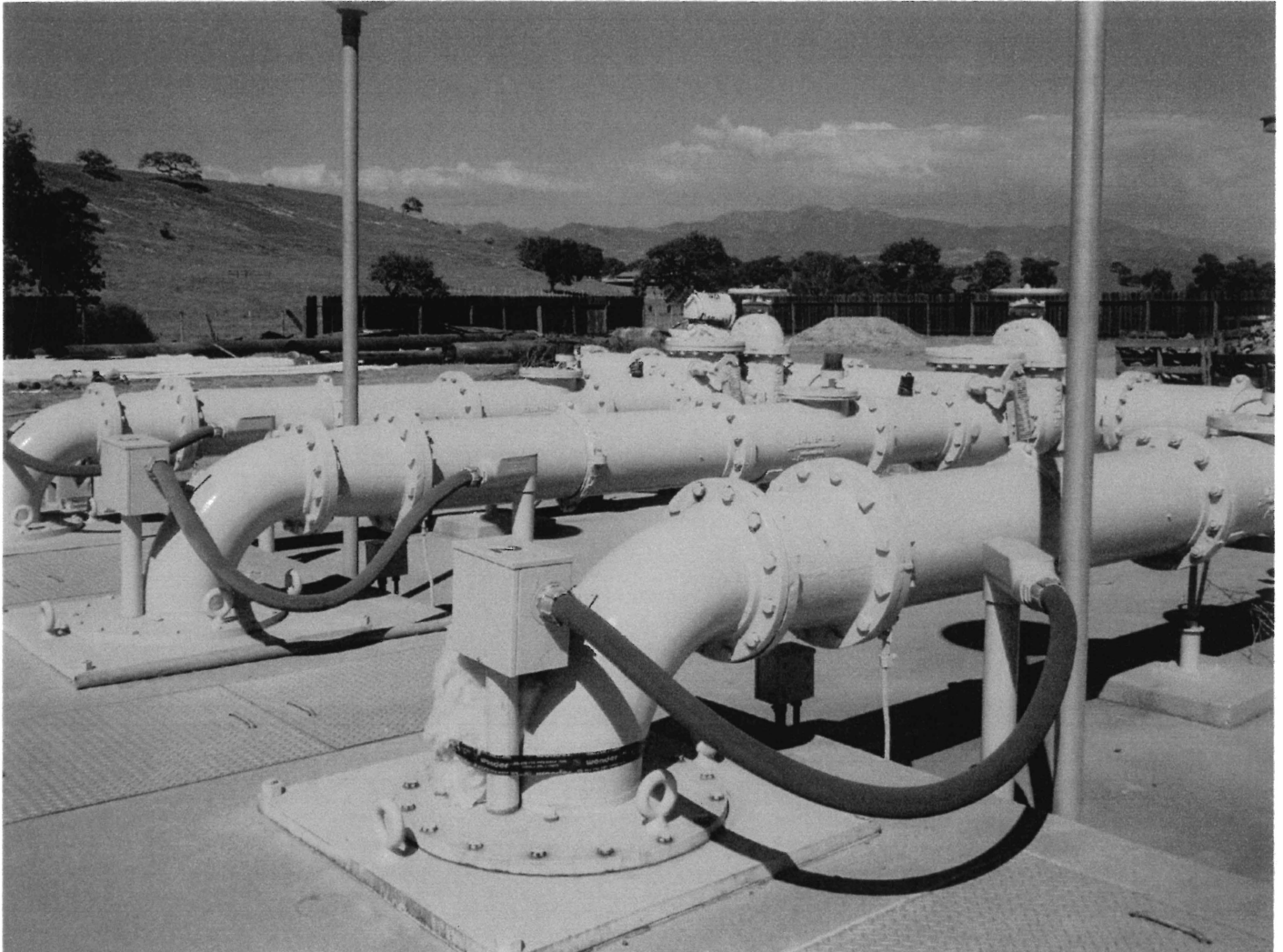


**WATER WORKS STANDARDS
AND
CONSTRUCTION SPECIFICATIONS**



**SANTA YNEZ RIVER WATER CONSERVATION DISTRICT
IMPROVEMENT DISTRICT NO. 1**

January 1, 2008

**3622 Sagunto Street
Santa Ynez, CA 93460
(805) 688-6015**

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SECTION 1.0 - APPLICATION REQUIREMENTS

1.01 General

These Standards and Specifications shall be applied to water system facilities and improvements which are to be designed, constructed and become an extension of the existing Santa Ynez River Water Conservation District, Improvement District No. 1 ("District") water distribution system. Sections 3 through 8 of these Specifications are applicable to all of the District's water distribution system construction and may be used for District public works projects as well.

All materials shall conform to the District's Standard Specifications and shall be new and delivered in good operational condition and properly stored. The District shall approve all such materials before installation.

1.02 Purpose

These Standards and Specifications are for the purpose of establishing standard procedures for making an application and designing and constructing water facilities which are an extension of the District's existing water distribution system.

1.03 Definitions

The following terms shall be used in these Standards and Specifications as defined herein:

Acceptance - The formal written acceptance by the District of an entire project, which has been completed in all aspects and in accordance with the Plans and Specifications and any approved modifications.

Agreement - Shall mean the written application and agreement for construction or improvement of water facilities between the District and the Applicant.

Air/Vac - Shall mean a combination air and vacuum valve, including service line, shut-off valve, concrete slab, and fabricated cover.

Applicant - Shall mean the property owner(s) (individual, partnership, corporation) making an application to the District for a new service connection and/or construction of water distribution facilities.

Record Drawings - Shall mean a set of record drawings prepared by the project engineer depicting revisions and/or changes that occurred during the course of construction of the project.

ASA - Shall mean American Standards Association which is the former name of the American National Standards Institute.

ASTM - Shall mean American Society for Testing and Materials.

Authorized Representative - Shall mean a District employee, consultant, or individual as assigned by the District General Manager or the Board of Trustees.

AWWA - Shall mean the American Water Works Association.

Backfill - Shall mean that material used to refill an excavated trench from the top of bedding to subgrade. Where no road or paving is to exist, constructed backfill shall be the material used to refill an excavated trench from top of bedding to finish grade.

Bedding - Shall mean that material used to support and protect the pipe. The bedding shall extend six inches below the pipe invert.

Board - Shall mean the Board of Trustees of the Santa Ynez River Water Conservation District, Improvement District No. 1.

Caltrans - Shall mean California State Department of Transportation.

Cal OSHA - Shall mean California Occupational Safety and Health Act as enforced and interpreted by the State of California, Division of Industrial Safety.

Contract - Shall mean the written agreement between the Applicant and the Contractor. When work is performed under a public works contract between the District and the Contractor, the term Contract shall be as defined in the General Provisions of that Contract.

Contractor - Shall mean the properly licensed individual, partnership, corporation, joint venture, or other legal entity having a contract or agreement with the Applicant to construct permitted work.

County - Shall mean the County of Santa Barbara unless otherwise specified.

DHS – Shall mean the State of California, Department of Health Services

District's General Manager - Shall mean the General Manager of the Santa Ynez River Water Conservation District, Improvement District No. 1. and his/her authorized representative.

District - Shall mean the Santa Ynez River Water Conservation District, Improvement District No. 1.

Easement - Shall mean a legal right to use or control the property of another for designated purposes by the District.

Encroachment - Shall mean any tower, pole, pole line, pipe, pipeline, fence, stand or any structure or object of any kind or character which is within the right-of-way or easement on property owned in fee or easement by the District and made by any public agency or private individual.

Environmental Documents – Shall mean all documentation relating to environmental issues, including mitigation measures.

Fire Flow – Shall mean the flow rate specified by the County of Santa Barbara Fire Department.

Material - All pipes, valves, fittings, backfill, bedding and all other items required to complete the project in accordance with the plans and specifications.

NSF – Shall mean National Sanitation Foundation.

Pipe Zone – Shall mean the area 6-inches beneath the pipe, the full trench width and 12-inches over the pipe.

