

3.02 ALIGNMENT

The building sewer shall leave the building in a straight and direct line to the lateral sewer or shall be run in such a manner that the house drain shall discharge into the house sewer at an angle of 45 degrees. All changes in direction shall be made by the use of 1/16 bends, 1/8 bends, or by combination fittings that have the same relative sanitary curve and any change from one size of pipe to another size shall be made by the use of a reducer.

3.03 CLEANOUTS

Cleanouts in building sewers shall be provided in accordance with the California Plumbing Code, most recent edition, as defined in the California Code of Regulations, Title 24, Part 5, and Standard Drawing S-4, "Typical Building Sewer". All cleanouts shall be maintained watertight.

3.04 JOINTS AND CONNECTIONS

Joints in PVC pipe shall conform to the provisions of the Standard Specifications for PVC Sewer Pipe and Fittings.

3.05 TESTING

All piping of building sewers shall be tested in the presence of the Inspector and/or Engineer before the line is backfilled and before the final Certificate of Inspection is issued. All openings in the pipe shall be tightly closed except at the highest point and the piping filled with water, but no part of its length shall be tested with not less than a 4-foot head of water. All dead ends shall be relieved of air during the process of filling. Under this test conditions, the water pressure shall remain constant without showing any addition of water or showing any leaks. The Owner shall at his own expense furnish all materials for making the tests required under the direction of the Inspector and/or Engineer.

3.06 PRESERVATION OF PROPERTY

Any and all damages to private property which occurs as a result of the Owner or his Contractor's operation in connection with the installation of the building sewer shall be repaired and/or restored to the original condition. Prior to final acceptance by the District, a signed release by the Owner is to be witnessed and filed with the Inspector, that all damages incurred have been restored to the original condition or repaired to his satisfaction.

STANDARD SPECIFICATIONS
FOR
SEWER CLEAN OUTS

PART 1 GENERAL

Sewer cleanouts shall be constructed at the locations as specified in these Standard Specifications and as shown on the plans.

STANDARD SPECIFICATIONS
FOR
PRECAST CONCRETE MANHOLES

PART 1 GENERAL

Precast concrete sewer manholes shall be constructed in accordance with the design, size and details and at the locations shown on the plans. The manholes shall be constructed of precast eccentric manhole units in accordance with the plans and these Standard Specifications. The precast eccentric manhole shall be used, unless otherwise specified on the plans or in the special provisions.

Manhole locations are fixed and cannot be moved to accommodate pipe manufacturing or laying. If necessary, special lengths will have to be provided to meet manhole location requirements.

PART 2 MATERIALS AND WORKMANSHIP

2.01 EXCAVATION AND BACKFILL

Excavation and backfill shall be done in accordance with the Standard Specifications for Earthwork.

2.02 CONCRETE

All concrete used in the construction of manholes shall conform to the Standard Specifications for Concrete Construction.

2.03 PRECAST MANHOLES

Precast manholes shall conform to the size, shape, form and details shown on the plans. Concrete for precast manhole units shall be Class A concrete (minimum). The precast cylinder units, the precast concrete taper sections and precast eccentric flat top sections shall meet the strength requirements for ASTM C 478. Precast manholes shall be equal in all respects to those as manufactured by Associated Concrete Products or centrifugally spun manhole units as manufactured by Ameron or approved equal. The minimum allowable steel shall be hoops of No. 4 wire to be cast into each unit at adequate places as a precautionary measure for handling. Each manhole section shall be set in a bed of grout to make a watertight joint and shall be neatly pointed on the inside and shall be set perfectly plumb. Sections of various heights shall be used in order to bring the top of the manhole ring and cover to the required elevation.

The precast concrete manhole rings shall be joined with Kent Seal.

Manhole Bases: Manhole bases shall be constructed of Class A concrete to the form and dimensions shown on the details on the plans. Said concrete shall be formed and poured on undisturbed soil and/or on gravel subbases as called for in the special provisions or shown on the plans. That portion of the base above the invert elevation of the sewer pipe shall be formed to provide a smooth channel section as shown on the plans. The forms shall be checked and approved by the District's Representative for accuracy of dimensions and relative smoothness prior to pouring the base. Channels shall vary uniformly in size and shape from inlet to outlet, if required. The manhole base shall be poured as one monolithic pour.

2.04 MANHOLE FRAMES AND COVERS

Manholes frame and cover sets of the type, size and quality as indicated in these Standard Specifications or on the plans shall be installed at the locations shown.

Castings for frame and cover sets shall conform to the requirements for gray iron castings in ASTM A48 for Class No. 30 castings. Before leaving the foundry, all castings shall be thoroughly cleaned and subjected to a hammer inspection, after which they shall be dipped twice in a preparation of asphalt or coal tar and oil applied at a temperature of not less than 290°F, nor more than 310°F, and in such a manner as to form a firm and tenacious coating. Each cover shall be ground or otherwise finished so that it will fit in its frame without rocking, and frames and covers shall be match-marked in sets before shipping to the site. Covers shall have the word "SEWER" cast thereon as shown in these Standard Specifications or on the plans. No other lettering on the topside will be permitted. Shop drawings of all manhole rings and covers shall be submitted to the Engineer for approval.

Setting Manhole Frames and Covers: The elevations at which manhole frames and covers are to be set shall conform to the requirements set forth on the plans, but in all cases shall be governed by the District's Representative in the field. Where the cover is in existing pavement or in the traveled way of the existing road shoulder, it is to be placed flush with the existing surface. Where the manhole cover falls in the existing roadside ditch or right-of-way or easement, it is to be placed approximately 9-inches above the existing ground surface or as directed by the Inspector and/or Engineer. Manhole frames shall be set at the required grade and shall be securely attached to the top precast manhole shaft unit with a grout bed and fillet as shown on the plans. After the frames are securely set in the place provided herein, covers shall be installed and all necessary cleaning and scraping of foreign materials from the frames and covers shall be accomplished to ensure a fine satisfactory fit.

2.05 DROP MANHOLES

Drop manholes shall be constructed at the location and in conformance with the details shown on the plans. Materials and construction of drop manholes shall conform in all respects to the applicable provisions of these Standard Specifications for standard precast manholes (including frames and covers), with modifications for the addition of drop inlets as set forth on the plans. The inside diameter of the drop inlet pipe shall be the same diameter as the intercepted sewer, unless otherwise noted on the plans or in these Standard Specifications.

2.06 STUBS AT MANHOLES

PVC stubs shall be furnished and installed at manholes at the locations and in conformance with details shown on the plans and as herein specified. All stubs shall be plugged with a District-approved watertight stopper as shown on the plans.

2.07 SEWER PIPE AND FITTINGS

All sewer pipe fittings, including installation at manholes, shall conform to the provisions of these Standard Specifications.

2.08 RESURFACING

Resurfacing of all excavations for construction of manholes shall conform to the applicable permits.

2.09 WATERTIGHTNESS OF MANHOLES

It is the intent of these Standard Specifications that manholes and appurtenances be watertight and free from infiltration. The adequacy of manholes and appurtenances as to watertightness shall be determined when ordered by the Inspector and/or Engineer by filling the manhole with water. When testing of the manhole is ordered, said test may be made in connection with the leakage test of the sanitary sewer. Any evidence of leakage as a result of testing shall be repaired to the satisfaction of the Inspector and/or Engineer at the sole expense of the Owner.

2.10 RAISING OF MANHOLES WITHIN SURFACED STREETS

After pavement has been completed, the Owner shall be responsible for raising manholes and raising frame and covers to finish grade as shown on the Standard Drawings within 30 days.

STANDARD SPECIFICATIONS
FOR
CONNECTIONS TO EXISTING WORK

PART 1 TEMPORARY HANDLING OF SEWAGE

Certain work in connection with tying into existing sewers and manholes may require the temporary handling of sewage either by temporary bypass lines, pumping, bulkheading at low flows, or other means to be approved by the District. Sewage so diverted shall be handled in a manner so as not to create a public nuisance or health hazard. The Owner shall be responsible for any costs related to making these connections.

PART 2 REMODELING EXISTING MANHOLES

Connections to existing manholes and to existing sewers shall be made at locations as shown on the plans. Manhole bases shall be reworked as shown on the drawings. Where an existing manhole base has to be reworked, provisions shall be made to keep pieces of concrete and debris out of the sewer. Where new flow-through channels have to be cut, they shall be cut so that the resulting section is smooth and conforms to the intended shape. Deviation from alignment and grade shall not be greater than 1/4-inch. Where holes are required in existing manhole walls for new or revamped connections, the Owner will be required to use coring-type equipment if, in the opinion of the Inspector and/or Engineer, the Contractor's method of making holes will result in excessive damage to existing manholes. The size of the hole shall have a maximum dimension of 4-inches larger than the outside diameter of the pipe. The annular space shall be filled with dry-pack mortar.

STANDARD SPECIFICATIONS
FOR
CONCRETE CONSTRUCTION

PART 1 MATERIALS AND WORKMANSHIP

All concrete construction shall conform to the provisions of Sections 40 and 90 of the State of California, Department of Transportation Standard Specifications, latest edition, except as herein modified. Unless otherwise noted on the plans or in these Standard Specifications, all concrete shall be Class A.

PART 2 CONCRETE

2.01 CLASS A

All other concrete shall be Class A containing not less than six sacks of Portland cement per cubic yard and have a minimum compressive strength of 3,000 psi in 28 days.

2.02 CLASS B

Manhole bases and thrust blocks shall be Class B concrete containing not less than five sacks of Portland cement per cubic yard and have a minimum compressive strength of 2,500 psi in 28 days.

2.03 CLASS C

Pipe cradles and cut-off walls shall be Class C concrete containing not less than four sacks of Portland cement per cubic yard and have a minimum compressive strength of 2,000 psi in 28 days.

PART 3 CONCRETE DESIGN AND MATERIALS

The Owner shall submit to the Inspector and/or Engineer for approval the design of the mix proposed for use. Said mix design shall set forth weights of cement, sand, coarse aggregate and water to be used together with a gradation analysis of sand and coarse aggregate. The source of supply of all materials entering into the mix shall also be given. The mix design and materials shall be approved by the Inspector and/or Engineer prior to placing any concrete.

PART 4 REINFORCING

Where reinforced concrete is required as shown on the plans or specified herein, reinforcing steel conforming to the applicable provisions of Sections 52 of the State of California, Department of Transportation Standard Specifications, latest edition, shall be furnished and installed.

STANDARD SPECIFICATIONS
FOR
REMOVAL AND RESURFACING OF
STREET PAVEMENT AND SURFACES

PART 1 GENERAL

Street pavement and surfaces shall be removed and replaced in all areas of construction excavation in conformance with details shown on the plans and as specified herein. Resurfacing of existing pavement and surfaces damaged or removed in connection with the construction of improvements shall conform to the provisions of permits issued by the state, county, or city agency for the work within the rights-of-way of the respective agency.

PART 2 EARTHWORK

Earthwork shall conform to the provisions of the Standard Specifications for Earthwork of these Standard Specifications.

PART 3 PAVEMENT REMOVAL

3.01 GENERAL

Street pavement or existing road surfacing shall be removed within the limits of all construction excavations prior to proceeding with excavation operations of any nature. Surplus material shall be removed as provided in the Standard Specifications for Earthwork. Prior to removal of existing surfacing, pavement cuts shall be made as shown on the plans and/or specified herein. All pavement cuts shall be neat and straight along both sides of the trench and parallel to the alignment of the pipe to provide an un-fractured and level pavement joint for bonding existing surfacing with pavement replacement. Where large irregular surfaces are removed, such trimming or cutting as hereinafter provided shall be parallel with roadway centerline or at right angles to the same. All cut edges shall provide clean, solid, vertical faces free from all loose material.

3.02 PORTLAND CEMENT CONCRETE SURFACES

Concrete pavement, including cross-gutters, curbs and gutters, sidewalks, driveways and concrete surfaces of whatever nature shall be saw cut to a minimum depth of 1-1/2-inches prior to removal in accordance with details shown on the plans or as specified herein. Said saw cut shall be made at a point approximately 1 foot beyond the edge of the trench and/or excavation. With the written permission of the Property Owner or the Governing Agency, pneumatic tools or other approved equipment may be used to cut concrete pavement prior to removal at the limits of the excavation. In such an event, the saw cut, as provided herein, shall be made after backfilling, and the additional concrete pavement shall be removed and disposed of by the Contractor prior to resurfacing.

3.03 PLANT MIX SURFACING (ASPHALT CONCRETE PAVEMENT)

Streets and alleys surfaced with asphalt concrete pavement shall be initially cut by means of pneumatic pavement cutters or other approved equipment at the limits of the trench and/or excavation prior to removal of surfacing. After backfilling the excavation, asphalt concrete pavement shall be saw cut to a minimum depth of 2

inches at a point not less than 12 inches outside the limits of excavation or the previous pavement cut (made by pneumatic tools), whichever limits are the greater.

3.04 ROAD MIXED SURFACING

Streets and alleys surfaced with road mixed surfacing shall be cut at the limits of the trench and/or excavation prior to removal of existing surfacing. Cuts may be made with pneumatic tools or other approved equipment. The extra trimming width by saw cuts prior to resurfacing will not be required.

PART 4 RESURFACING

In all streets or alleys in which the surface is removed, broken or damaged by equipment or in which the ground has caved in or settled due to the installation of the improvements, the surface shall be restored to the original grade, street structural section, and crown section by the Contractor. In the absence of specified designation on the plans, and where the street has been improved with roadway surface, base course, curb, sidewalk, or gutter, trenches or damaged sections shall be restored with the type of improvement conforming to that which existed at the time the Contractor entered upon the work. Prior to resurfacing, the existing surfacing shall be removed as provided above. All broken and jagged edges of the trench edge shall be straight. Areas to be cut shall be indicated by the Owner and no permanent pavement shall be placed until these edges have been sawed. If during the initial removal of the existing pavement a method of removal was used which disturbed the adjoining pavement or if during general construction the adjacent pavement was disturbed, then this adjoining pavement must also be removed and replaced. Disturbed or undermined cement treated base shall be removed and replaced with its equivalent aggregate base, and asphalt concrete paving above the cement treated base shall be sawed in a straight line and replaced in kind. Where irregular surfaces are to be surfaced, existing pavement shall be cut parallel to the alignment of the pipe or to the centerline of the street at the Owner's discretion. End cuts shall be perpendicular.

All work shall match the appearance of the existing improvements and finished pavement shall not deviate from existing grade by more than 1/8-inch in 10 feet and shall be free from ruts, depressions, and irregularities. Asphaltic emulsion shall be applied to the vertical faces of all asphaltic concrete pavement against which the pavement replacement materials are to be placed. The completed surface, when ready for acceptance, shall be thoroughly compacted, true to grade and cross section and shall be free from ruts, depressions and irregularities. Where the trench line is approximately parallel with the traveled way, the pavement shall be brought to the final grade with a Barber-Green paving machine or approved equal. The resulting edge of contact between the new and existing pavement of each side shall parallel the existing trench and be a straight and neat join line. New pavement shall not lap over existing pavement.

STANDARD SPECIFICATIONS
FOR
STEEL CASING PIPE

PART 1 GENERAL

Steel casing pipe shall be installed at the locations and to the lines and grades indicated on the plans or detail drawings and as herein specified. All work shall conform to the specifications and requirements of the State of California Division of Highways, County of Santa Barbara Road Department, Santa Ynez Community Services District and/or the railroad company involved. It shall be the Owner's responsibility to secure all necessary permits for start and prosecution of casing pipe installation and must submit copies to the District Manager prior to issuance of a permit.