Plans - Construction plans, submitted and approved by the District's General Manager to include: Title sheet, vicinity map, general notes, specifications, plan view, profiles, cross sections, and details.

Project Engineer – Shall mean a licensed civil engineer or delegated authority.

Punch List – Shall mean a list of all items that the District determines need to be completed by the Contractor and/or corrected for final inspection.

Right of Way - Land covered by a public road.

Rules and Regulations – Shall mean the Santa Ynez River Water Conservation District, Improvement District No. 1's adopted Rules and Regulations.

SDR – Shall mean the standard dimension ratio, defined as the interior diameter of a pipeline divided by its wall thickness.

Specifications - Shall mean the directions, provisions and requirements herein and/or project-specific technical specifications pertaining to methods, quantities and quality of materials to be furnished by the applicant under the permit or contract.

UBC – Shall mean the Uniform Building Code.

USA - Shall mean Underground Service Alert.

Work - Shall mean all construction, repair, maintenance or other work to be performed under the District's jurisdiction, whether in or out of contract, in accordance with the Plans, Specifications and/or special provisions, and/or permit.

1.04 District Application Package

A completed District Application Package and filing fee shall be submitted to begin the review process for approval of all new or modified water services and main line extensions. The Application Package shall include a general plan, project description, and a copy of all permits relating to the installation of the water system improvements, i.e., Road Encroachment Permit, California Department of Fish and Game, U.S. Army Corps of Engineers along with water demand calculations for the proposed project. Water Demand calculations shall be prepared by a licensed Architect, Landscape Architect or Civil Engineer. The District reserves the right to request additional information to properly evaluate the application and proposed project. Upon deeming an application package complete, the District shall then determine the final water system improvements and easement(s) that will be required to provide water service. The Applicant will then receive a "Requirements Letter". This letter will state the following: 1) the water system improvements which must be constructed; 2) the right-of-way and or easement(s), if any to be

dedicated to the District; 3) the required fees, securities and any additional conditions specifically relating to the project that must be met prior to the commencement of construction.

The letter will include an expiration date one year from the date that it was issued beyond which the application is no longer valid.

A District application form for Water Service can be obtained through the District office or downloaded from the web site.

1.05 Special Service Request Application

A Special Service Request Application and fee may be submitted to the District for a Water Service Consultation to determine the water system improvements, Right-of-way and conditions, which might be required for water service to the proposed new project.

1.06 Fees

The Applicant shall pay a deposit and/or fees to the District, in advance, for new service and for any costs and expenses incurred by the District during the Application review process and construction phases of a project. A list of fees and charges for obtaining water service will be included in the Requirements Letter.

Upon submittal of a completed Mainline Extension Application package, the applicant shall pay the Application deposit(s) and any fee required for review of the proposed water system improvements. Upon completion of the review of plans for water system improvements and meeting all other conditions, the construction surety bond shall be submitted to the District.

1.07 Requirements Letter

During the process of an application for water service, a "Requirements Letter" will be issued by the District stating the requirements and conditions that the Applicant shall meet in order to obtain water service.

1.08 Can and Will Serve Letter

When the requirements outlined in the Requirements Letter have been met, a Can and Will Serve letter may be issued. A Can and Will Serve letter for water service will only be available when the following have been met:

- 1) All financial arrangements have been met including payment of all fees; charges, required deposits and securities have been paid.
- 2) All conditions of the Requirements Letter have been met, including the installation and testing of a back flow device, if required.
- 3) All other agencies whose requirements impact the Districts facilities are satisfied.
- 4) All Environmental processes and appeal periods have been completed.

1.09 District Indemnification

The Contractor and the Applicant shall agree to defend, save and hold harmless the District, its Board, employees, engineer, consultants, and other agents against any and all loss and any and all

claims, demands, payments, suits, actions, recoveries and judgments of any kind arising from the negligent action of the Contractor and/or the Applicant in the design and construction of the water system improvements covered by these specifications.

SECTION 2.0 - DESIGN / SUBMITTAL REQUIREMENTS

2.01 General

The Applicant shall submit the following:

- Three sets of drawings prepared, signed, and sealed by the Project Engineer showing: site location; all property lines and easements; the proposed water system improvements as well as other project improvements.
- Copy of Conditional Use Permit; Permits and/or written approval required by other Regulatory Agencies having jurisdiction including the County Fire Department's Condition Letter, and hydraulic and water demand calculations.

The water system design shall comply with all requirements of the District's Standards and Specifications. Any deviation from these requirements can result in additional fees and or rejection of the application and may require a resubmittal fee. The Project Engineer's signature, stamp and expiration date shall appear on all sheets of the plan set (profiles, specifications, etc.), as well as necessary supporting reports and calculations.

2.02 Qualifications

The Project Engineer shall be a registered Professional Civil Engineer with a current valid license to practice in the State of California.

2.03 Plans

A. Plans shall be submitted in the following format and as shown in STD. Details 8.01 and 8.02:

1. 24-inch by 36-inch for full size and 11-inch by 17-inch for reduced plan sets
2. All borders, title blocks, plan and profile views shall be as shown in the STD. Detail 8.01.
3. A sheet consisting of the General Notes shall be included in the plan set.
4. All calculations shall be attached separately to the plan set.
5. Drawings shall include: A North arrow; drawing scale; plan views; profiles; details and signature block designated for Santa Ynez River Water Conservation District, ID No. 1.
6. A description of all benchmarks showing the Basis of Bearings shall be included.
7. Show all existing utilities, substructures and overhead lines.
8. Profiles shall be drawn with a horizontal scale of 1-inch = 20-feet and vertical scale of 1-inch = 4-feet. All other scales may be used if approved by the District; however the scale shall not be smaller than H: 1-inch= 40 feet and V: 1-inch= 8 feet.
9. Plans reduction shall be drafted in a manner that can be clearly read at full scale and reduced scale.
10. All lines, grades, stationing, contours, elevations, bearing and distances shall be shown on plans.
11. All mitigation measures the project is required to meet shall be included.
12. Dimensions shall be in feet and inches.

13. Horizontal Datum shall be based on the North American Datum of 1983 (NAD83) using the California State Plane Coordinate System in Zone V and Vertical Datum shall be based on the North American Vertical Datum of 1988 (NAVD88).

B. All plans drawn in AutoCAD shall be submitted to the District in electronic files and in paper format. The plans shall be drawn using NAD 83, California State Plane Coordinates, Zone V. The electronic files shall be fully functional and compatible with AutoCAD DWG file format. Separate dwg file layers shall be used for each type of water works appurtenance shown on the drawings. For example all pipes shall be in one layer, all fittings in another layer, all valves in yet another layer, all easements in another layer and so on. Final Record Drawings shall be submitted in full-size format and printed on Mylar and paper. A CD of the Record Drawings shall also be submitted.

C. District Specifications shall be printed on the construction plans as follows:

SANTA YNEZ RIVER WATER CONSERVATION DISTRICT
IMPROVEMENT DISTRICT NO. 1
SPECIFICATIONS:

1. All work shall be performed in accordance with the State of California Division of Industrial Safety, Construction and Safety Orders.
2. Contractor shall notify all utility companies with facilities in the construction area a minimum of 48 hours prior to commencing construction. Call Underground Service Alert (USA) at 1-800-422-4133.
3. The term "District Manager" shall mean the General Manager of the Santa Ynez River Water Conservation District, Improvement District No. 1, or authorized agent.
4. Commencement of construction shall not begin until such time that the District has signed all Plans, all required easements have been acquired and recorded and all construction permits and/or written approvals have been obtained through the appropriate agencies. A "Notice to Proceed" may be required.
5. All barricades, traffic control and warning signs shall be placed in accordance with the permitting requirements.
6. Contractor shall verify water, sewer and storm drain flow line elevations within the project area prior to commencing construction. Contractor shall immediately notify the District and the Applicant's Project Engineer of any potential conflicts between existing facilities and the construction of the proposed improvements.
7. Contractor shall verify the location, depth, material and size of existing water lines at points of proposed connection. If pipe data is misrepresented on plans, the Applicant's Project Engineer shall be notified immediately and no connection shall be made to the water system at that point until the Contractor has received approval from the Applicant's Project Engineer and the District.
8. Water mains, fire hydrants, and service connections shall be installed as shown on the plans unless otherwise approved in writing by the Applicant's Project Engineer and approved by the District. Water mains shall be installed after sewer lines and shall meet the minimum horizontal and vertical separation as specified in the District's Standards and Specifications, STD. Detail 8.14.
9. A complete set of approved plans shall be kept and maintained on site by the Contractor at all times during construction as required by the District. Upon completion of the construction, the Applicant's Project Engineer shall submit a complete set of Mylar "Record Drawings"

showing the actual construction that has been performed. The words "Record Drawings" shall be printed on each sheet.

10. A Contractor possessing a valid class "A" or other appropriate Class as required by the State of California Contractors License Board shall do all work pertaining to water facilities construction.
11. All material shall conform to the latest AWWA and ASTM specifications and NSF Standards 60 and 61.
12. All trenches shall be backfilled in accordance with these Water Works Standards and Construction Specifications.
13. All paving and repaving done in conjunction with water facilities construction shall be performed in accordance with the governing agency.
14. During construction, a tracer wire shall be installed along the top of all water mains and brought to the finished surface at each valve box, service connection angle stop, and blow-off.
15. A four mil blue plastic tape marked "Caution - Buried Potable Water Lines" shall be installed 2-feet above the top of constructed potable water mains.
16. All water system improvements shall be constructed in accordance with the current District Standards and Specifications.
17. Minimum cover of water mains is 36-inches. Minimum cover of water service laterals is 30-inches.
18. All newly installed lines shall be disinfected and tested for bacteria by a laboratory specified by the District. All water line improvements and extensions shall then be pressure tested per the District's Water Works Standards and Construction Specifications. The order in which the bacteria and pressure tests are performed will be determined on a case-by-case basis and must be approved by a District representative. See Section 5.18 for disinfection procedure.
19. A valve shall be installed in the closed position at the connection point to the existing District water system. This valve shall remain closed throughout construction and during the disinfection process.
20. Contractor shall submit in writing to the District all proposed shutdowns of existing in-service water mains when making the connection to the new water main. The Contractor shall notify the District a minimum of 10 working days prior to the proposed date the service will need to be shutdown. The District shall determine the actual date of any and all shutdowns.
21. The Contractor shall not operate any District valves, initiate any water main shut down or start up, nor tie over any temporary water service connections. Such work shall only be conducted by District personnel.

2.04 Design Elements for Water Distribution System

A. System Pressure (Title 22, Section 64566)

- 1 Changes in the distribution systems shall be designed to maintain an operating pressure at all service connections of not less than 20 pounds per square inch gauge (psig) under the following demand conditions:
 - a. User maximum hour demand.
 - b. User average day demand plus design fire flow.

- 2 In a public water system supplying users at widely varying elevations, a water supplier may furnish a service to a user which does not comply with (1) if the user is fully advised of the conditions under which minimum service may be expected and the user's agreement is secured in writing. This waiver shall be applicable only to individual service connections.
- 3 Water mains shall be designed to have at least five psig pressure throughout any buried length of the main except when the main is removed from service for repairs or maintenance. This requirement shall not apply to short lengths of water main near reservoirs inlets and outlets provided:
 - a. The water main is on premises owned, leased or controlled by the water supplier; or
 - b. The prior review and written approval of the District is obtained.

B. Water Demand Calculations (AWWA Manual M22)

The Project Engineer will submit calculations which estimate the water demand requirements (i.e., the flow rate) and the required pressure, for the proposed service connections. These calculations shall be completed in accordance with AWWA Manual M22. The calculations shall include the building fixture counts, landscape irrigation requirements, fire suppression system requirements, and all other appropriate data necessary to determine meter size and service connection size. The Water Demand Calculations shall be submitted in the format outlined in Manual M22 and shall be signed and stamped by either a registered Engineer or licensed Architect. The District will make the final determination for the service connection and meter sizes.

C. Sizing of Pipes

The proposed water main pipe diameter shall be sized to supply the maximum diurnal demand plus the required fire flow or peak hourly flow, whichever is greater. The Project Engineer shall submit to the District hydraulic calculations showing the adequacy of the selected pipe size, peak flows, fire flows, pressures, velocities, and hydraulic gradient. The district shall review the Project Engineer's proposed pipe size and make a final determination of the size to be installed. Minimum pipe diameter size for water mains shall be an interior diameter (I.D.) of 8-inches unless otherwise approved by the District.

Depending upon the material used, the velocity of the pipe shall be kept within a range acceptable to the District, but shall generally be less than 4 fps.

D. Thrust Restraints

Thrust blocking and thrust restraint shall be fully detailed on the drawings prepared by the Project Engineer.

Thrust blocking or other types of thrust restraints shall be sufficient to prevent movement of pipe or appurtenances in response to thrust forces. Thrust blocking or restraints shall be used at the following locations:

- a) Changes in pipeline direction (e.g. tees, bends, crosses)
- b) Line valves (except where adequate pipeline friction can be demonstrated)
- c) Change in pipeline size (e.g. reducers)
- d) Pipeline terminations (e.g. dead ends)
- e) Pipeline connects to hydrant at which thrust develops when open and closed
- f) Is subject to conditions in which thrust forces might occur and cause movement of pipeline or appurtenances.

Standard thrust block sizes shown in STD. Detail 8.10 for pipes up to 8-inches in diameter shall be used. An acceptable alternative to this requirement would be the submittal of a written report, prepared by a geotechnical engineer, licensed in the State of California, stating that the soils within the project site have a higher allowable soil bearing pressure for horizontal restraint than 1000 psf. In such cases, thrust blocks may be designed using the allowable soil bearing pressure determined by the geotechnical engineer.

For thrust block design, refer to AWWA Standard Manual M23 for PVC and AWWA Standard Manual M11 for steel.

Concrete thrust blocks shall be poured in undisturbed earth, a minimum of 8-inches from the outside diameter of the pipe. Compacted earth fill will be placed on the opposite side of the pipe (if not slurry). Blocks shall extend the full height of the pipeline.

E. Fire Protection

District-Owned Fire Hydrants – The location, number of fire hydrants and required fire hydrant flows shall be determined by the Santa Barbara County Fire Department and by the District's General Manager. The Condition Letter issued by the County of Santa Barbara Fire Department shall be included as a part of the initial submittal package to the District.

All hydrant laterals shall be constructed of 6-inch ductile iron pipe per AWWA C151 with locking restraints, poly wrap and encased with bolts properly greased. The selection of materials shall be made by the District.

Hydrants shall be wet-barrel type per AWWA C503 and equipped with a 6-hole drill breakaway spool, and shall have one 2-1/2-inch nozzle and one 4-inch nozzle unless otherwise specified. Hydrants within commercial areas shall have two 2-1/2-inch nozzles and one 4-inch nozzle. Installation shall conform to the District STD Details 8.12 and 8.13.

Hydrants shall be located within the public right-of-way or within District easements.

Private Fire Hydrants - A Double Check Detector Backflow prevention assembly shall be installed on all laterals serving private hydrants.

A detector check with bypass (“tattle tale”) meter shall be installed on services serving private fire hydrants.

Private fire lines shall be sized to limit pipeline velocity no more than 4 feet-per-second at the required fire flow rate.

F. Looping of Systems

All water main line extensions connected to the District's water supply system shall be connected in two or more locations. No dead-end lines shall be permitted, except as recommended by the General Manager and approved by the Board of Trustees. Looping will allow greater flexibility for maintenance, repair, improve quality of water and provide better fire flow in system hydrants.

G. Isolation Valves

Gate valves shall be required at locations to allow isolation of pipe segments and pipe appurtenances in the following configuration:

1. At crossings, 4 valves.
2. At tees, 3 valves.
3. At intervals along the main, not exceeding 1000 feet
4. One at each hydrant branch – See AWWA Standards Manual M31, page 19

In special circumstances, more valves may be required by the District.