PART 2 MATERIALS AND WORKMANSHIP

2.01 GENERAL

The equipment, materials and methods used for the construction of the complete installation of the casing pipe and the carrier pipe shall be determined by the Owner to the extent that the final and completed installation receives the approval of the Inspector and/or Engineer and is consistent with the intent of these Standard Specifications.

The Owner may present an alternate detailed proposal in lieu of the methods and materials specified herein to jack or bore casing pipe under the locations as shown on the plans. Such proposal shall be subject to the sole approval of the Inspector and/or Engineer and shall be presented sufficiently in advance of the work to allow adequate time for checking and must be in accordance with all the conditions set forth in the necessary permits.

2.02 MATERIALS

Steel casing pipe shall be butt welded of sheets conforming to ASTM Specification A 570 Commercial Grade or of plate conforming to ASTM Specification A 283. All field joints also shall be butt welded full circumference or by other means approved by the Inspector and/or Engineer. Use of a jacking band to reinforce the end of the pipe receiving the jacking thrust will be required. All joints shall be capable of resisting the jacking stresses without failure. Wall thickness of casing pipe shall be a minimum of 3/8-inch and the diameter shall be of the minimum size shown on the plans or as covered by the permit.

PART 3 INSTALLATION

3.01 GENERAL

Steel casing pipe of the minimum sizes and thickness specified herein shall be installed in place by jacking and/or boring methods, without the use of water or air at the locations shown on the plans and to grades required to install the sewer carrier pipe. Care shall be taken in placing the casing pipe so as to permit the construction of the carrier pipe to the lines and grades shown on the plans.

3.02 SEWER PIPELINE

The sewer pipelines, which are gravity flow, are designed at grades which will not permit variance from the lines and grades as shown. It shall be the Owner's responsibility for choosing a size of casing at/or above the minimum specified in order that the jacking may be done with a sufficient degree of accuracy to permit installation of the carrier pipe to the grades shown on the plans. Should voids or loss of ground occur during jacking operations, said voids shall be filled with grout consisting of a lean mixture of cement and sand.

The carrier pipe shall be supported on insulating spacers in such a manner as to relieve the pipe bells from all load and bearing. Steel casing spacers shall be as manufactured by Pipeline Seal and Insulator, Inc. or approved equal. The bands shall be 304 stainless steel 12-inches wide with 2-inch wide glass reinforced plastic runners. All fasteners shall be made of 304 stainless steel. Casing ends seals shall be Model C as manufactured by Pipeline Seal and Insulator Inc. or approved equal. End seals shall be made of 1/8-inch thick specially compounded synthetic rubber for long life and easy installation. All products shall be installed in strict conformance to manufacturer's recommendations. Joint restraints shall be used on all PVC sewer carrier pipe installed within casing pipe.

3.03 EARTHWORK AND RESURFACING

Earthwork and resurfacing shall conform respectively to the provisions for the Standard Specifications for Earthwork and Removal and Resurfacing of Street Pavement and Surfaces.

STANDARD SPECIFICATIONS
FOR
USE OF COMPLETED FACILITIES

PART 1 GENERAL

The District shall have the right upon ten (10) days written notice to the Owner and his Surety to take possession of and use any completed or partially completed portion of the work notwithstanding that the time for completing the entire work may not have expired, but such taking possession and use and assumption of maintenance of any portion of the work shall not be deemed an acceptance of any work. It is the intent of this section to provide for the District placing into operation portions of the facilities as the work progresses. It shall be mandatory upon the Owner to test and make ready for operation each section of the sewers between manholes between intersections within 14 consecutive calendar days following the completion of the pipe laying for any such section.

When the Owner has completed any section of the sewers in all respects, except for trench resurfacing, the District Manager may so notify the Owner and his Surety in writing as provided herein. After such notice has been given, the District shall have the right to place such section of the facility into service and to operate same. The Owner will be relieved of the duty of maintaining and protecting said portion of the work except for said resurfacing. When resurfacing is not required pursuant to the plans and Standard Specifications for completed portions of the work, the Owner shall be relieved of the responsibility and duty of maintaining and protecting portions of the roadway only after receiving written notice from the Inspector and/or Engineer.

However, nothing in this section shall be construed as relieving the Owner of the full responsibility for making good defective work or materials as specified in the General Conditions.

STANDARD SPECIFICATIONS
FOR
INSPECTION OF WORK

PART 1 GENERAL

All work shall be subject to inspection by appropriate District authority and shall be left open and uncovered until the installation is approved by the District.

The District shall at all times have access to the work during construction and shall be furnished with every reasonable facility for ascertaining full knowledge respecting the progress, workmanship and character of materials used and employed in the work.

The Owner shall submit a schedule to the District outlining the proposed construction operation. Whenever the Owner varies the period during which work is carried on each day, he shall give due notice to the District so that proper inspection may be provided. Any work done in the absence of the District Inspector will be subject to rejection.

No pipe, fittings or other materials shall be installed until inspected and approved by the District or its representative. All installations which are to be backfilled shall be inspected and approved by the District prior to backfilling and due notice shall be given to the District in advance of backfilling so that proper inspection may be provided.

The inspection of the work shall not relieve the Owner of any of his obligations to complete the work as prescribed by the Standard Specifications. Defective work shall be made good and unsuitable materials may be rejected notwithstanding the fact that such defective work and unsuitable materials have been previously overlooked by the District and accepted.

The District shall have the authority to suspend the work wholly or in part for such time as it may deem necessary due to the failure on the part of the Owner to carry out orders given, or to perform any provisions of the plans or Standard Specifications. The Contractor shall immediately comply with the written order of the District to suspend the work wholly or in part. The work shall be resumed when methods or defective work are corrected as ordered or approved in writing by the District.

In addition to the requirements of the District ordinance under which these Standard Specifications are adopted, the Owner shall bear all costs of construction inspection. The Owner shall also bear the cost of traffic regulations lawfully exacted by the Federal Government, the State of California, or County or City during the time of performing work affecting the property of said Government, State, County, or City.

STANDARD SPECIFICATIONS
FOR
CLEAN-UP

PART 1 GENERAL

During the progress of the work, the premises shall be kept free of any unsightly accumulation of rubbish and debris. Upon completion of the work and before final approval of the completed facility by the District, all unused materials, rubbish, concrete forms, surplus excavated material and other materials or equipment shall be removed from the work area and disposed of in accordance with Federal, State, and local laws and ordinances.

If during the progress of the work any improvements, such as, fences, lawns, shrubs or other vegetation, whether on private or public property are damaged, they shall be restored to a condition equivalent to that which existed before work started. These repairs shall be completed prior to acceptance of the completed facilities by the District.

STANDARD SPECIFICATIONS
FOR
PERMITS, LICENSES AND NOTIFICATIONS

PART 1 GENERAL

The Owner and his Contractor shall comply with the lawful orders, regulations and ordinances of the State of California, County of Santa Barbara and Santa Ynez Community Services District applying to construction operations affecting property or improvements under the respective jurisdiction of said authorities.

PART 2 LICENSES AND PERMITS

The Owner and his Contractor shall at his own expense apply for and procure all licenses and permits as required by the regulations or ordinances of said State, County or District. Copies of said licenses and permits shall be delivered to the District Manager prior to issuance of District permits.

Special attention is directed to the narrow roadways in some streets where work is to be done. Work in such streets shall be arranged so that vehicular traffic of residents to and from their homes will not be interrupted at any time for more than 8 hours, and advance notice shall be given to such residents of the time any street or portion thereof is expected to be closed to traffic.

The District shall be notified in advance when connections are to be made to the sewer system. Whenever practical, such connections shall be made during a period of low water usage, but in any event, only after proper authorization from the District.

STANDARD DRAWINGS

CONTENTS

ARTICLE III - STANDARD DRAWINGS

<u>DRAWING TITLE</u>	<u>DWG. NO.</u>
STANDARD SEWER NOTES	S-1
SEWER PIPE BEDDING AND BACKFILL DETAILS	S-2
TYPICAL LATERAL SEWER	S-3
TYPICAL BUILDING SEWER	S-4
STANDARD CLEANOUT	S-5
LATERAL SEWER INSTALLATION	S-6
STANDARD WYE BRANCH INSTALLATION	S-7
48" I.D. STANDARD SEWER MANHOLE WITH PRECAST BASE	S-8
48" I.D. STANDARD SEWER MANHOLE WITH CAST-IN-PLACE BASE	S-9
60" I.D. STANDARD MANHOLE	S-10
MANHOLE – FRAME AND COVER	S-11
MANHOLE – DROP INLET CONNECTION	S-12
STEEL CASING FOR SEWER PIPE	S-13

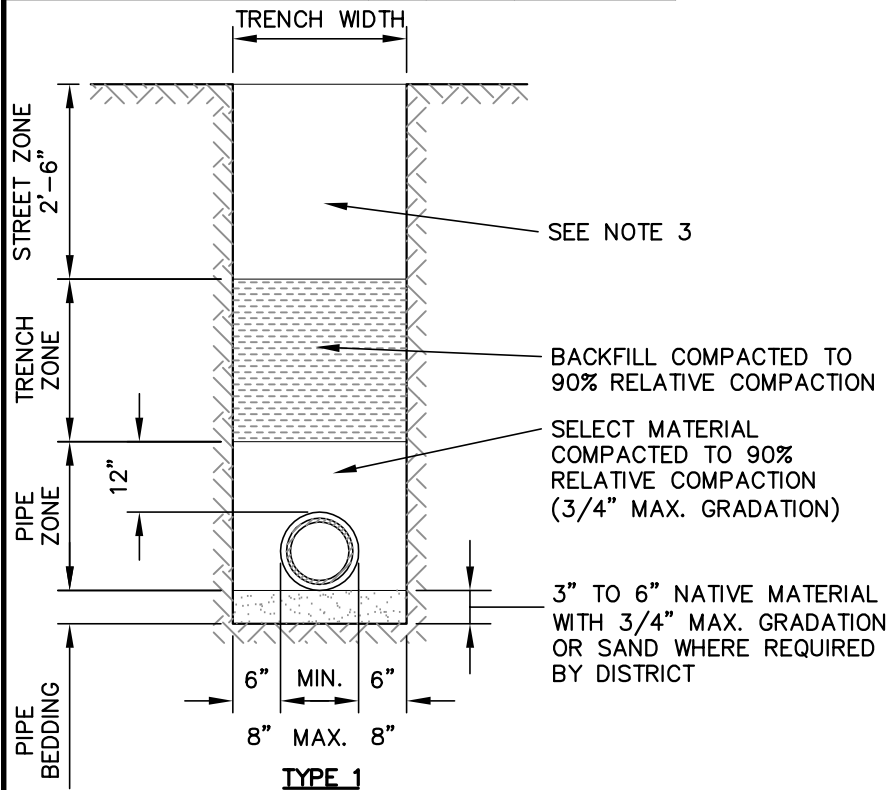
REVISIONS			
DESCRIPTIONS	BY	DATE	APPROVED

SEWER NOTES

1. THE SEWER FACILITIES TO BE DEDICATED TO THE S.Y.C.S.D. SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE S.Y.C.S.D.
2. THE S.Y.C.S.D. SHALL BE NOTIFIED AT LEAST FOURTEEN (14) WORKING DAYS PRIOR TO START OF CONSTRUCTION. TELEPHONE (805) 688-3008.
3. THE CONSTRUCTION PLANS MUST BE APPROVED BY THE S.Y.C.S.D. PRIOR TO THE START OF ANY SEWER CONSTRUCTION. TWO (2) SETS OF APPROVED PLANS SHALL BE FURNISHED TO S.Y.C.S.D. AND ONE (1) SET OF THE SAME TO THE DISTRICT'S ENGINEER. PRIOR TO DISTRICT APPROVAL, THE PLANS MUST BE SIGNED BY A CALIFORNIA REGISTERED CIVIL ENGINEER.
4. PRIOR TO ACCEPTANCE OF THE SEWER FACILITIES, ALL NECESSARY EASEMENT DOCUMENTS SHALL BE PROPERLY EXECUTED AND RECORDED. THREE (3) COPIES EACH OF THE RECORDED DOCUMENTS SHALL BE FURNISHED TO S.Y.C.S.D.
5. THE MANHOLE FRAME AND COVER AND CONCRETE SUPPORT FOR MANHOLES SHALL BE RAISED AND CONSTRUCTED TO FINISHED PAVED GRADE AFTER THE PAVING OPERATION IS COMPLETED. THE RING SECTION SHALL NOT BE MORE THAN 24" FROM THE CONE. THE COMPLETE SEWER SYSTEM SHALL BE COMPLETELY CLEAN PRIOR TO ACCEPTANCE.
6. WHERE THE MANHOLE STRUCTURE FALLS IN EXISTING PAVEMENT, TRAVELED WAY, OR SHOULDER, THE MANHOLE COVER SHALL BE PLACED FLUSH WITH THE EXISTING SURFACE. WHERE THE MANHOLE FALLS IN THE EXISTING ROADSIDE DITCH OR RIGHT-OF-WAY, OR IS CONSTRUCTED WITHIN AN EASEMENT, THE TOP SHALL BE PLACED APPROXIMATELY NINE (9) INCHES ABOVE EXISTING GROUND SURFACE AS DIRECTED BY THE ENGINEER, USING THE "ALTERNATE COLLAR" AS SHOWN ON DRAWING S-11.
7. WORK IN THE STATE OF CALIFORNIA OR THE COUNTY OF SANTA BARBARA RIGHTS-OF-WAY SHALL BE DONE IN ACCORDANCE WITH THE APPROPRIATE ENCROACHMENT PERMITS.
8. THE SEWER SYSTEM, INCLUDING LATERALS, SHALL BE HYDROSTATIC WATER OR AIR TESTED, AFTER ALL UNDERGROUND UTILITIES ARE CONSTRUCTED, AND PRIOR TO PLACING STREET PAVEMENT. CLEANING BALL SHALL BE RAN AFTER MANHOLES ARE ADJUSTED TO FINISH GRADE.
9. EXISTING SEWER LOCATION AND FLOW LINE SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR BEFORE START OF CONSTRUCTION. THE DISTRICT SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.
10. ONE COMPLETE SET OF DRAWINGS (REPRODUCIBLE 3-MIL. DOUBLE MATTE FILM) SHALL BE FURNISHED TO THE DISTRICT ON COMPLETION OF CONSTRUCTION.