All distribution pipelines shall have in-line valves spaced no greater than 1,000 feet. The District shall approve final valve location, type and size.

H. Air & Vacuum and Blowoff Assemblies

Air/Vac shall be required at all high points in water mains. Only combination air valves (air release and air/vacuum) shall be installed in the District water system. Valves shall be sized in accordance with the manufacturer's printed requirements.

Blowoff assemblies shall be located at all significant low points in the water supply system. Fire hydrants may be used in lieu of a blow off valve if approved by the District's General Manager.

I. Service Connections and Meters

The Contractor shall install corporation stop, lateral pipe, meter box, curb stop, and customer valve. Meter locations shall be in District easements or County right of ways. To facilitate the construction, flushing and testing of the system, a short pipe spool piece (meter spacer) shall be inserted where the meter will be installed.

The District itself shall install all service meters. Meters shall be no larger than the existing service line. The size of the meter shall be determined according to the District Rules and Regulations. Standard sizes of meters and laterals are as follows:

<u>Meter Size</u>	<u>Lateral Size</u>
5/8-inch	1- inch
3/4-inch	1-inch

<u>1-inch</u>	<u>1-inch</u>
<u>1.5-inch</u>	<u>2-inch</u>
<u>2-inch</u>	<u>2-inch</u>
<u>3-inch</u>	<u>4-inch</u>
<u>4-inch</u>	<u>4-inch</u>
<u>6-inch</u>	<u>6-inch</u>

J. Cross Connection Control

All water facilities shall be designed with cross connection control in accordance with the requirements of the California Department of Health Services, the District Rules and Regulations, the Uniform Plumbing Code (current edition) and Section 3.0 of these specifications. If there is a conflict between any of the guidelines, the more stringent guideline shall apply.

K. Depth of Burial

Water Mains - All water main lines up to and including 12-inches in diameter shall have a minimum cover of 36-inches from finish surface grade to the top of pipe, and a maximum cover of 48-inches. Pipelines greater than 12-inches and less than 24-inches diameter shall have a minimum cover of 42-inches from finish surface grade to top of pipe. For pipelines over 24-inches in diameter, the Project Engineer shall submit drawings and calculations for the proposed depth of the pipeline to be reviewed by the District.

Service Laterals – Lateral service pipelines shall generally be installed with a depth of cover of 30-inches.

L. Pipe Materials

All dead loads, live loads and surge pressures shall be considered in the design of water mains and the selection of materials.

For water mains up to and including 12-inches in diameter, PVC pressure pipe shall be used and shall be manufactured in accordance with AWWA C900 and designed in conformance with the AWWA Standards Manual M23. PVC Pipe shall be pressure rated as class 200 with the appropriate standard dimension ratio. PVC pipes shall be provided with bell and spigot push-on joints with integral gaskets.

M. Water Main Location

Whenever possible, all water mains shall be located within public road right-of-ways and in conformance with the DHS requirements for separation of sewers and sewage disposal facilities and water pipelines. Typical separation requirements are illustrated in STD. Detail 8.14. The project engineer shall obtain written approval from the District's General Manager for water mains located within private road right-of-ways. This approval should be obtained prior to preparation of the construction drawings. Water mains may be located in side or back yard easements if no other feasible option is available, and the alignment has been approved by the District; however, no service connections will be allowed on side or back yard mains unless otherwise approved in writing by the District.

The District's General Manager will make the final determination of the location of all water main lines.

N. Easements

For all water mains in private property, a minimum easement width of 20-feet shall be granted to the District unless otherwise determined by the District's General Manager. Water lines shall not be located closer than 5-feet from an easement line, property line or any other right-of-way line.

For hydrants, meters, backflow assemblies, air/vacs, and other appurtenances located on private property, an easement shall be granted extending 7.5 feet in each direction from the center of the hydrant or appurtenance and the center of its lateral pipe.

Easements shall be provided to the District without cost to the District and shall be recorded with the County of Santa Barbara, County Records Office before the District will sign the construction drawings. The grantor of the easement must be the property owner at the time the easement is recorded. Easements shall grant to the District the right to install, operate, maintain and replace water pipelines and all appurtenances. The right of access, ingress and egress shall also be granted to the District with the easement. The easement shall also state that the grantor of the easement and its heirs shall not install or allow to be installed structures, trees, fencing, invasive landscaping, or other fixed object(s) which may interfere or hinder the District's installation, operation, maintenance or replacement of facilities in the easement, or interfere or hinder the District's access or other rights to the easement. The easement shall also state that the grantor of the easement, its heirs and assigns shall be responsible for the cost of damage, repair, relocation, maintenance, and/or replacement of landscaping, paving, utilities and any other surface or subsurface features placed in the easement by the grantor of the easement, its heirs, assigns, or other parties and due to the District's exercising of its rights in the easement.

Any required easement descriptions, maps and deeds must be provided prior to final approval of the plans. The District will provide a standard Deed of Easement form for attachment of an "Exhibit A" (detailed description of easement) and detailed maps. The District may require a preliminary title report with the Deed of Easement to clarify ownership along the pipeline location.

In all cases easements shall conform to the District's Rules and Regulations, Article 7, section 708-B.

O. Existing Facilities

The Project Engineer shall contact Underground Service Alert (USA) to locate and mark existing facilities in the project area, shall contact all utilities who are registered with USA for the project area, shall gather and review all available records of existing utilities from these registered utilities, and shall show all existing utility information and locations on the plans.

2.05 Horizontal and Vertical Control

General

Vertical Datum on all topographic maps, construction drawings, and record drawings shall be tied to a benchmark whose location shall be described or shown on the plans. The benchmark elevation shall be based upon the North American Vertical Datum of 1988 (NAVD 88).

Horizontal Datum shall be based upon the North American Datum of 1983 (NAD 83) using California State Plane Coordinate System - Zone V.

A. Horizontal Control

Horizontal locations of proposed water system improvements shall be measured and referenced to the line of stationing along centerline of road wherever possible or as approved by the District. Stations shall be 100-foot increments. Stations for water system appurtenances shall be determined as measured perpendicular or radially from the line of stationing.

Construction shall show horizontal dimensions and distances for all property lines, easements, right-of-ways, existing improvements - above and underground, trees, landscaping and proposed new improvements. Ties to existing facilities, boundaries, coordinates, bearings and distances shall be used to show exact location of the proposed water system improvements.

B. Vertical Control

Construction Plans shall specifically define vertical location of proposed water system improvements. Elevation or depths shall be used to show exact vertical location unless otherwise permitted by the District.

A profile view shall be used to show the existing surface elevation, utilities and structures in a faded out format. All proposed improvements, finish surface elevations, and other appurtenances shall be prominently shown in the profile.

Top and bottom of the proposed pipeline shall be in profile depicting all connections to fire hydrants, blowoffs, air and vacuum valves and all other valving and improvements.

SECTION 3.0 - CROSS CONNECTION CONTROL

3.01 General

A cross connection is defined as any unprotected actual or potential connection or structural arrangement between a public potable water system and any other source or system through which it is possible to introduce into the potable system used water, industrial fluid, gas, or substance other than the intended potable water with which the system is supplied. Bypass arrangements, jumper connections, removable sections, swivel or change-over devices and other temporary or permanent devices through which or because of which backflow can occur are considered to be cross-connections.

Backflow prevention is the main purpose of the cross connection control and it is the intent of the District's cross connection control policies to eliminate all potential backflow. Backflow is typically caused by one of the following two situations: (1) when a greater pressure exists on the private side of the connection than on the District's side. This will change the direction of flow and backflow due to "back pressure" will result; or (2) when the water supply system drops into negative pressure, the fluids in the private system are sucked or "back siphoned" into the potable system. This may occur when demands on the District's distribution system are very high such as when fire flows are required.