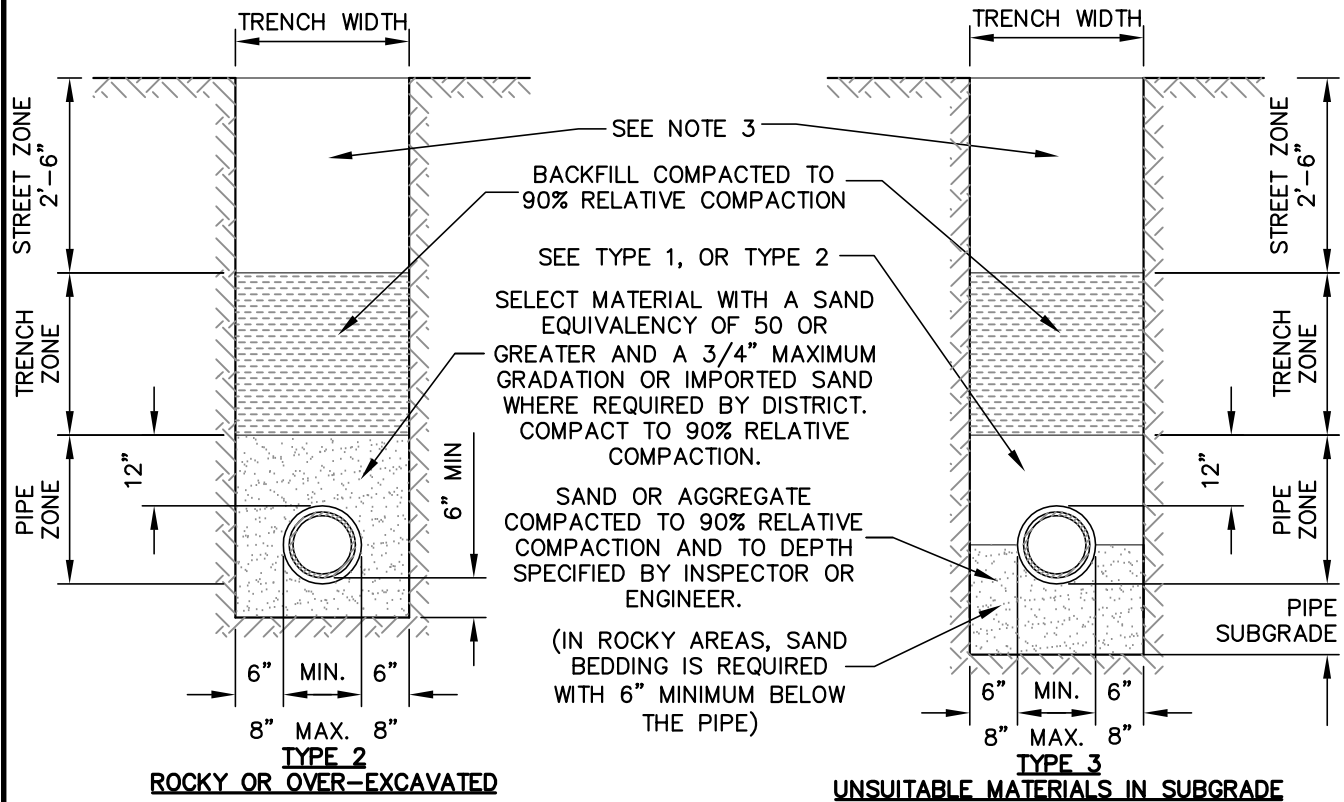
DATE	SANTA YNEZ COMMUNITY SERVICES DISTRICT	DRAWING NO.
JANUARY 2007	STANDARD SEWER NOTES	S-1

REVISIONS			
DESCRIPTIONS	BY	DATE	APPROVED



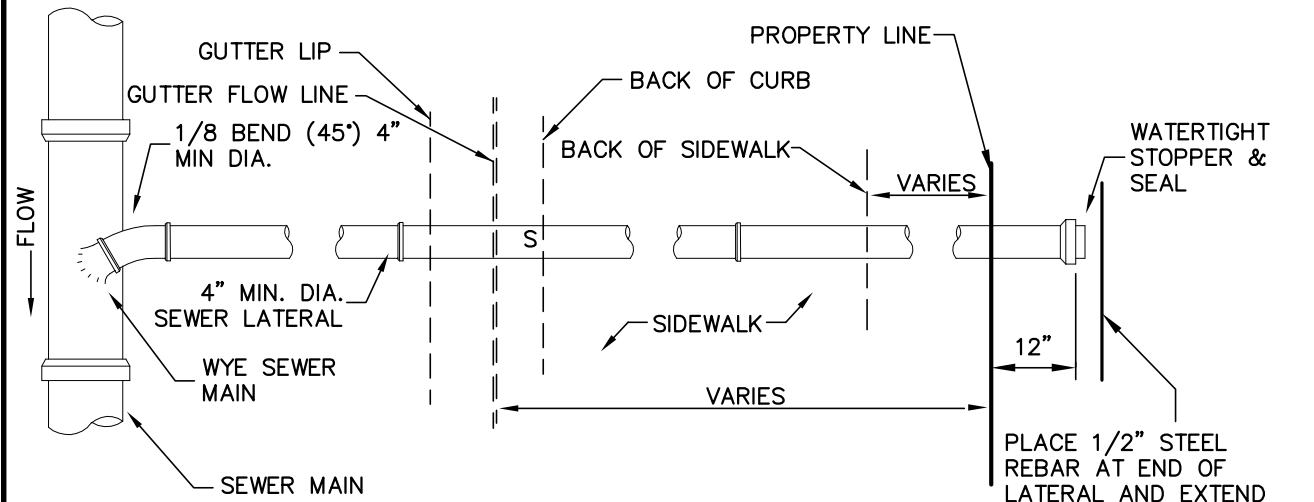
NOTES:

1. SAND AND SELECT MATERIAL SHALL BE PER STANDARD SPECIFICATIONS FOR EARTHWORK.
2. SEE STANDARD SPECIFICATIONS FOR EARTHWORK IF TRENCH WIDTH EXCEEDS THE MAXIMUM SHOWN ON THIS DRAWING.
3. STREET ZONE TO BE COMPACTED TO 95% RELATIVE COMPACTION IF WITHIN ROADBED OR TO 90% RELATIVE COMPACTION IF OUTSIDE OF ROADBED. SEE STANDARD SPECIFICATIONS FOR EARTHWORK.
4. MINIMUM COVER OVER ALL SEWER MAINS TO BE 6' AS MEASURED FROM FINISHED GRADE.
5. PERCENT RELATIVE COMPACTION IS THE PERCENT OF THE MAX. DRY DENSITY AS DETERMINED BY ASTM D-1557 (5 LAYER)
6. PAVEMENT, BASE, AND SUBBASE SHALL BE REPLACED IN STREET ZONE PER STANDARD SPECIFICATIONS.



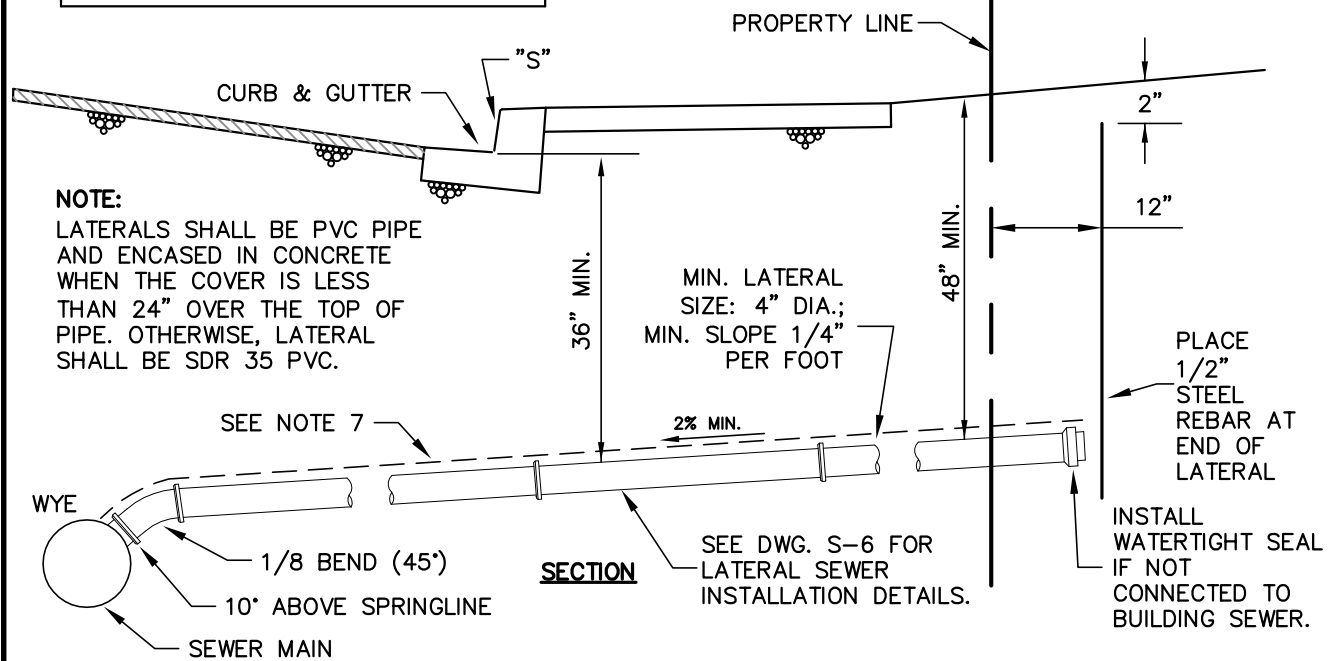
DATE	SANTA YNEZ COMMUNITY SERVICES DISTRICT	DRAWING NO.
JANUARY 2007	SEWER PIPE BEDDING AND BACKFILL DETAILS	S-2

REVISIONS			
DESCRIPTIONS	BY	DATE	APPROVED



A DISTRICT PERMIT AND INSPECTION ARE REQUIRED FOR SEWER SERVICE AND INSTALLATION.

PLAN



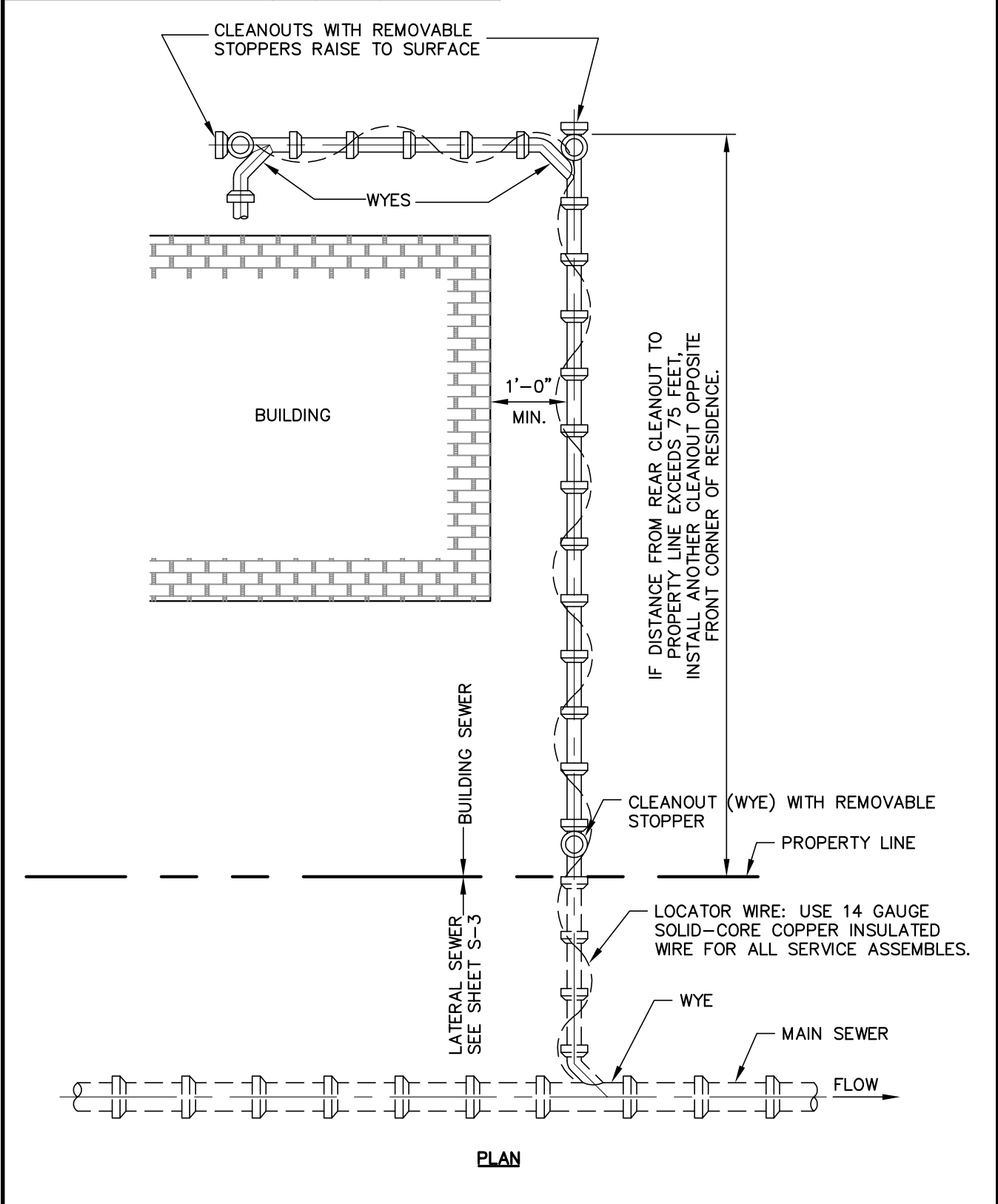
NOTE:
 LATERALS SHALL BE PVC PIPE AND ENCASED IN CONCRETE WHEN THE COVER IS LESS THAN 24" OVER THE TOP OF PIPE. OTHERWISE, LATERAL SHALL BE SDR 35 PVC.

SECTION

- NOTES:**
- "S" SHALL BE MARKED ON CURB FACE OVER LATERAL.
 - THE "S" SHALL BE STAMPED INTO NEW CONCRETE AND SHALL BE CHISELED INTO EXISTING CONCRETE.
 - THE "S" SHALL BE NOT LESS THAN 3" HIGH, 2" WIDE AND 3/16" DEEP.
 - MAINTAIN MINIMUM 10' HORIZONTAL SEPARATION FROM WATER SERVICE.
 - LATERAL SEWERS SHALL NOT BE LOCATED IN DRIVEWAYS UNLESS APPROVED BY THE DISTRICT ENGINEER.
 - FOR LATERAL SEWERS CONNECTING ONTO EXIST. SEWER MAIN, A SEWER SADDLE MAYBE USED AS DIRECTED BY THE DISTRICT ENGINEER.
 - LOCATOR WIRE: USE 14 GAUGE SOLID-CORE COPPER INSULATED WIRE FOR ALL SERVICE ASSEMBLES.

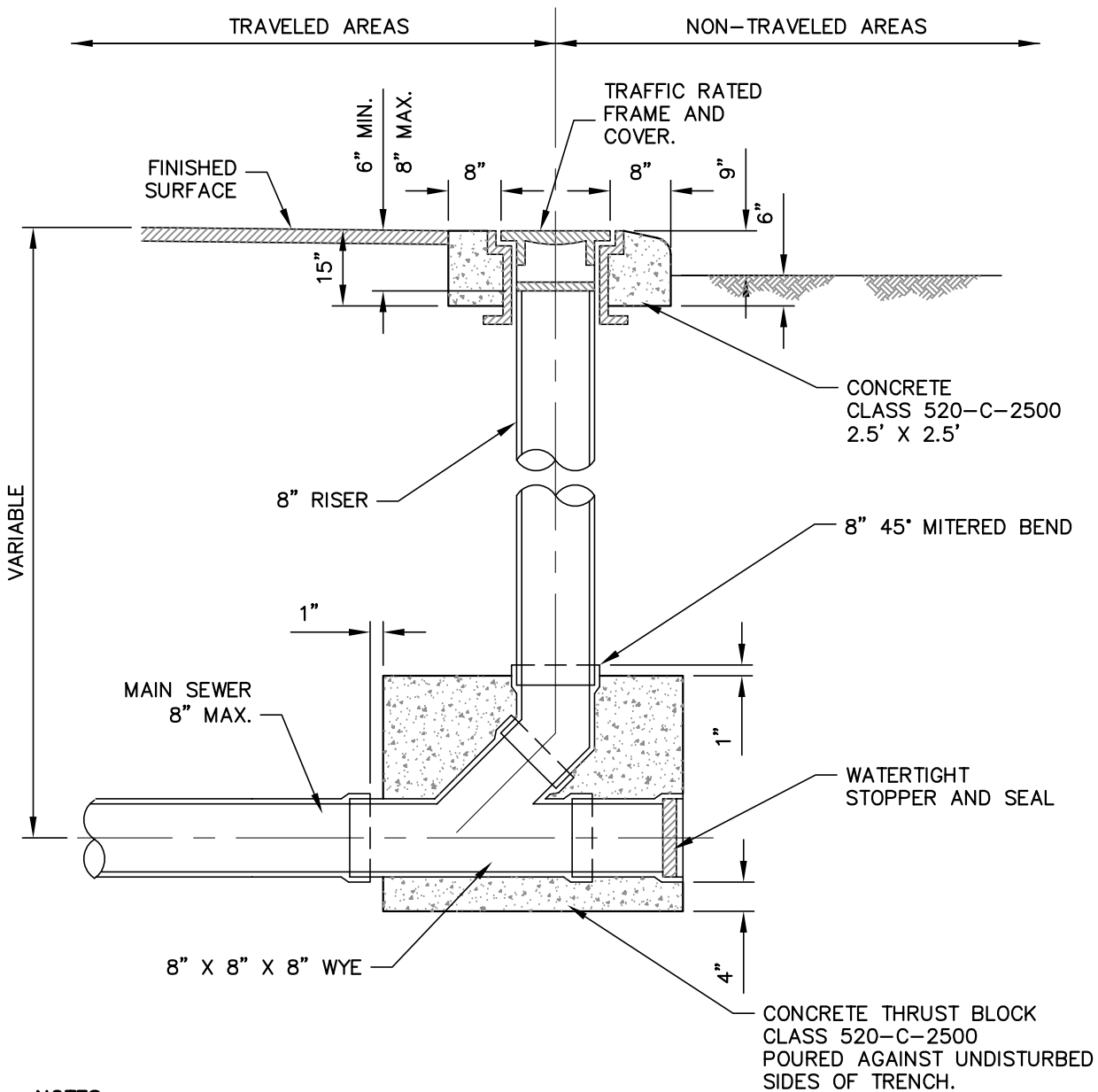
DATE	SANTA YNEZ COMMUNITY SERVICES DISTRICT	DRAWING NO.
JANUARY 2007	TYPICAL LATERAL SEWER	S-3

REVISIONS			
DESCRIPTIONS	BY	DATE	APPROVED



DATE	SANTA YNEZ COMMUNITY SERVICES DISTRICT	DRAWING NO.
JANUARY 2007	TYPICAL BUILDING SEWER	S-4

REVISIONS			
DESCRIPTIONS	BY	DATE	APPROVED



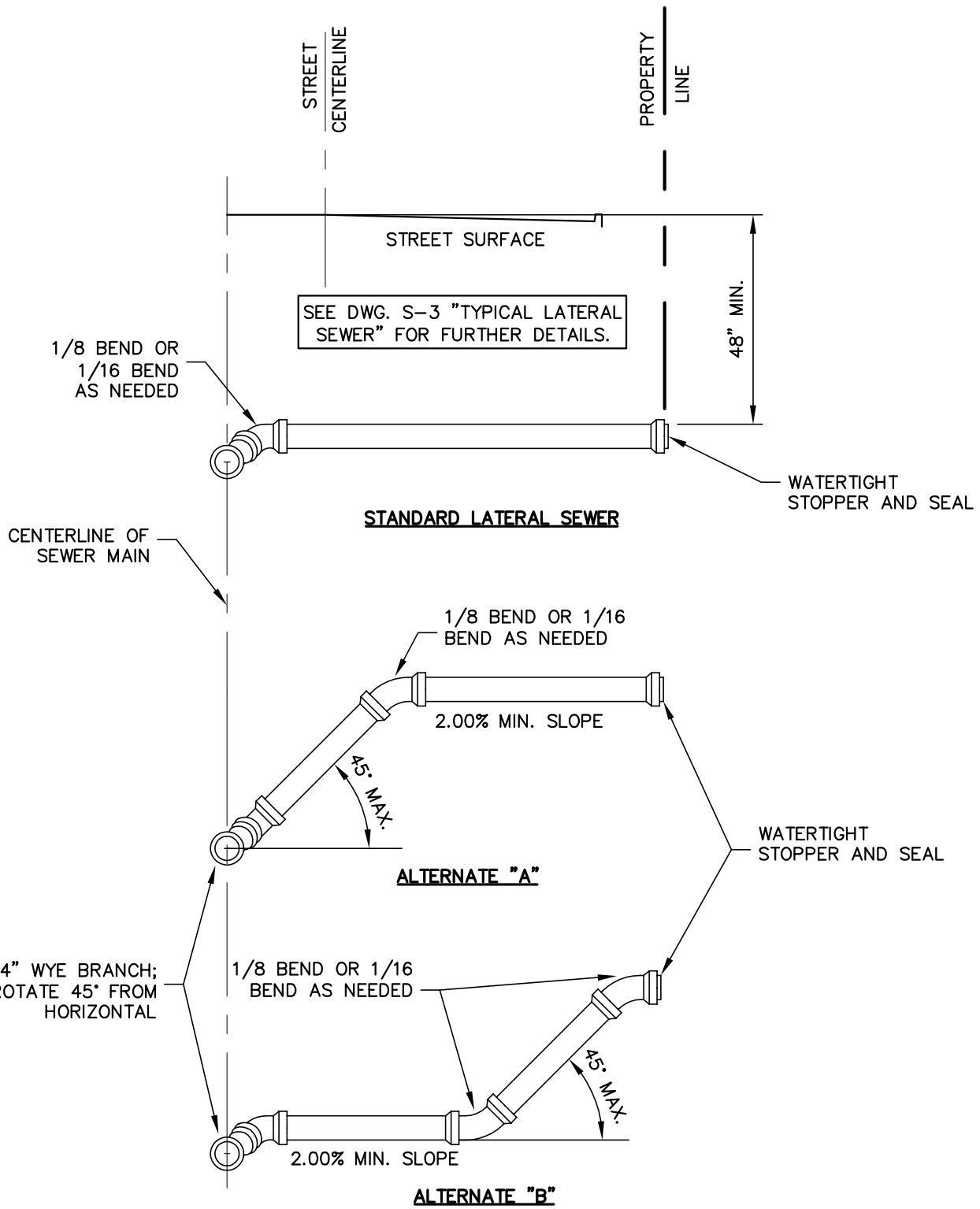
NOTES:

1. RISER SHALL BE OF SAME MATERIAL AS SEWER PIPE.
2. FRAME AND COVER SHALL BE ALHAMBRA FOUNDRY 1-1240 OR APPROVED EQUAL.
3. SET FRAME AND COVER FLUSH WITH PAVEMENT GRADE, EXCEPT WHEN CONSTRUCTED IN EXISTING ROADSIDE DITCH, RIGHT-OF-WAY, OR EASEMENT, SEE "ALTERNATE COLLAR" DWG. S-11.
4. CLEANOUT LARGER THAN 8" SHALL BE PROVIDED SUBJECT TO THE APPROVAL OF THE ENGINEER.
5. ALL PIPE AND FITTINGS SHALL BE SDR-35 P.V.C. PER ASTM 3034.

DATE	SANTA YNEZ COMMUNITY SERVICES DISTRICT	DRAWING NO.
JANUARY 2007	STANDARD CLEANOUT	S-5

REVISIONS

DESCRIPTIONS	BY	DATE	APPROVED



DATE	SANTA YNEZ COMMUNITY SERVICES DISTRICT	DRAWING NO.
JANUARY 2007	LATERAL SEWER INSTALLATION	S-6

REVISIONS			
DESCRIPTIONS	BY	DATE	APPROVED

INSTALLATION OF WYE BRANCH IN EXISTING SEWER MAIN

GENERAL:

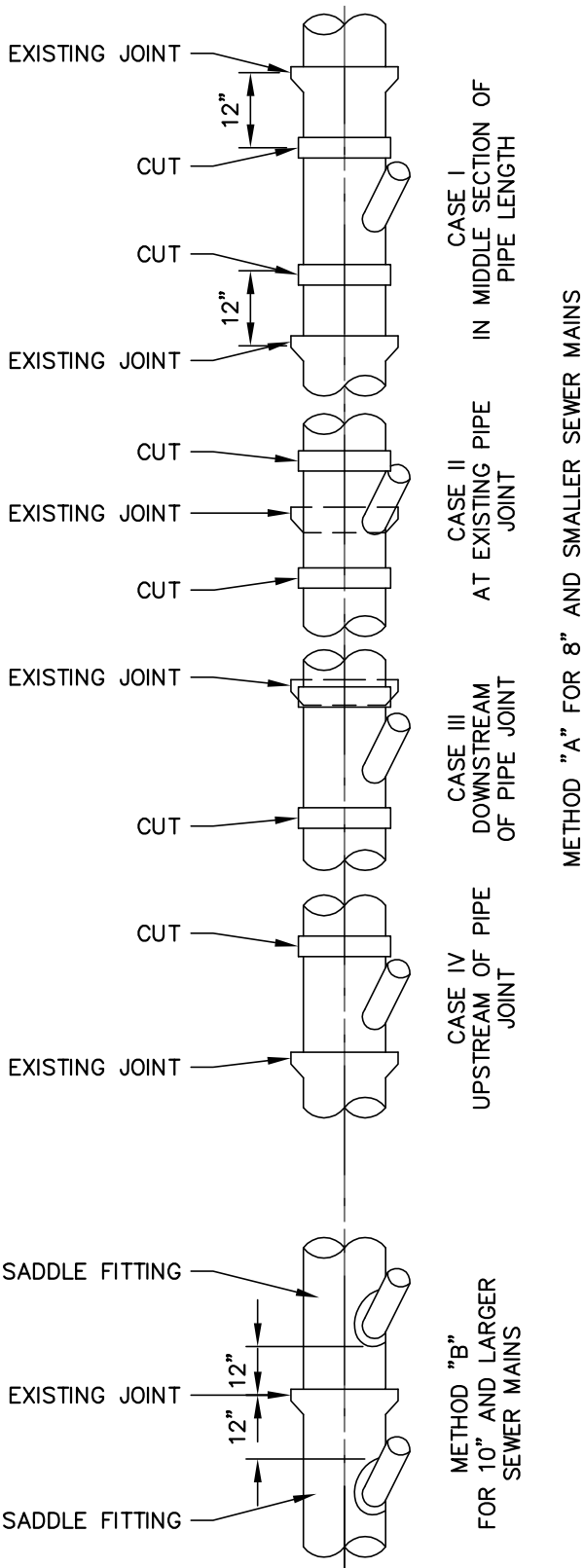
- METHOD "A" SHALL BE USED FOR ALL 8" SEWER MAINS. METHOD "B" MAY BE USED FOR 10" AND LARGER SEWER MAINS WHERE LOCATION OF HOUSE LATERAL PERMITS.
- THE BRANCH FOR LATERAL SHALL BE 4" DIAMETER UNLESS OTHERWISE DIRECTED BY ENGINEER, AND MAY BE BELL AND SPIGOT TYPE OF AN APPROVED BAND COUPLING TYPE (BAND-SEAL OR EQUAL).
- WYE BRANCH FITTINGS SHALL BE INSTALLED WITH THE BRANCH STUB AT AN ANGLE OF 45° UPWARD FROM THE HORIZONTAL.
- IRREGULAR CUT ENDS, OVERSIZE OR RAGGED OPENINGS, PIPE CRACKED OR OTHERWISE DAMAGED BY CONTRACTOR SHALL REQUIRE REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

METHOD "A":

- CUT AND REMOVE SECTION OF EXISTING PIPE. CUT ENDS SHALL BE SMOOTH AND SQUARE WITH PIPE.
- A FACTORY FABRICATED BRANCH FITTING SHALL BE INSTALLED IN THE MAIN USING HEAVY DUTY RUBBER COUPLINGS WITH STAINLESS STEEL CLAMPS. COUPLINGS TO BE TYPE USED FOR SEWER REPAIRS (BAND-SEAL OR EQUAL).

METHOD "B":

- DISTRICT SHALL INSTALL ALL SADDLES ON MAIN. CONTRACTOR SHALL EXPOSE PIPE AND MAKE SPACE FOR ENTRY. CONTRACTOR SHALL FURNISH APPROVED SADDLE, SEALTITE SEWER SADDLE TYPE E, MODEL H, IRON BODY WITH STAINLESS STEEL BAND.