3.02 Authority, References

The District's cross connection policies and requirements are included in Section 809, Article 8, of the District's rules and Regulations for water service, which shall govern for all properties served by the District. The installation, testing, maintenance, and repair of the backflow device are the responsibilities of the property owner. The District's Cross Connection Control Program Administrator is the enforcement agent for the District and all policy matters will be handled through his/her office. In addition, all backflow devices shall meet the requirements of the State of California Safe Drinking Water Act, Title 17, California Department of Health Services and the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (Foundation). If any conflict occurs between any of the guidelines, the more stringent shall apply.

3.03 Approved Devices

All backflow prevention devices shall be approved by the Foundation. A current list of approved devices may be reviewed at the District office.

3.04 Installation Inspection and Testing

A certified inspection and test of all backflow prevention devices shall be performed annually or more often in those instances where successive inspection indicate repeated failure, or on such other schedule approved by the Department of Health Services.

It is the responsibility of the property owner to have these devices tested. The District will send out a reminder of this requirement annually. The owner of the device shall, upon completion of the testing, submit the required forms completed by the tester to the District. Failure to test or

repair any found problem will result in immediate water service termination. Any failure of the device will require immediate repair.

Only individuals that are certified by AWWA (American Water Works Association), the Backflow Prevention Association (BPA) or the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (FCCHR) shall conduct inspections and tests. A list of certified testers is available at the District Office.

3.05 Backflow Device Installation

An approved backflow device shall be installed by the property owner, on all meters 1.5-inches or larger, on all meters connected to a commercial unit, and on all meters of any size, where a cross connection potential exists, including fire protection systems (per California Department of Health Services Requirements).

The device shall be installed within the property, near the location where the service lateral enters, adjacent to and downstream from the water meter for which the device is intended to serve. The device shall be accessible for maintenance and testing, with a clearance of at least 12-inches above grade.

SECTION 4.0 - PROJECT REVIEW

4.01 General

The District staff will review all proposed water facility improvements and extensions to the District's water supply system. Plans for such improvements and extensions shall be submitted to the District for review in accordance with this section.

4.02 Plan Submittal and Review

Applicant shall submit to the District two sets of the proposed construction plans for review. After the District has reviewed the plans, the District will return one set of plans to the Applicant with comments, changes, corrections and conditions for completion of the construction plans. Plans shall be corrected and returned for final review, along with the original plans and District comments. Once all conditions and requirements of the District are met, the Applicant shall submit to the District three sets of 24 x 36 inch plans on Mylar and computer AutoCAD files on CD-ROM of the completed construction plans. These plans shall be prepared in accordance with the requirements outlined in Section 2 of these specifications.

The review and signing of the completed plans by the District is only a review of the design concept and general compliance with the District's standards and specifications. The Project Engineer is responsible for the design and accuracy of the construction drawings. Any errors, omissions, conflicts, ambiguities, or discrepancies in the completed signed plans do not relieve the Applicant and/or its Contractor(s) of the responsibility to construct all water system improvements in accordance with the District's rules, regulations, standards and specifications. (See Section 5.05 of the Water Works Standards and Construction Specifications, Work to be Performed.)

4.03 Plan Review Fees

The Applicant shall be required to pay the District for plan checking services. The charges will be billed based on staff time (including applied overhead charges) and materials in accordance with the District's Rules and Regulations and Section 1 of these specifications.

4.04 Inspection Fees

The Applicant will be required to pay the District for inspection services during construction of water system improvements. The charges will be billed based on staff time and materials in accordance with the District's Rules and Regulations and Section 1 of the Water Works Standards and Construction Specifications.

4.05 Cost Estimate

A construction cost estimate for water system improvements will be required once the plans have been completed. The Project Engineer as defined in Section 2.02 of these specifications shall provide the Cost Estimate. The engineer's cost estimate will serve as guide for the District to determine an estimated construction cost amount for surety of performance of the Work and for

surety for labor and materials. The District reserves the right to make adjustments to the cost estimate that in its judgment are necessary for a more accurate estimate for the work.

4.06 Construction Surety

The Applicant shall submit bonds, letters of credit, or other surety acceptable to the District guaranteeing the performance of the Contractor performing the work and the payment by the Contractor for labor and materials in constructing the work. The performance surety and payment surety shall each be for 100 percent of the estimated construction cost determined by the District-approved cost estimate. The surety shall protect the District against any and all costs to install, repair or maintain the water system improvements should the contractor fail to perform during construction and to pay any and all claims for labor and materials to construct the improvements.

Upon substantial completion of the constructed improvements and acceptance of the improvements by the District, up to 90 percent of the surety for performance will be released. The District shall retain the remaining surety for performance for a period of one year after the Board of Trustees has formally accepted the project. In addition, the Applicant shall submit to the District waivers of lien, release of liens and/or affidavits of payment for all suppliers of labor and materials to construct the water system improvements prior to acceptance of the improvements by the District. The District shall release the surety 35 days after the Notice of Completion has been filed with the County of Santa Barbara and all financial obligations for all costs and expenses incurred by the District relating to this project have been resolved.

4.07 Required Permits and Easements

The Contractor shall obtain all required permits from the governing jurisdictions in which the project is situated. A copy of all permits relating to the installation of the water system improvements, i.e., Road Encroachment Permit, California Department of Fish and Game, U.S. Army Corps of Engineers and USA numbers shall be submitted to the District two working days prior to the commencement of construction. If the District does not already hold copies of the recorded documents providing all required easements and right-of-ways for the proposed water system improvements, these documents shall be submitted to the District a minimum of two working days prior to the commencement of construction.

SECTION 5.0 - CONSTRUCTION METHODS AND PROCEDURES

5.01 General

The Contractor shall construct all water facilities in accordance with these specifications, applicable AWWA Standards, the Construction Plans signed by the District's General Manager (or authorized representative) and all approved project special provisions.

5.02 Qualification

A California licensed contractor with a Class A or other authorized class designation shall do all construction. A copy of the Contractor's current valid license shall be provided at least two days prior to beginning construction.

5.03 Liability Insurance

As required by the District, the Contractor shall furnish to the District copies of insurance policies or certifications of general liability and auto coverage. General liability and auto insurance shall be for the amount determined by the District and in accordance with ACWA/Joint Powers Insurance Authority (JPIA).

5.04 Preconstruction Conference

A pre-construction conference shall be scheduled a minimum of 10 business days prior to the commencement of construction. Attendee's shall include the District's General Manager, District Inspector, Applicant or Applicant's representative, Project Engineer, Contractor, the Contractor's principal subcontractors and other appropriate personnel or agencies. This discussion shall consist of a review of proposed materials, work schedule and details pertaining to methods to minimize the interruption of service to existing District customers.

5.05 Work to be performed

The Contractor shall perform all the work necessary to complete the construction in accordance with the District's Rules and Regulations, Standards and Specifications and the District approved signed plans. Work shall also include all construction related to changes, repairs, removals, pressure testing, disinfection procedures (See District Water Works Standards and Construction Specifications) and any or all modifications as part of the project.

In resolving disputes resulting from conflicts, errors, omissions, ambiguities, or discrepancies in the approved plans, District Water Works Standards and Construction Specifications, and any other of the project construction documents, the order of precedence for resolution shall be as follows:

- 1) Permits of other agencies
- 2) Change Orders, Work Change Directives, or Written Amendment, stamped and signed by the Project Engineer and approved by District Engineer
- 3) District Rules and Regulations
- 4) District Water Works Standards and Construction Specifications

- 5) Construction Drawings, i.e. Plans, reviewed and signed by the Project Engineer and approved by the District

With reference to plans, the order of precedence shall be as follows:

- 1) Notes and Specifications on plans govern over graphic representations on the plans
- 2) Dimensions, i.e. numbers, govern over scaled dimensions
- 3) Detail drawings govern over general drawings
- 4) Approved Change Order drawings govern over previously approved construction drawings

5.06 Locations, Lines and Grades

All work shall conform to the lines; elevations, alignments, offsets and profiles shown on the approved signed plans. The Contractor shall provide elevation, alignment, lot numbers, off-sets and control stakes set by a licensed land surveyor or authorized Civil Engineer and any conflict shall be immediately reported to the District and the Project Engineer.