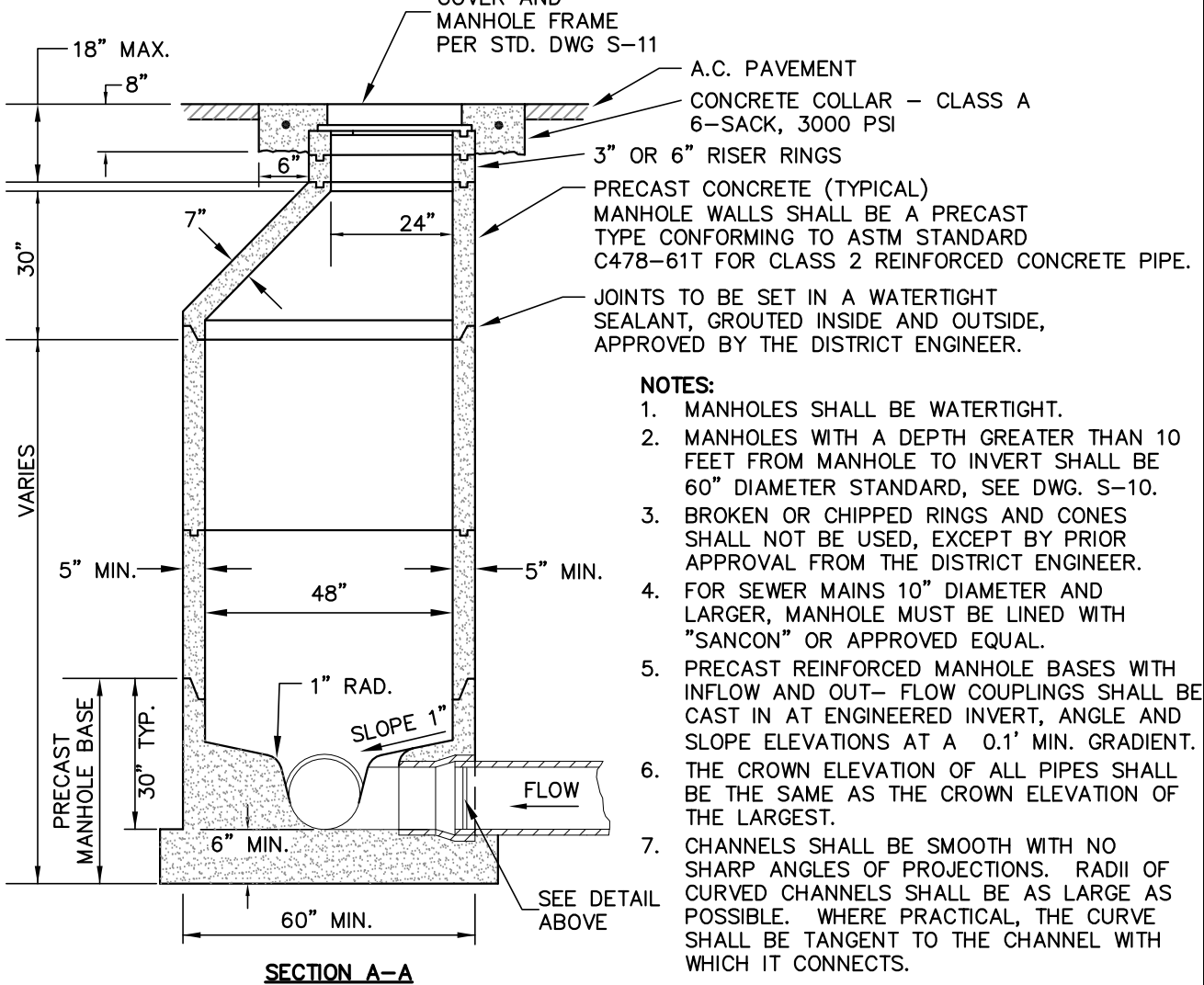
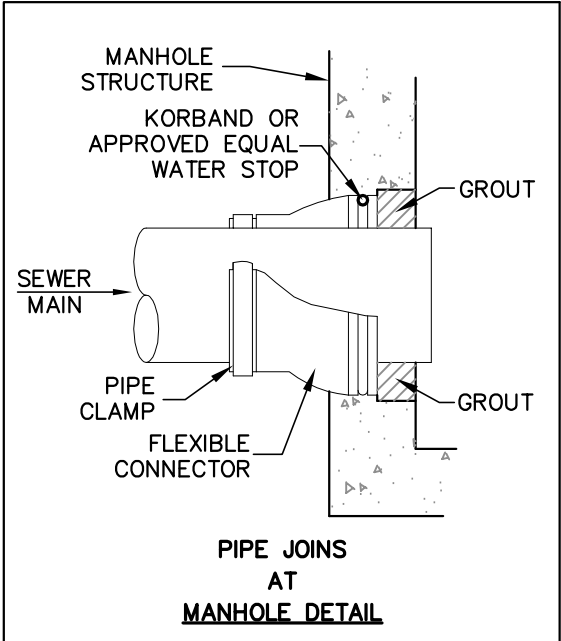
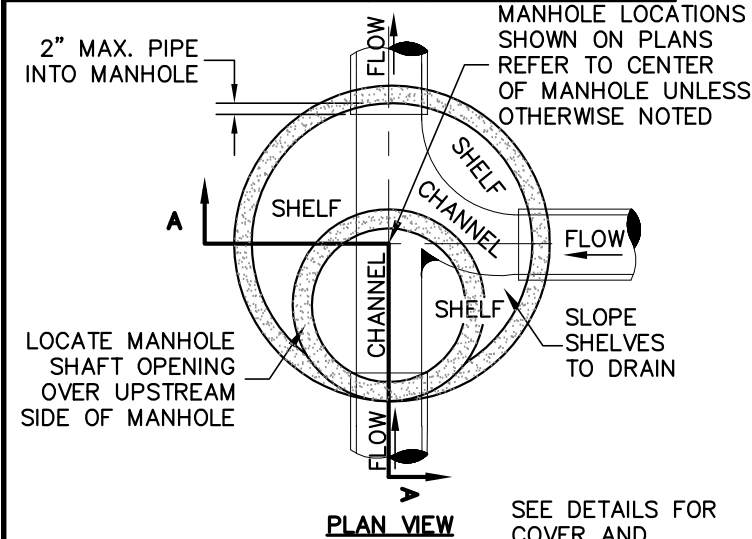


METHOD "A" FOR 8" AND SMALLER SEWER MAINS

METHOD "B" FOR 10" AND LARGER SEWER MAINS

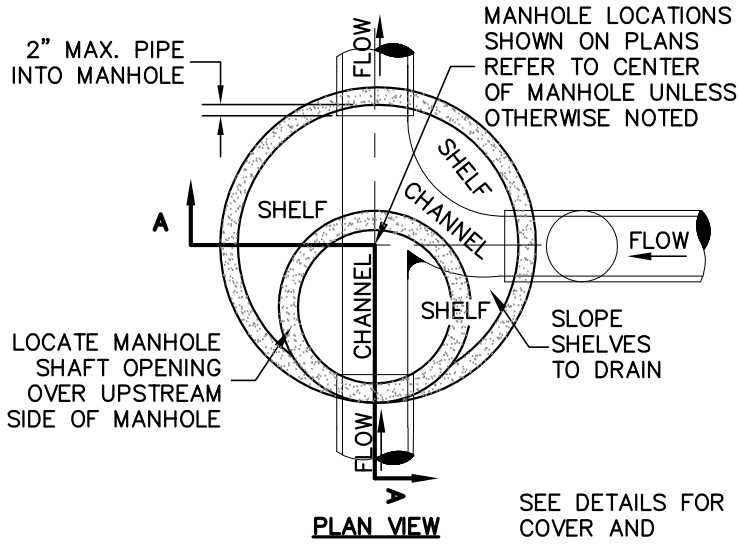
DATE	SANTA YNEZ COMMUNITY SERVICES DISTRICT	DRAWING NO.
JANUARY 2007	STANDARD WYE BRANCH INSTALLATION	S-7

REVISIONS			
DESCRIPTIONS	BY	DATE	APPROVED

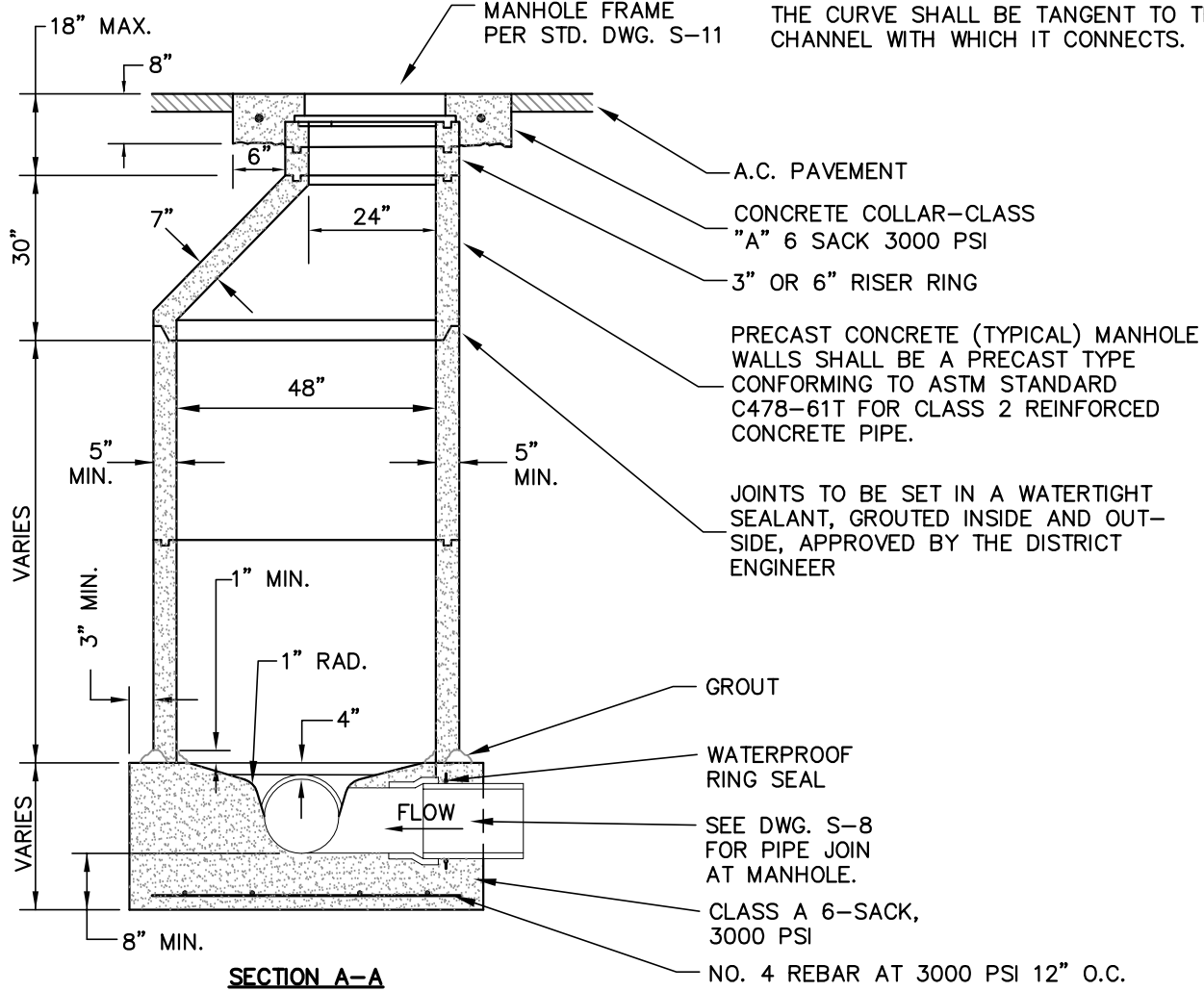


DATE	SANTA YNEZ COMMUNITY SERVICES DISTRICT	DRAWING NO.
JANUARY 2007	48" I.D. STANDARD SEWER MANHOLE WITH PRECAST BASE	S-8

REVISIONS			
DESCRIPTIONS	BY	DATE	APPROVED



- NOTES:**
1. MANHOLES SHALL BE WATERTIGHT.
 2. MANHOLES WITH A DEPTH GREATER THAN 10 FEET FROM MANHOLE TO INVERT SHALL BE 60" DIAMETER STANDARD, SEE DWG. S-10.
 3. BROKEN OR CHIPPED RINGS AND CONES SHALL NOT BE USED, EXCEPT BY PRIOR APPROVAL FROM THE DISTRICT ENGINEER.
 4. FOR SEWER MAINS 10" DIAMETER AND LARGER, MANHOLE MUST BE LINED WITH "SANCON" OR APPROVED EQUAL.
 5. PRECAST REINFORCED MANHOLE BASES WITH INFLOW AND OUT-FLOW COUPLINGS SHALL BE CAST IN AT ENGINEERED INVERT, ANGLE AND SLOPE ELEVATIONS AT A 0.1' MIN. GRADIENT.
 6. THE CROWN ELEVATION OF ALL PIPES SHALL BE THE SAME AS THE CROWN ELEVATION OF THE LARGEST.
 7. CHANNELS SHALL BE SMOOTH WITH NO SHARP ANGLES OF PROJECTIONS. RADII OF CURVED CHANNELS SHALL BE AS LARGE AS POSSIBLE. WHERE PRACTICAL, THE CURVE SHALL BE TANGENT TO THE CHANNEL WITH WHICH IT CONNECTS.

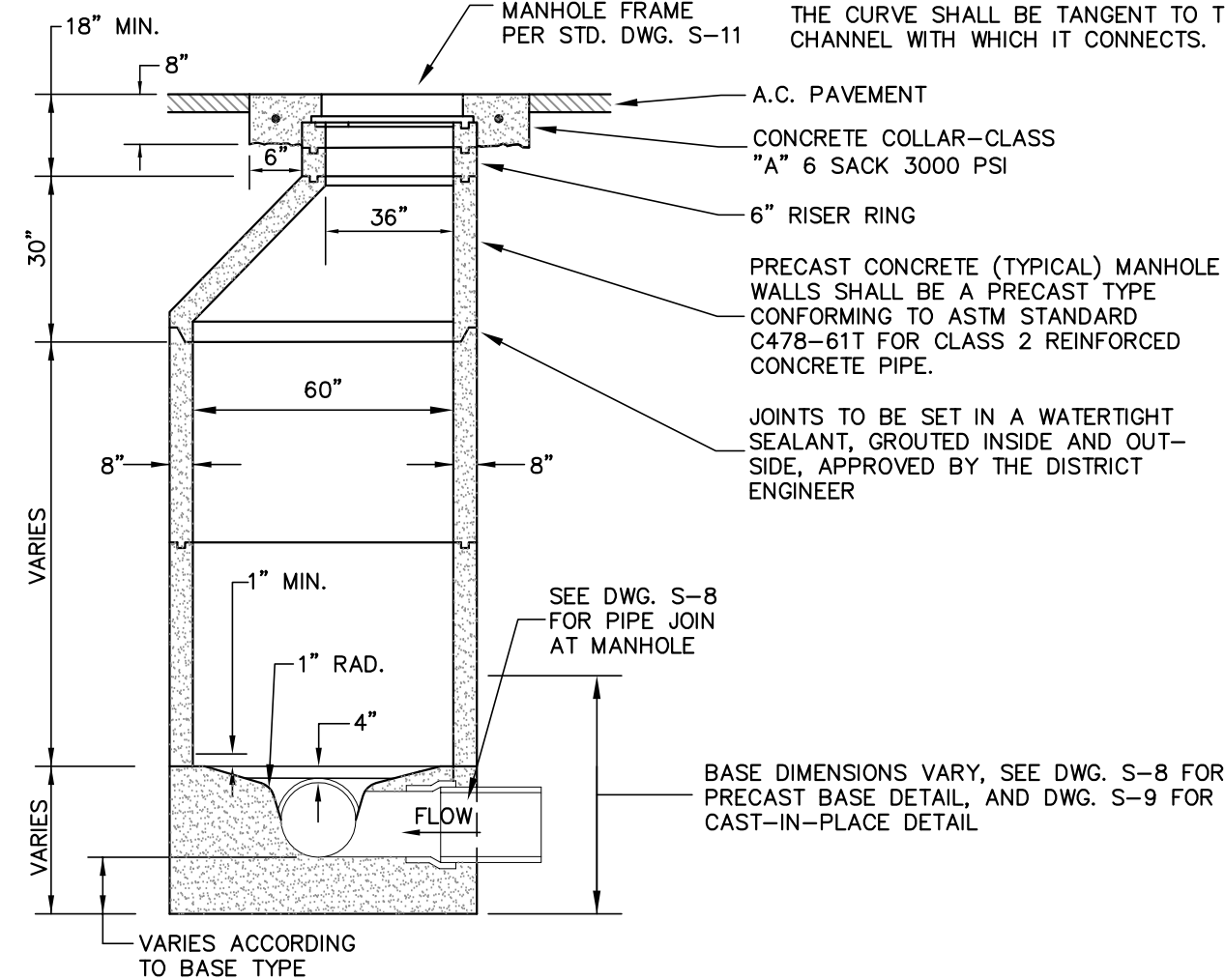
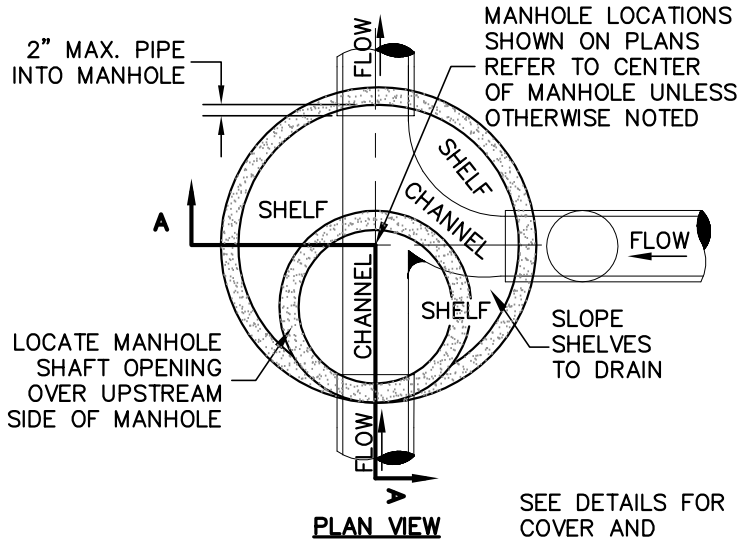