The as-constructed coordinates and elevations of all hydrants, meter boxes, air/vac valves, blowoffs, and valve covers shall be surveyed by a licensed land surveyor or authorized Civil Engineer. This information will be incorporated into the record drawings, to be submitted by the Applicant's Project Engineer (per Paragraph 5.07).

5.07 Records of Construction

Red-Lined Field Drawings - A complete set of signed construction plans and written specifications shall be kept on site at all times during construction. The Contractor shall mark on the plans all changes and revisions from the original signed plans including all change orders, alignment changes, depth changes of pipe and other utilities and all other items that are not the same as they are shown on the original District signed plans. All notations made in the field shall be initialed by the reviser.

Permanent Record Drawings - Upon completion of the project, the Contractor shall submit to the Applicant's Project Engineer the marked-up drawings showing all changes, along with the surveyed information, as discussed in Paragraph 5.06. The Applicant's Engineer will then submit to the District, (prior to acceptance of the water system improvements by the District and prior to the release of the Applicant surety) a complete set of "Record" Mylar drawings and paper drawings showing the completed system, including the coordinates and elevations of all hydrants, meter boxes, air/vac valves, blowoffs, and valve covers. A CD of the Record Drawings in AutoCAD, in the layer formatting and datum outlined in Section 2.03 shall also be submitted.

5.08 Inspection

All work and materials are subject to inspection by the District. Inspection of materials and work shall be as required in these specifications and per the District's General Manager. The District's inspector shall be notified 48 hours in advance prior to the time inspection is required. Work and water improvements covered without District inspection shall be completely uncovered for inspection at the Contractor's expense.

5.09 Material Storage

All pipe and pipe appurtenances shall be kept in a safe storage area where they can be protected from heat, dirt, weather, or other detrimental factors. Pipe shall be stored in such a way as to not create a load on the pipe that may cause bending, cracking or other damage.

The ends of stored pipe materials shall be covered to prevent the entry of rodents and insects.

In accordance with AWWA Standards, PVC and HDPE pipe shall not be exposed for extended periods to direct sunlight. If the District's inspector suspects that degradation of plastic materials has occurred due to exposure to ultra-violet light, a sample of material shall be taken and submitted for testing to a District-approved testing laboratory, at the Contractor's expense. (Certified test reports shall be furnished directly to the District.) If material degradation is confirmed by this testing, all material associated with the sample shall be removed from the project, and additional testing of materials, may be ordered.

5.10 Trench Excavation

No worker shall enter a trench that is 5 feet or more in depth, unless a Contractor-submitted worker protection plan is on file with the District and an OSHA certified "competent" person has confirmed that bracing and shoring have been properly installed, and other requirements of the worker protection plan have been met. The Contractor's worker protection plan shall be at least as effective as that required by the Construction Safety Orders of the California Division of Industrial Safety. If the plan varies from the shoring systems standards established by said Safety Orders, the plan shall be prepared by a registered civil or structural engineer.

Trenches shall be excavated to line and grade as shown on the Plans. Material excavated from the trenches shall be placed in such a way as to not endanger the health and safety of the workers or the public.

Dewatering - The Contractor shall remove water that accumulates in the excavation during the progress of the work so work can be done in a substantially dry trench. Trenches or other excavation shall be kept free from water while the pipe or structures are being installed, while concrete is setting, and until backfill has progressed to a sufficient height to prevent possible flotation or movement of the pipe.

Water shall be disposed of in such a manner as to not cause injury or damage to the public, private property or be a threat to public health and in conformance with NPDES requirements. It shall be the responsibility of the Contractor to procure permits needed to discharge to streets, streams and drainages.

All loose material shall be removed from the bottom of the trench before placement of any bedding material. If material in the bottom of the trench is deemed unsuitable for proper pipe support, the unsuitable material shall be removed and replaced with pea gravel or other approved fill.

No trench in the traveled way shall remain open overnight without backfill or steel plate covers. All trenching operations shall be in accordance with the requirements of the State of California Division of Industrial Safety, Construction Safety Orders.

5.11 Pipe Bedding and Pipe Zone Material

Pipe bedding is defined as the material located from the pipe invert to 6-inches below the pipe. Pipe zone material is defined as backfill material extending from the pipe invert to a minimum of 12 inches above the pipe crown. Pipe bedding and pipe zone material shall conform to Section 6.11 of these specifications, and shall be placed across the entire trench width, as shown in STD. Detail 8.09. Pipe bedding and pipe zone material shall be compacted to 90% relative compaction per ASTM D 698. The Contractor shall ensure that pipe is not being supported by the bell portion of the pipe at any joint. (See Section 5.16, trench backfill and compaction requirements.) The Contractor shall reimburse the District for any District testing costs for failed tests.

5.12 Pipe Installation

Pipe shall be handled and installed in accordance with the pipe manufacturer's printed recommendations and per the District's Specifications. The Contractor shall determine the location of existing underground utilities in the vicinity of proposed pipe installation prior to excavation.

For PVC pipe installation, see AWWA Standards Manual M23. For steel pipe, see AWWA Standards Manual M11.

At the end of each workday, the Contractor shall plug or cap the open ends for all unfinished pipelines with bolted mechanical joint plugs, mechanical joint end caps or blind flanges or other methods approved by the District.

Pipe Laying - All pipes shall be laid to the line and grade shown on the plans. Pipe alignment and grade shall be checked after each length of pipe is installed to insure that downstream pipe did not deflect as a result of the last pipe length installed. Pipe shall not deflect at the joints more than 75% of the manufacturer's printed recommendations. If PVC pipe is bent, the radius of curvature shall be no less than 133 percent of the manufacturer's minimum. No pipe shall be backfilled before being inspected by the District.

Tracer Wire - A tracer wire, No. 12 gauge solid core insulated copper, shall be placed at the top of the water main before backfilling. Tracer wire shall be spliced with solder connections. Cover splices with electrical tape for corrosion protection. Perform a continuity test for all tracer wire installations. Wire shall extend from valve to valve, to service lines and fire hydrants as well. See STD. Detail 8.12.

Service Interruptions - 72-hours before any portion of the existing system is to be taken out of service, the Contractor shall make a written request to the District showing specifically what services will be affected and what valve operations are required. At the District's discretion, the schedule of such shutdowns will be modified to reduce impacts on customers and lessen risks to the system.

Customers shall be notified of any disruption of service at least 24 hours in advance. This shall be accomplished by distributing a District-approved "door-hanger" notification to each affected

customer. The scheduling of outages for critical customers shall be arranged at the convenience of the customers. Critical customers include: medical care facilities, schools, and businesses that depend on water service.

Work that requires the interruption of service shall be planned and executed so that it will not disrupt service before 8:30 A.M., and will ensure restoration of service before 3:30 P.M. each day, unless an exception in writing is acquired from the District prior to the shutdown. If, in the opinion of the District, the Contractor does not demonstrate that work is properly planned, the shutdown shall be deferred until a proper plan is provided.

Only District personnel may operate existing mainline valves. Prior to the system shutdown, the Contractor may request that specific valves be exercised and tested to verify their operation.

Connection to Existing In-Service Mains - The connection of new water pipelines to the existing District water supply system shall be made with closed valves separating the new pipe from the District's system. The connection shall be made prior to disinfection and testing. The separation valves will not be opened until bacterial testing results have been received showing successful disinfection of the new pipelines. The materials used to make the connection shall be cleaned and disinfected before installation, including the interior surfaces of tapping sleeves, tees, outlet nozzles, and the separation valves. These materials shall be thoroughly cleaned and then they shall be swabbed with 12 percent sodium hypochlorite solution prior to refilling the existing system.

Use of Tapping Sleeves – The use of tapping sleeves to connect new mains to existing pipelines shall be subject to the review and approval of the District. Where the District determines that the existing pipeline will be excessively weakened by the connection, plans and procedures shall be developed to insert a “T” connection into the pipe, during a temporary shutdown. All tapping sleeve materials shall conform to the requirements found in Section 6. Approved manufacturers and models are found on the approved materials list.

Wet-tap connections – Only approved Contractors may perform 4-inch and larger wet-tap connections. To be approved for such work, a Contractor must demonstrate to the satisfaction of the District that he or she has the required skills, equipment, and experience.

Service abandonment. Where services are permanently abandoned, corporation stops shall be shut-off and capped at the main.

Disposal of Asbestos-Cement Piping Materials – Asbestos cement pipe and other materials considered to be hazardous shall be disposed of in a manner conforming to all state and federal regulations. Chain-of-custody documentation (manifests) shall be provided to the District, showing that such material is deposited into a landfill permitted to receive it.

Storage of Piping Materials. Upon delivery, piping materials shall be elevated from the ground and covered to protect from ultraviolet degradation and contamination.

5.13 Thrust Restraint

Thrust blocks and other restraints shall be installed at all vertical and horizontal bends, tees, crosses, dead ends, and hydrants and at other locations shown on the approved plans, and as described in Section 2.04. Each concrete thrust block shall be formed so that it is confined to the

approximate shape shown. Bolts and nuts for flange and other connections shall not be encased in concrete.

Thrust blocks shall be formed out of concrete meeting requirements of Section 5 herein and AWWA Standards M23 and M11. Blocks shall be sized and configured in accordance with Section 5 herein and STD. Detail 8.10. Concrete shall be poured against undisturbed ground.

5.14 Fire Hydrants

Fire hydrant assemblies shall be installed in accordance with applicable sections of AWWA C600 and AWWA Manual M17. Materials shall be as specified in Section 6.06 herein. Hydrants shall be installed plumb and shall be installed before curb and gutter and sidewalk whenever possible.

Location –Hydrants shall be located 3-feet from the property line. Where sidewalks exist, hydrants shall be placed behind the sidewalk, a minimum of 18-inches from the centerline of the hydrants to the back of sidewalk. Where no curbs exist, hydrants shall be located a minimum of 3-feet from the edge of roadway pavement. See STD. Detail 8.12. Guard post may be required, as shown in STD. Detail 8.13.

Depth - A minimum of 18-inches of clearance and a maximum of 24-inches shall be maintained between finished grade and the lowest operating nut on the hydrant. The center of the breakaway spool shall be on grade with the top of curb unless the hydrant is set in concrete in which case the spool shall be completely exposed.

Breakaway Spool - The hydrant shall be installed with a breakaway spool with hollow bolts on the flange. Hollow bolts shall be installed with the hollow tips pointing up and filled with silicon sealant.

5.15 Valves and Appurtenances

Valves shall conform to AWWA Standard C509, Resilient-Seated Gate Valves for Water Supply Service, as manufactured by the Mueller Corporation. Valves shall be carefully inspected and cleaned before installation. The Contractor shall operate each valve prior to installation to determine if it is in proper working order. If a valve is defective, no attempt shall be made to repair it, and the defective valve shall be returned to the manufacturer. Valves shall be set plumb and secured in place.

Valve boxes shall be installed centered and plumb over the operating nut. Valve boxes shall be set just below subgrade to prevent damage during construction and surfacing. Tracer wires shall run up the side and loop inside the valve box, as shown in Detail 8.10.

5.16 Backfill and Compaction

Trench backfill shall mean the fill material placed in the trench above the pipe zone. Trenches shall be backfilled with a suitable material as specified in Section 6.11 and compacted to 90% relative compaction in accordance with ASTM D 698. All trenches shall be backfilled in 6-inch lifts, and then compacted by mechanical means. When required, backfill shall be Class 1 backfill material or sand/cement slurry as specified in Section 6.11 of this Specification.

Trench spoils or imported material may be used for trench backfill above the pipe zone, provided the compaction requirements are met, and provided that slurry or other special material is not required by the County permit. Moisture shall be carefully controlled so as to achieve the required compaction, and adequate tests shall be taken to demonstrate results. The Contractor shall remove and dispose of all excess materials.

5.17 Service Connections

Service connections shall be installed as required by the signed Plans and Specifications. Service lines shall be installed perpendicular to water mains. Service connection size shall be determined by the District as defined in Section 2 – D. Service connection sizes shall be 1”, 2”, 4”, 6” or 8” only and shall be installed per the instructions defined in STD Details 8.04, 8.05 and 8.06.

5.18 Disinfection

General - Disinfection shall be done in accordance with AWWA C651. Sodium Hypochlorite solution or powdered chlorine shall be used. The disinfection process shall be supervised by authorized District personnel.

Disinfection - The disinfection of a main shall be conducted as follows: Assure valves are closed on existing system to prevent the solution from flowing into water supply system. Sampling shall be performed by authorized District personnel for bacteriologic tests.

Final Flushing - After disinfection is complete, the pipe section shall be drained of chlorinated water and flushed with clean potable water. The Contractor shall notify the District in advance that final flushing will be performed. Flushing shall continue until residual levels are no more than 2 mg/L. All water that is flushed from the pipeline shall be dechlorinated prior to discharge to the street, storm drain, storm channel or other water course.

Bacteriologic Tests- After pipe has been flushed and before pipe can be connected to the system water samples shall be taken and tested for the presence of coliform organisms. Test shall be done by a DHS-qualified laboratory and results provided directly to the District. If water in pipe does not meet the State Health requirements, repeat the disinfection procedure until requirements are met. Successful testing shall be confirmed before the new main is connected to the distribution system.

5.19 Hydrostatic Testing

General- The Contractor shall conduct pressure and leakage tests on all newly laid pipe only after successful disinfection has been confirmed. Test sections shall not exceed 1,000 feet in length. The Contractor shall furnish all equipment and materials for tests, unless otherwise directed by District.

Pressure Test - Each section (1,000 feet max) of line shall be tested. Pressure tests shall not be conducted until concrete thrust blocks have been placed and cured per Section 2.04-C, Section 5.13 and STD. Detail 8.10. The pressure test shall be conducted in accordance with the AWWA Standards Manual M23 for PVC and AWWA Standards Manual M11 for steel pipe. The test pressure shall be 200 psi, and the test duration shall be 4 hours, unless otherwise approved by the District.

Leakage Test - A leakage test shall be conducted concurrently with the pressure test. No installation will be accepted until the leakage is less than the allowable limit as defined by the AWWA Standards.

5.20 Corrosion Protection

All Ductile Iron Pipe, fittings, and appurtenances shall be protected from corrosion using polyethylene wrap per AWWA C105.

All buried metallic fittings shall be encased in polyethylene wrap, after liberal application of grease.

5.21 Abandonment

Abandonment of pipelines, structures or conduits shall be performed as noted on the Plans and Specifications. Items to be abandoned in place shall be filled with slurry and plugged with concrete at all openings. All laterals and service lines that are abandoned shall be shut-off at the corp stop and capped.

5.22 Resurfacing

All pavement resurfacing within the road right-of-way shall be performed, tested, and inspected in accordance with the requirements of the governing agency.

5.23 Changes During Construction

During construction, the Contractor, the Project Engineer, the Applicant or the District may propose changes, which are not shown on the plans. All proposed changes shall be made in writing and submitted to all of the other parties. The District or the Project Engineer may require sketches or revised construction drawings depicting the proposed changes. The District may also require a plan check of any sketches or revised construction drawings. The District and the Project Engineer shall approve all changes in writing prior to their construction. The change in construction plans shall be shown on the Record Drawings prepared at completion of the work in accordance with Section 7 of these Specifications.

SECTION 6.0 - CONSTRUCTION MATERIALS

6.01 General

All materials shall conform to sizes, capacities and quantities as shown on the Drawings or described in these specifications of which this is a part. Materials shall be from new stock and delivered in good condition. After delivery to the site, all materials shall be properly protected against breakage, rusting, accumulation of foreign matter, disintegration and injury.

The Contractor shall submit a complete list of materials for District review and approval prior to delivery. The submitted list of materials shall clearly highlight any materials that are proposed as substitutes for the materials that have been specified.