DATE	SANTA YNEZ COMMUNITY SERVICES DISTRICT	DRAWING NO.
JANUARY 2007	48" I.D. STANDARD SEWER MANHOLE WITH CAST-IN-PLACE BASE	S-9

REVISIONS			
DESCRIPTIONS	BY	DATE	APPROVED

NOTES:

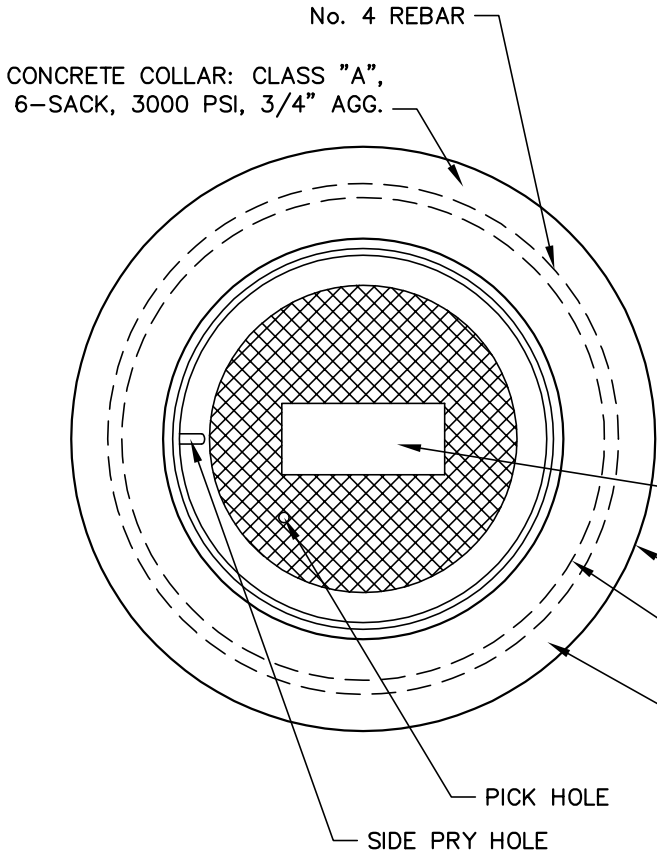
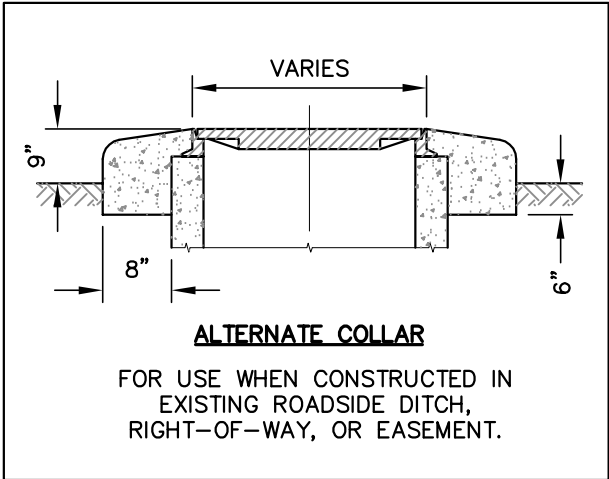
1. MANHOLES SHALL BE WATERTIGHT.
2. MANHOLES WITH A DEPTH GREATER THAN 10 FEET FROM MANHOLE TO INVERT SHALL BE 60" DIAMETER STANDARD.
3. BROKEN OR CHIPPED RINGS AND CONES SHALL NOT BE USED, EXCEPT BY PRIOR APPROVAL FROM THE DISTRICT ENGINEER.
4. FOR SEWER MAINS 10" DIAMETER AND LARGER, MANHOLE MUST BE LINED WITH "SANCON" OR APPROVED EQUAL.
5. PRECAST REINFORCED MANHOLE BASES WITH INFLOW AND OUT-FLOW COUPLINGS SHALL BE CAST IN AT ENGINEERED INVERT, ANGLE AND SLOPE ELEVATIONS AT A 0.1' MIN. GRADIENT.
6. THE CROWN ELEVATION OF ALL PIPES SHALL BE THE SAME AS THE CROWN ELEVATION OF THE LARGEST.
7. CHANNELS SHALL BE SMOOTH WITH NO SHARP ANGLES OF PROJECTIONS. RADII OF CURVED CHANNELS SHALL BE AS LARGE AS POSSIBLE. WHERE PRACTICAL, THE CURVE SHALL BE TANGENT TO THE CHANNEL WITH WHICH IT CONNECTS.



SECTION A-A

DATE	SANTA YNEZ COMMUNITY SERVICES DISTRICT	DRAWING NO.
JANUARY 2007	60" I.D. STANDARD MANHOLE	S-10

REVISIONS			
DESCRIPTIONS	BY	DATE	APPROVED

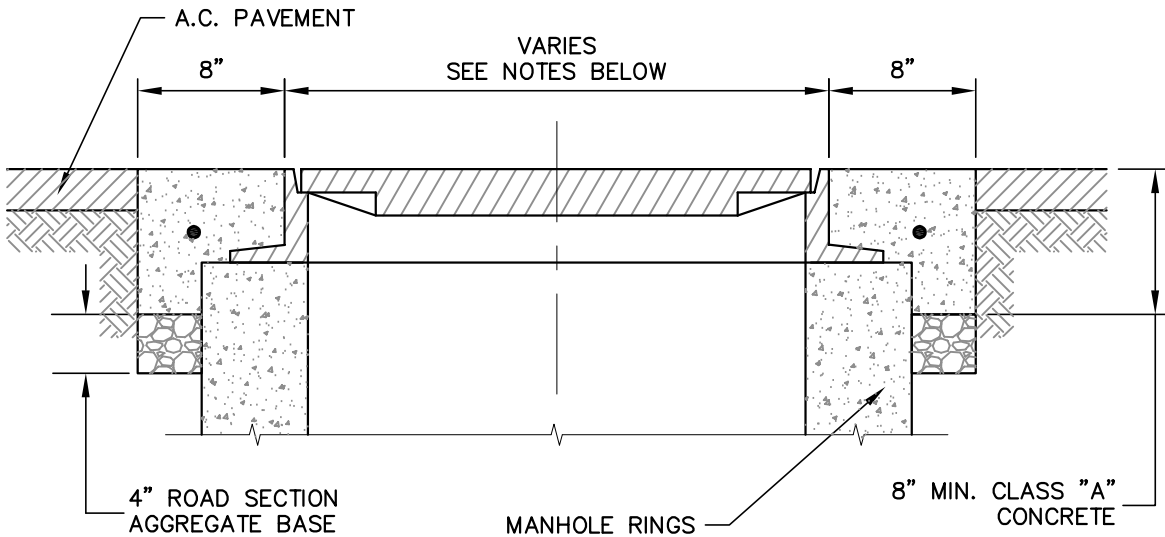


STANDARD COVER MARKING:
"SEWER" IN RAISED LETTERS
2" IN HEIGHT.

SAWCUT

OUTSIDE WALL OF MANHOLE

8" THICK CONC. 6" CL II AGG. BASE



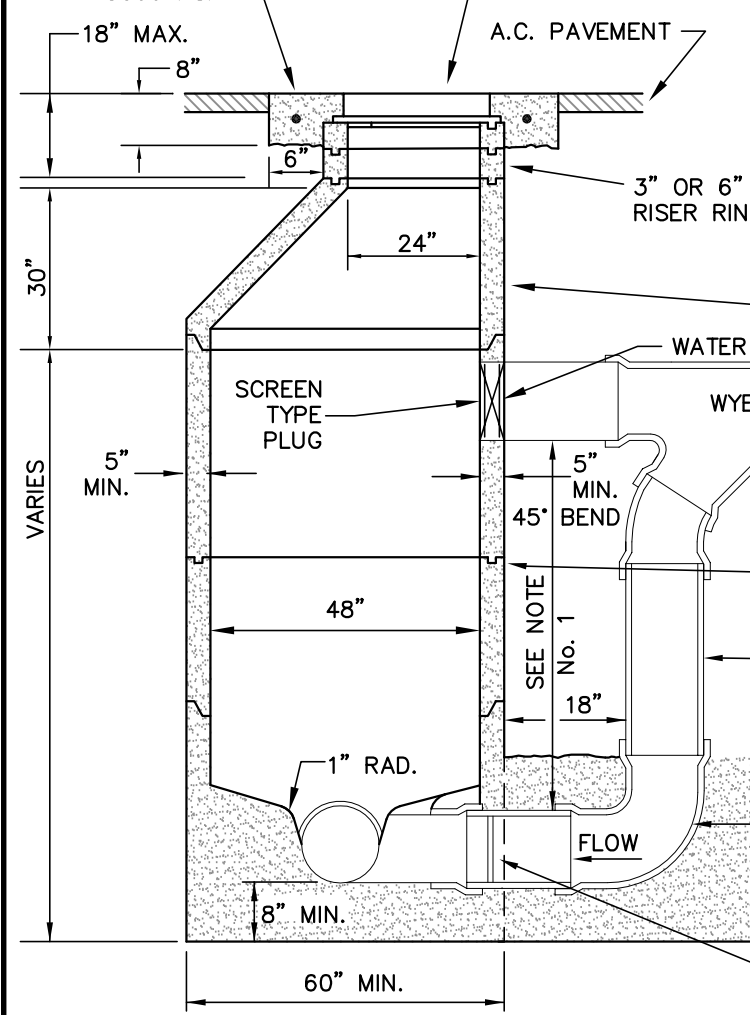
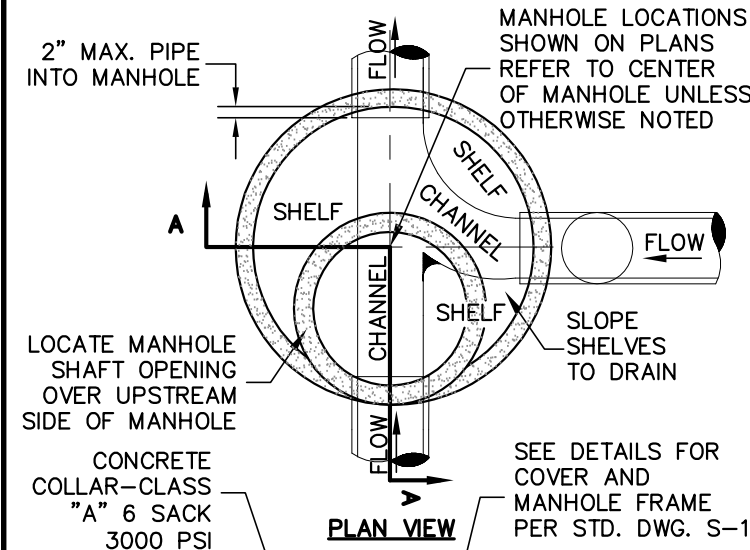
- NOTES:**
1. FOR 24" DIAMETER COVER, USE ALHAMBRA FOUNDRY NO. A-1254 OR APPROVED EQUAL.
 2. FOR 36" DIAMETER COVER, USE ALHAMBRA FOUNDRY NO. A-1251 OR APPROVED EQUAL.
 3. ALL CONTACT SURFACES TO BE MACHINED.
 4. A HIGH TRAFFIC COVER MAY BE REQUIRED IN AREAS AS DETERMINED BY DISTRICT ENGINEER.

DATE	SANTA YNEZ COMMUNITY SERVICES DISTRICT	DRAWING NO.
JANUARY 2007	MANHOLE – FRAME AND COVER	S-11

REVISIONS			
DESCRIPTIONS	BY	DATE	APPROVED

NOTES:

1. A DROP MANHOLE SHALL BE USED WHEN SEWER MAIN IS MORE THAN 12" ABOVE THE MANHOLE BOTTOM.
2. FOR SEWER MAINS LESS THAN 12" ABOVE THE MANHOLE BOTTOM, A CONCRETE TROUGH SHALL BE INSTALLED TO INSURE SMOOTH TRANSITION FROM PIPE TO MANHOLE.
3. MANHOLES SHALL BE WATERTIGHT.
4. MANHOLES WITH A DEPTH GREATER THAN 10 FEET FROM MANHOLE TO INVERT SHALL BE 60" DIAMETER STANDARD, SEE DWG. S-10.
5. BROKEN OR CHIPPED RINGS AND CONES SHALL NOT BE USED, EXCEPT BY PRIOR APPROVAL FROM THE DISTRICT ENGINEER.
6. FOR SEWER MAINS 10" DIAMETER AND LARGER, MANHOLE MUST BE LINED WITH "SANCON" OR APPROVED EQUAL.
7. PRECAST REINFORCED MANHOLE BASES WITH INFLOW AND OUT-FLOW COUPLINGS SHALL BE CAST IN AT ENGINEERED INVERT, ANGLE AND SLOPE ELEVATIONS AT A 0.1' MIN. GRADIENT.
8. THE CROWN ELEVATION OF ALL PIPES SHALL BE THE SAME AS THE CROWN ELEVATION OF THE LARGEST.
9. CHANNELS SHALL BE SMOOTH WITH NO SHARP ANGLES OF PROJECTIONS. RADI OF CURVED CHANNELS SHALL BE AS LARGE AS POSSIBLE. WHERE PRACTICAL, THE CURVE SHALL BE TANGENT TO THE CHANNEL WITH WHICH IT CONNECTS.



PRECAST CONCRETE (TYPICAL) MANHOLE WALLS SHALL BE A PRECAST TYPE CONFORMING TO ASTM STANDARD C478-61T FOR CLASS 2 REINFORCED CONCRETE PIPE.

JOINTS TO BE SET IN A WATERTIGHT SEALANT APPROVED BY THE DISTRICT ENGINEER.

LATERAL CONNECTION OVER 5' TO BE P.V.C. FOR DROP TEE, PIPE & 90° BEND.

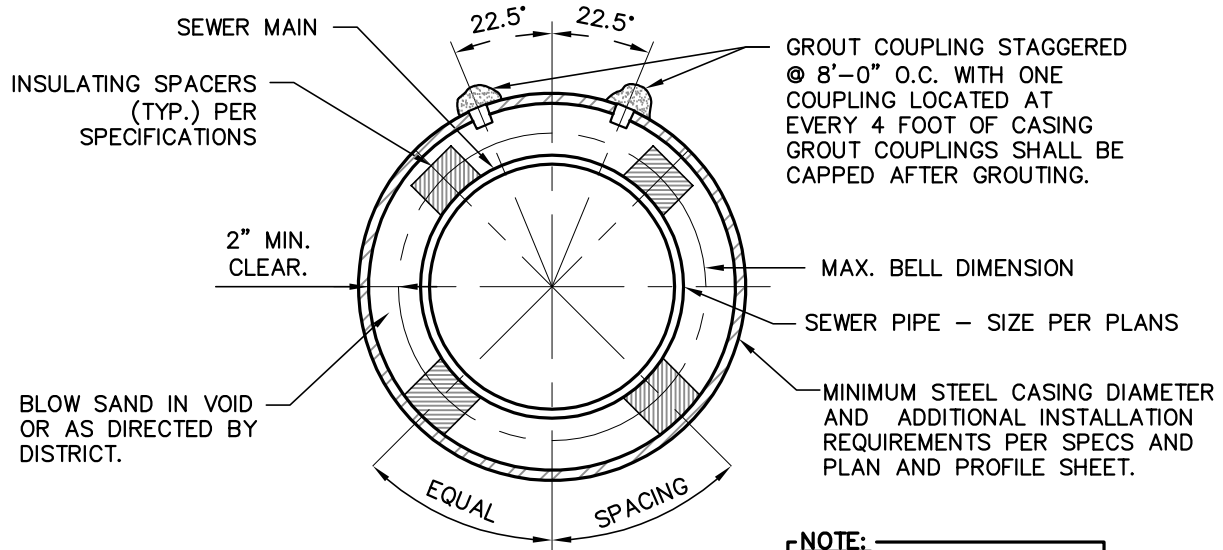
POURED IN PLACE CLASS "A" CONCRETE, 6-SACK 3000 PSI

SEE DWG. S-8 FOR PIPE JOIN AT MANHOLE

SECTION A-A

DATE	SANTA YNEZ COMMUNITY SERVICES DISTRICT	DRAWING NO.
JANUARY 2007	MANHOLE - DROP INLET CONNECTION	S-12

REVISIONS			
DESCRIPTIONS	BY	DATE	APPROVED



NOTE:
ALL STEEL CASING
PIPES ARE TO BE NEW.

1. ALL STEEL CASING PIPE FIELD JOINTS SHALL BE WELDED FULL CIRCUMFERENCE.
2. THE ENDS OF CASING SHALL BE SEALED WITH 1/8" TYPE "C" RUBBER END-SEAL IN ACCORDANCE WITH THE SPECIFICATIONS.
3. PLACE WARNING TAPE (SEE SPECIFICATIONS) ON PIPE PRIOR TO ATTACHING INSULATING SPACERS.
4. SPACERS SHALL BE 12 INCHES IN WIDTH AND OF SUFFICIENT HEIGHT TO PROVIDE A MINIMUM OF 2 INCH CLEARANCE AT THE BELL AND A MAXIMUM OF 2" CLEARANCE BETWEEN SPACER AND INSIDE TOP OF CASING. ALL SPACERS SHALL BE EQUAL DIMENSIONS AND POSITIONED UNIFORMLY.
5. SPACERS SHALL BE ATTACHED IN PLACE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
6. MINIMUM NUMBER OF SPACERS PER SPACER ASSEMBLY AND MINIMUM NUMBER OF SPACER ASSEMBLIES PER JOINT OF PIPE.

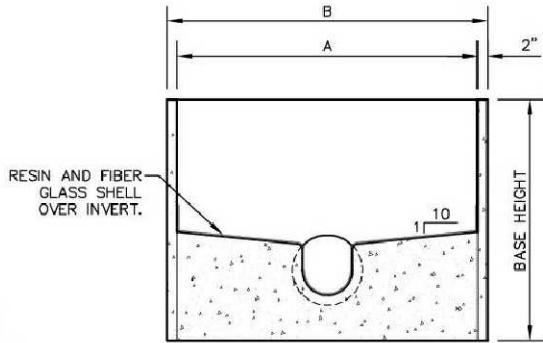
CARRIER PIPE SIZE (INCHES)	NUMBER OF SPACERS	WIDTH OF SPACER ASSEMBLY (MIN.)
12- UNDER	4	12-INCHES
14-16	5	12-INCHES
18-24	6	12-INCHES
30 & OVER	8	12-INCHES

3 SPACER ASSEMBLIES WILL BE REQUIRED PER EACH LENGTH OF PIPE.

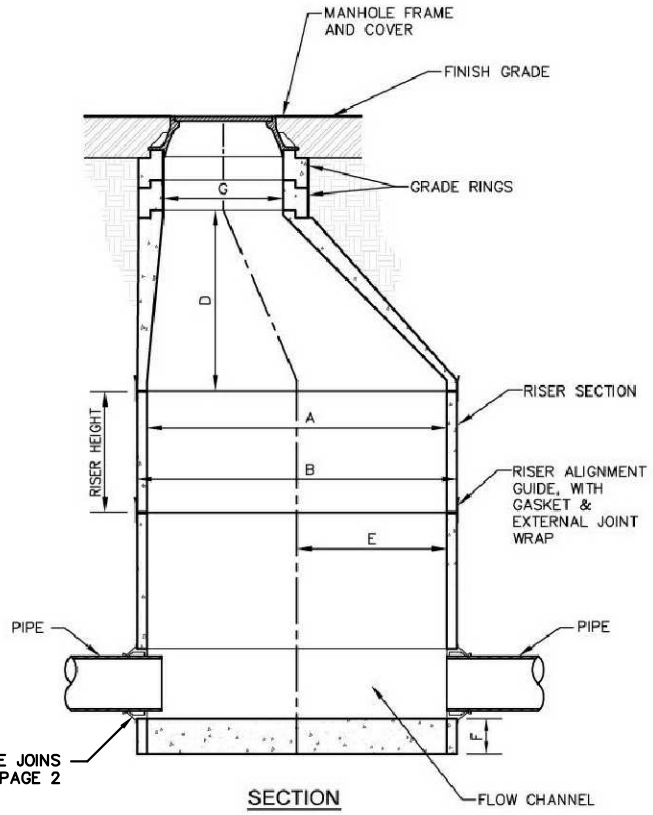
8. MINIMUM WALL THICKNESS OF STEEL CASING SHALL BE 3/8-INCH. CONTRACTOR SHALL BE RESPONSIBLE FOR CALCULATION OF ACTUAL CASING WALL THICKNESSES AND STRENGTH NEEDED TO MATCH EQUIPMENT TO BE USED BY CONTRACTOR.

DATE	SANTA YNEZ COMMUNITY SERVICES DISTRICT	DRAWING NO.
JANUARY 2007	STEEL CASING FOR SEWER PIPE	S-13

REVISIONS			
DESCRIPTIONS	BY	DATE	APPROVED



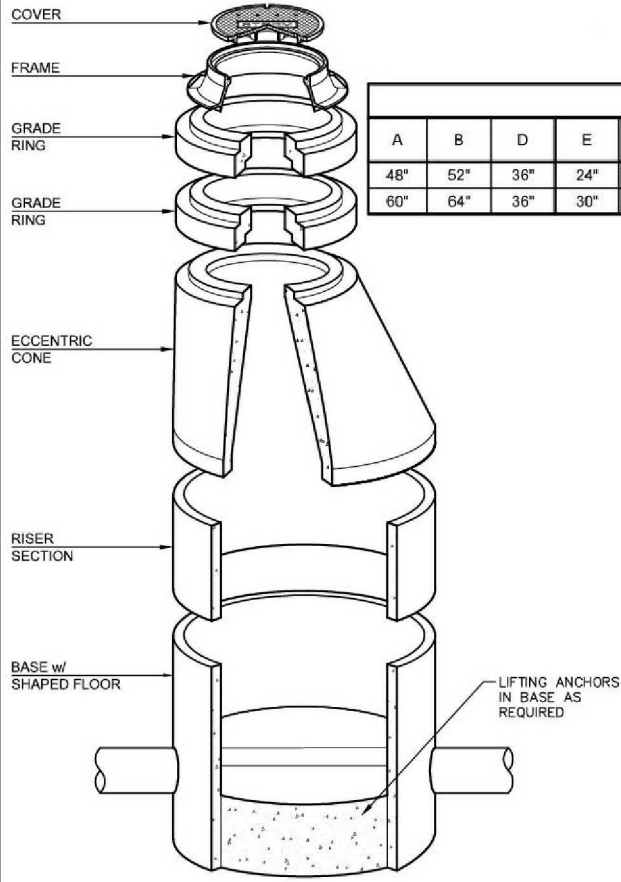
BASE SECTION



SEE PIPE JOINS
DETAIL ON PAGE 2

SECTION

NOTES:
*ADVISE MANUFACTURER IF STEPS ARE REQUIRED.
**AS REQUIRED BY MUNICIPALITY



ISOMETRIC VIEW

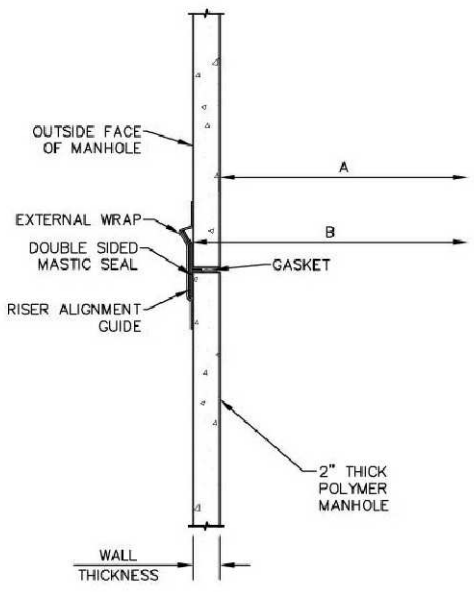
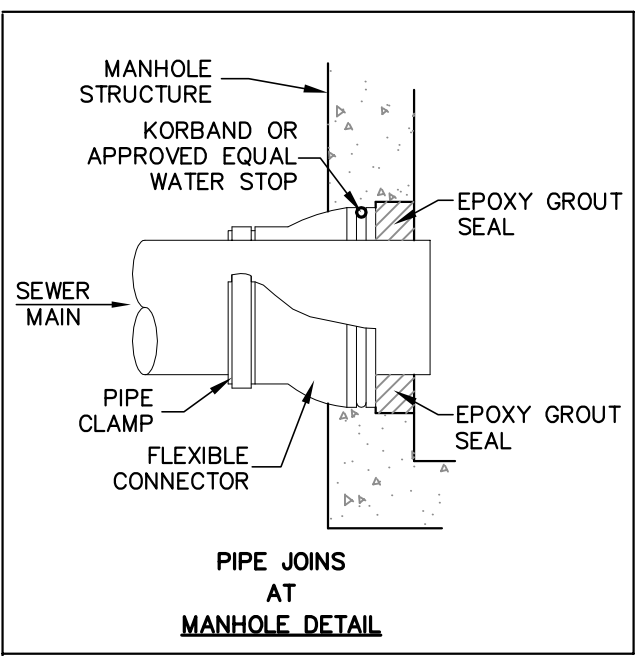
POLYMER MANHOLE SPECIFICATIONS										
A	B	D	E	F	G	WALL THICKNESS	AVAILABLE BASE HEIGHTS	AVAILABLE RISER HEIGHTS	WEIGHT	
									SLAB	WALL
48"	52"	36"	24"	7"	AS REQUIRED**	2"	3', 4'	1', 2', 3', 4', 5', 6'	1,100 lb	300 lb/ft
60"	64"	36"	30"	7"	AS REQUIRED**	2"	3', 4', 5'	1', 2', 3', 4', 5', 6'	1,720 lb	375 lb/ft

NOTES:

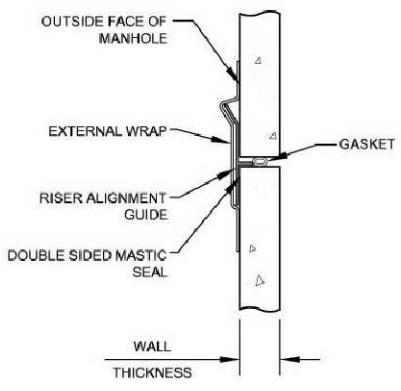
1. POLYMER MANHOLES ARE TO BE USED IN CONDITIONS WITH HIGH H₂S LEVELS.
2. MANHOLES SHALL BE WATERTIGHT.
3. MANHOLES WITH A DEPTH GREATER THAN 10 FEET FROM MANHOLE COVER TO INVERT SHALL BE 60" DIAMETER STANDARD.
4. BROKEN OR CHIPPED RINGS AND CONES SHALL NOT BE USED, EXCEPT BY PRIOR APPROVAL FROM THE DISTRICT ENGINEER.
5. MANHOLE BASES WITH INFLOW AND OUTFLOW COUPLINGS SHALL BE CAST IN AT ENGINEERED INVERT, ANGLE AND SLOPE ELEVATIONS AT A 0.1' MIN. GRADIENT.
6. THE CROWN ELEVATION OF ALL PIPES SHALL BE THE SAME AS THE CROWN ELEVATION OF THE LARGEST.
7. CHANNELS SHALL BE SMOOTH WITH NO SHARP ANGLES OR PROJECTIONS. RADII OF CURVED CHANNELS SHALL BE AS LARGE AS POSSIBLE. WHERE PRACTICAL, THE CURVE SHALL BE TANGENT TO THE CHANNEL WITH WHICH IT CONNECTS.
8. NO LADDER OR RUNGS ARE REQUIRED.

DATE	SANTA YNEZ COMMUNITY SERVICES DISTRICT	DRAWING NO.
MAY 2012	48"-60" I.D. POLYMER SEWER MANHOLE (PAGE 1 OF 2)	S-14.1

REVISIONS			
DESCRIPTIONS	BY	DATE	APPROVED



POLYMER MANHOLE SPECIFICATIONS			
A	B	WALL THICKNESS	WEIGHT PER FOOT
48"	52"	2"	300 lb
60"	64"	2"	375 lb



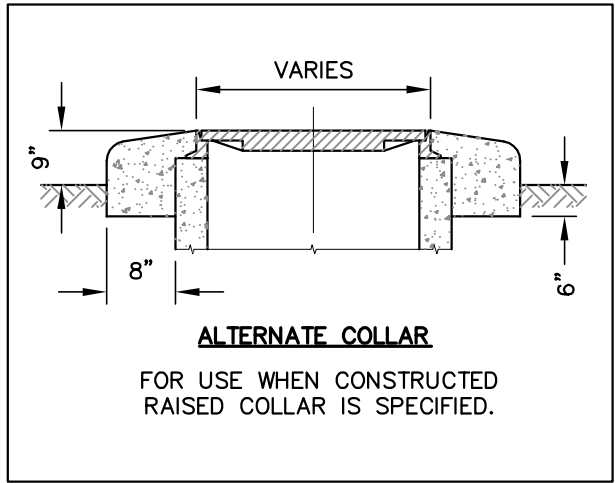
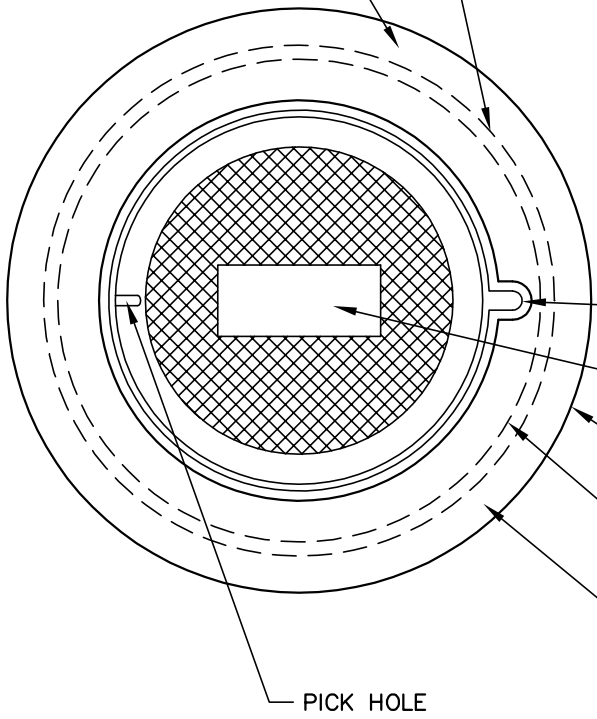
NOTES:

1. POLYMER MANHOLES ARE TO BE USED IN CONDITIONS WITH HIGH H₂S LEVELS.
2. MANHOLES SHALL BE WATERTIGHT.
3. MANHOLES WITH A DEPTH GREATER THAN 10 FEET FROM MANHOLE COVER TO INVERT SHALL BE 60" DIAMETER STANDARD.
4. BROKEN OR CHIPPED RINGS AND CONES SHALL NOT BE USED, EXCEPT BY PRIOR APPROVAL FROM THE DISTRICT ENGINEER.
5. MANHOLE BASES WITH INFLOW AND OUTFLOW COUPLINGS SHALL BE CAST IN AT ENGINEERED INVERT, ANGLE AND SLOPE ELEVATIONS AT A 0.1' MIN. GRADIENT.
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8. NO LADDER OR RUNGS ARE REQUIRED.

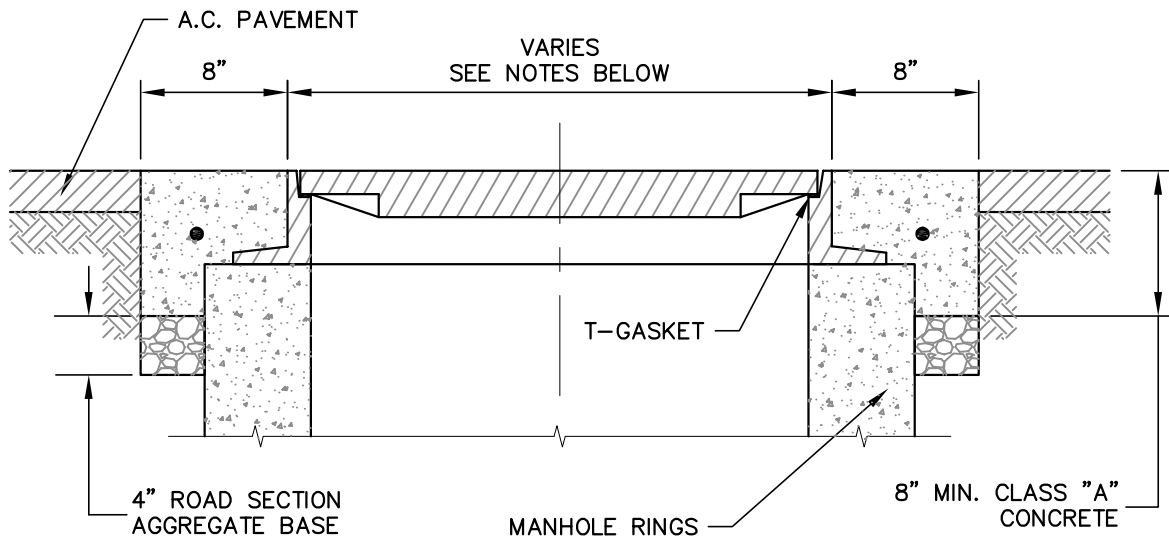
DATE	SANTA YNEZ COMMUNITY SERVICES DISTRICT	DRAWING NO.
MAY 2012	48"-60" I.D. POLYMER SEWER MANHOLE (PAGE 2 OF 2)	S-14.2

REVISIONS			
DESCRIPTIONS	BY	DATE	APPROVED

No. 4 REBAR
 CONCRETE COLLAR: CLASS "A",
 6-SACK, 3000 PSI, 3/4" AGG.



STANDARD COVER MARKING:
 "SEWER" IN RAISED LETTERS
 2" IN HEIGHT.



NOTES:

1. FOR 24" DIAMETER COVER, USE ERGO ACCESS ASSEMBLY OR APPROVED EQUAL.
2. FOR 30" AND LARGER DIAMETER COVER, USE ERGO XL ACCESS ASSEMBLY OR APPROVED EQUAL.
3. ALL CONTACT SURFACES TO BE MACHINED.
4. A HIGH TRAFFIC COVER MAY BE REQUIRED IN AREAS AS DETERMINED BY DISTRICT ENGINEER.

DATE	SANTA YNEZ COMMUNITY SERVICES DISTRICT	DRAWING NO.
MAY 2012	MANHOLE – HINGED FRAME AND COVER	S-15

APPENDIX

CONTENTS

APPENDIX

GUIDANCE CRITERIA FOR THE SEPARATION OF WATER MAINS AND NON-POTABLE PIPELINES

PERFORMANCE, PAYMENT AND GUARANTEE BOND

CERTIFICATE OF INSURANCE:
WORKER'S COMPENSATION AND EMPLOYER'S LIABILITY INSURANCE

INSURANCE ENDORSEMENT:
WORKER'S COMPENSATION AND EMPLOYER'S LIABILITY INSURANCE

CERTIFICATE OF INSURANCE:
LIABILITY INSURANCE

INSURANCE ENDORSEMENT:
LIABILITY INSURANCE

**GUIDANCE CRITERIA FOR THE SEPARATION OF WATER MAINS AND NON-
POTABLE PIPELINES**

Name of Project: _____

Bond No. _____

PERFORMANCE, PAYMENT AND GUARANTEE BOND

KNOW ALL MEN BY THESE PRESENTS: THAT WHEREAS, the Santa Ynez Community Services District, (the "District"), has entered into an agreement (the "Agreement") dated _____ 2006, with _____, (the "Principal"), whereby the Principal agrees to construct certain sewer improvements as therein described, which Agreement is on file with the District and by this reference is made a part hereof; and

WHEREAS, the Principal is required under the terms of the Agreement to furnish a bond for the faithful performance of said Agreement in accordance with the conditions hereafter set forth.

NOW, THEREFORE, the undersigned Principal, as principal, and _____, a corporation organized and existing by virtue of the laws of the State of _____, (the "Surety") as surety, are held and firmly bound unto said District in the sum of _____ Dollars (\$ _____) for the payment of which they do jointly and severally bind themselves and their respective heirs, executors, administrators, personal representatives, successors, and assigns by these presents.

THE CONDITIONS OF THIS OBLIGATION are such that if the said Principal, his (or its) representatives, heirs, successors, and assigns shall well and truly keep and observe all of the covenants and conditions and agreements in said Agreement and shall faithfully perform all the provisions of the Agreement and pay all laborers, mechanics, subcontractors, and materialmen and all persons who shall supply such persons and subcontractors with provisions and supplies for carrying on such work and all engineering, legal and other fees and expenses incurred by the District under said Agreement, whether any such claim would arise under the public works lien statutes, or the mechanic lien statutes of the State of California and compliance with the formal requirements of either or both of said statutes shall not be a condition to recovery upon said bond, and shall indemnify and save harmless the District, its officers, and agents, from any pecuniary loss resulting from the breach of and of said terms, covenants, and conditions to be performed by the principal;

AND FURTHER, that if the Principal will correct or replace any defective work or materials discovered by the District within a period of one (1) year from the date of acceptance of such work by the District, then this obligation shall become null and void; otherwise, it shall be and remain in full force and effect.

No change, extension of time, alteration, or addition to the work to be performed under the Agreement shall, in any way, affect the Principal's or the Surety's obligation on this bond, and the Surety does hereby waive notice of any change, extension of time, alteration or additions thereunder.

IN WITNESS WHEREOF, the said Principal and the said Surety have caused this bond to be signed and sealed by their duly authorized officers this ____ day of _____, 20__.

“SURETY”

“PRINCIPAL”

(Name of Surety)

(Name of Principal)

By: _____
(Signature)
Its Attorney-in-Fact

By: _____
(Signature)

(Name and Title - Printed or Typed)

(Name and Title - Printed or Typed)

Insurance Co:

Agency:

Address:

Premium paid until: _____

NOTICE:

No substitution or revision to this bond form will be accepted. Sureties must be authorized to do business in and have an agent for service of process in California. Certified copy of Power or Attorney must be attached.

CERTIFICATE OF INSURANCE

Description of Contract:

Type of Insurance: **Workers' Compensation and
Employers' Liability Insurance**

THIS IS TO CERTIFY that the following policy has been issued by the below-stated company in conformance with the requirements of Section 8.01 and 8.02 of the General Conditions of the Santa Ynez Community Services District Design and Construction Standards and is in force at this time, and is in a form approved by the Insurance Commissioner.

The Company will give at least 30 days' written notice by certified mail to the District prior to any material change or cancellation of said policy.

POLICY NUMBER EXPIRATION DATE

LIMITS OF LIABILITY

Workers' Compensation:
Statutory Limits Under the Laws
of the State of California

Employers' Liability:

\$_____ Each Accident

\$_____ Disease - Policy Limit

\$_____ Disease -
Each Employee

Named Insured (Contractor)

Insurance Company

Street Number

Street Number

City and State

City and State

By _____
(Company Representative)

(SEE NOTICE ON PAGE 2)

Insurance Company Agent for Service
of Process in California:

Name

Agency

Street Number

City and State

Telephone Number

This certificate is issued as a matter of information only and confers no rights upon the certificate holder. This certificate does not amend, extend, or alter the coverage afforded by the policy listed herein.

This is to certify that the policy has been issued to the named insured for the policy period indicated, notwithstanding any requirement, term, or condition of any contract or other document with respect to which this certificate may be issued or may pertain, the insurance afforded by the policy described herein is subject to all the terms, exclusions, and conditions of such policy.

NOTICE:

No substitution or revision to the above certificate form will be accepted. If the insurance called for is provided by more than one insurance company, a separate certificate in the exact above form shall be provided for each insurance company.

INSURANCE ENDORSEMENT

Description of Contract:

Type of Insurance: Workers' Compensation and
Employers' Liability Insurance

This endorsement forms a part of Policy No. _____.

ENDORSEMENT

It is agreed that with respect to such insurance as is afforded by the policy, the Company waives any right of subrogation it may acquire against the District, the District's Engineer, and their consultants, and each of their directors, officers, and employees by reason of any payment made on account of injury, including death resulting therefrom, sustained by any employee of the insured, arising out of the performance of the above-referenced contract.

The additional premium for this endorsement shall be _____%* of the California Workers' Compensation premium otherwise due on such remuneration.

This endorsement does not increase the Company's total limits of liability.

Named Insured (Contractor)

Insurance Company

Street Number

Street Number

City and State

City and State

By _____
(Company Representative)

(SEE NOTICE ON PAGE 2)

* - Contractor's insurance company to fill in this percentage.

NOTICE:

No substitution or revision to the above endorsement form will be accepted. If the insurance called for is provided by more than one policy, a separate endorsement in the exact above form shall be provided for each policy.

CERTIFICATE OF INSURANCE

Description of Contract:

Type of Insurance: Liability Insurance

THIS IS TO CERTIFY that the following policies have been issued by the below-stated company in conformance with the requirements of Part 8.03 of the General Conditions of the Santa Ynez Community Services District Design and Construction Standards and are in force at this time:

Policy Number	Expiration Date	Limits of Liability In Thousands (000)					
	A.	GENERAL LIABILITY					
		General Aggregate	\$ _____				
		Products-Comp Ops Aggregate	\$ _____				
		Personal and Advertising Injury	\$ _____				
		Each Occurrence	\$ _____				
		Fire Damage (any one fire)	\$ _____				
		Medical Expense (any one person)	\$ _____				
	B.	EXCESS GENERAL LIABILITY	<table style="width: 100%; border: none;"> <tr> <td style="text-align: center; width: 50%;"><u>Each Occurrence</u></td> <td style="text-align: center; width: 50%;"><u>Aggregate</u></td> </tr> <tr> <td style="text-align: center;">\$ _____</td> <td style="text-align: center;">\$ _____</td> </tr> </table>	<u>Each Occurrence</u>	<u>Aggregate</u>	\$ _____	\$ _____
<u>Each Occurrence</u>	<u>Aggregate</u>						
\$ _____	\$ _____						
	C.	AUTOMOBILE LIABILITY					
		Bodily Injury (Each Person)	\$ _____				
		Bodily Injury (Each Accident)	\$ _____				
		Property Damage	\$ _____				
		or Bodily Injury and Property damage Combined Single Limit	\$ _____				
	D.	EXCESS AUTOMOBILE LIABILITY	<table style="width: 100%; border: none;"> <tr> <td style="text-align: center; width: 50%;"><u>Each Occurrence</u></td> <td style="text-align: center; width: 50%;"><u>Aggregate</u></td> </tr> <tr> <td style="text-align: center;">\$ _____</td> <td style="text-align: center;">\$ _____</td> </tr> </table>	<u>Each Occurrence</u>	<u>Aggregate</u>	\$ _____	\$ _____
<u>Each Occurrence</u>	<u>Aggregate</u>						
\$ _____	\$ _____						

The following types of coverage are included in said policies (indicate by "X" in space):

A. GENERAL LIABILITY

- Commercial Form YES___ NO___
- Premises-Operations..... YES___ NO___
- Explosion and Collapse Hazard..... YES___ NO___
- Underground Hazard..... YES___ NO___
- Products/Completed Operations..... YES___ NO___
- Contractual Insurance..... YES___ NO___
- Broad Form Property Damage..... YES___ NO___
- Independent Contractors..... YES___ NO___
- Personal Injury and Advertising Injury..... YES___ NO___

B. EXCESS GENERAL LIABILITY

- Following Form..... YES___ NO___

C. AUTOMOBILE LIABILITY

- Business Auto Form Including Loading and Unloading..... YES___ NO___
- Owned..... YES___ NO___
- Hired..... YES___ NO___
- Non-Owned..... YES___ NO___

D. EXCESS AUTOMOBILE LIABILITY

- Following Form..... YES___ NO___

This certificate is issued as a matter of information only and confers no rights upon the certificate holder. This certificate does not amend, extend, or alter the coverage afforded by the policies listed herein.

This is to certify that the policy has been issued to the named insured for the policy period indicated, notwithstanding any requirement, term, or condition of any contract or other document with respect to which this certificate may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions, and conditions of such policies.

The Company will give at least 30 days' written notice to the District prior to any cancellation of said policies.

Named Insured (Contractor)

Insurance Company

Street Number

Street Number

City and State

City and State

By _____
(Company Representative)

(SEE NOTICE ON PAGE 4)

Insurance Company Agent for Service
of Process in California:

Name

Agency

Street Number

City and State

Telephone Number

NOTICE:

No substitution or revision to the above certificate form will be accepted. If the insurance called for is provided by more than one insurance company, a separate certificate in the exact above form shall be provided for each insurance company.

Insurers must be authorized to do business and have an agent for service of process in California and have a "B+" policyholder's rating and a financial rating of at least Class VIII in accordance with the most current Best's Rating.

INSURANCE ENDORSEMENT

Description of Contract:

Type of Insurance: Liability Insurance

This endorsement forms a part of Policy No. _____.

ENDORSEMENT

The District, the District's Engineer, and their consultants, and each of their directors, officers, and employees are included as additional insureds under said policy but only while acting in their capacity as such and only as respects operations of the named insured. This insurance shall not apply to an additional insured to the degree that the loss or damage is ultimately determined to be the result of the additional insured's negligence (including any connected with the preparation or approval of maps, drawings, opinions, reports, surveys, designs, or specifications). The insurance afforded to these additional insureds is primary insurance. If the additional insureds have other insurance which might be applicable to any loss, the amount of this insurance shall not be reduced or prorated by the existence of such other insurance.

This endorsement does not increase the Company's total limits of liability.

Named Insured (Contractor)

Insurance Company

Street Number

Street Number

City and State

City and State

By _____
(Company Representative)

NOTICE:

No substitution or revision to the above endorsement form will be accepted. If the insurance called for is provided by more than one policy, a separate endorsement in the exact above form shall be provided for each policy.

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