The District's review and approval of the Contractor's list of materials does not relieve the Contractor of his/her sole responsibility for providing the materials required by these specifications, the project specifications, and the project drawings.

6.02 Pipe and Tubing

A. Poly Vinyl Chloride (PVC) - All PVC pipe for water mains shall be Class 200 and manufactured per AWWA Standard C900. All PVC and any other non-metallic pipes used for water mains shall be equipped with tracer wire. Pipe joints shall be push-on type unless otherwise specified on the plans or specifications. Gaskets shall be elastomeric and shall meet the testing requirements of ASTM D3139. All PVC pipe shall be marked at intervals of not less than five feet with the following information:

- 1) Material (PVC)
- 2) Inside diameter O.D.
- 3) Dimension ratio.
- 4) AWWA pressure class
- 5) AWWA Designation (i.e. C900)
- 6) Manufacturers name
- 7) Production Run Data

B. Lateral Pipes - Unless otherwise noted or approved, pipe for 1-inch water service laterals shall be high-density polyethylene pipe conforming to AWWA Standard C906. Such pipe shall be made from P.E. 3406 resins, conforming to ASTM D2239. Minimum wall thickness shall be SDR-7. Pipe shall have a nominal IPS (Iron Pipe Size) OD.

For 2-inch lateral pipes, PVC pipe and fittings shall be used. Pipe and fittings shall be Schedule 80, Type I - Type II, iron pipe size.

For service connections 4 inches in diameter and larger, piping and fittings shall be ductile iron with restrained mechanical-joint type fittings. For 6-inch hydrant laterals ductile iron pipe shall be used with joint restraints.

C. Ductile Iron Pipe - Ductile iron pipe shall be manufactured in accordance with AWWA Standard C150. All pipes shall be centrifugally cast in 18-foot lengths and made to conform to pipe thickness for 200-psi working-pressure. The pipe shall be bituminous seal coated and

cement-mortar lined, shall conform to AWWA Standard C104 and shall be standard thickness. The pipe ends shall be mechanical or push on type joints. Pipe shall be Class 52 minimum. All pipe fittings shall conform to AWWA Standard C110. The joint specifications for the pipe shall be applicable. The fittings shall be bituminous seal coated and cement-mortar lined, conforming to AWWA Standard C104. Poly wrap and “NO-OX-ID” bolt grease is required on all bolted connections. There shall be no bare ductile iron pipe buried without polyethylene encasement.

6.03 Service Fittings

- A. Saddles - Saddles shall be bronze with iron pipe size threads. On PVC pipe, saddles shall be secured by double flat stainless steel straps. On ductile iron pipe, saddles shall be secured by double bronze straps. Service saddles shall be made specifically for C900 PVC pipe unless special circumstances require an alternative design and material. See approved list for materials.
- B. Corporation Stops - Corp stops shall be bronze with iron pipe size threads and shall match saddle threads. See approved material list.
- C. Meter Stop - Angle meter stops shall be bronze and rated for 300 psi. A 1-inch size and smaller shall have a meter swivel nut connection. A 2-inch size shall have a flanged meter connection. See list of approved materials.

6.04 Valves and Pipe Fittings

- A. Gate Valves – Gate valves shall be iron body, resilient seated gate valves with non-rising stems, and shall conform to the requirements of AWWA C509. All gate valves shall be internally coated with epoxy in accordance with AWWA C550. Valves shall open counter clockwise and shall be of the same size as the main or service they are installed on. The minimum working pressure rating shall be 200 psi. Valves shall be by Mueller brand only. All valves shall be marked with manufacturer name, size, pressure rating and year manufactured. Gate valves shall be flanged joined unless otherwise specified on Plans and Specifications.
- B. Combination Air / Vacuum Valve – Combination Air / Vacuum Valves shall be sized as specified on plans and specifications. Body shall be ductile iron or cast iron. Valves shall conform to the requirements of AWWA Standard C512. See list of approved materials.
- C. Couplings – Couplings for connecting pipe of different material but similar outside diameter shall be sleeve type. Couplings on P.V.C. can be D.I. sleeves (restrained or non restrained depending on the engineering). See the list of approved materials for manufacturers and models.
- D. Bends, Tees, Crosses, Reducers and Caps – Fittings for PVC pipe shall be DIP in accordance with AWWA Standard C110. All fittings shall be rated for a minimum of 250-psi working water pressure. Fittings shall be mechanically joined unless otherwise specified on Plans or Specifications. Poly wrap and “NO-OX-ID” bolt grease are required.
- E. Tapping Sleeves – Tapping sleeves shall be stainless steel construction and designed for a pressure of 200 psi. See the list of approved materials for manufacturers and models. Nuts

and bolts shall be stainless steel, and sleeve shall be equipped with a 3/4-inch stainless steel tap and plug for pressure testing.

6.05 Meters

The District shall install all meters.

6.06 Hydrants

General- All fire hydrants shall be wet barrel hydrants manufactured in accordance with AWWA Standard C503. All hydrant laterals shall be constructed of 6-inch ductile iron pipe per AWWA Standards C150/C151. Operating nuts and caps shall be 1/18-inch pentagonal nuts measured 'point to flat'. Cap nuts shall have 1-1/8-inch diameter hole drilled through its center for attached chain. Hydrants shall be wet-barrel type, supplied with 6-inch x 6-inch, 125-pound class cast iron, 6 bolt-breakaway spool. Hydrants shall have one 2-1/2 inch nozzle and one 4-inch nozzle unless otherwise specified. Hydrant bury shall be 6 inch diameter cast iron or ductile iron conforming to the requirements of AWWA C502. Installation shall conform to AWWA Standards Specifications and the District STD. Details 8.12 and 8.13. See list of approved materials for hydrant manufacturers and models.

Flow testing- If hydrant flow testing is required by the building official or Fire Department, a District representative shall conduct the flow testing. Only District representatives shall conduct flow testing.

6.07 Backflow Protection Devices

Backflow Protection devices shall be installed as required per the signed plans and according to District Rules and Regulations. Approved devices shall be as outlined in Section 3.0 of these Specifications. Devices shall conform to the requirements of the District, the State of California Department of Health Services, and AWWA C510 and C511. Installation of an approved reduced pressure principle backflow prevention assembly shall be adjacent to and downstream of the water meter on the customer's property for which the assembly is intended to serve. The assembly must be accessible for testing and maintenance with a minimum clearance of 12-inches above grade.

6.08 Meter Boxes and Vaults

Meter boxes and vaults shall be as shown in the approved materials list.

In traffic areas the concrete box shall be equipped with a traffic rated steel lid. If meter is used for fire protection it must be marked as such on lid. Lids shall have mechanisms for lift assistance (Bilco-style) and shall not rattle or bang when impacted by traffic loads.

6.09 Thrust and Anchor Blocks

Thrust blocks and anchor blocks shall be constructed of Portland Cement Concrete with a minimum compressive strength of 2500 psi. Thrust block dimensions shall conform to STD. Detail 8.10, unless a project-specific geotechnical engineering report and engineering calculations are provided, which support an alternative design. Thrust block straps shall be epoxy coated or otherwise protected from corrosion.

6.10 Pipe Bedding

Coarse Bedding- Coarse aggregate for bedding shall be free from vegetable matter and other deleterious substances and shall form a firm, stable base when compacted. Coarse bedding shall be a round aggregate material and conform to the following gradation of material.

1. Material shall come from an approved source and shall be considered non-corrosive.
2. 100 percent of material shall pass the ¾-inch sieve.
3. No more than 10 percent of the material shall pass a No. 200 sieve.

Sand- Fine aggregate for bedding shall be free from vegetable matter and other deleterious substances. Fine aggregate shall be a washed sand material and shall conform to the following minimum requirements:

1. Sand shall come from an approved source. If requested by the District, the Contractor shall submit gradation test reports.
2. 100 percent of the material shall pass a 3/8-inch sieve.
3. No more than 10 percent of the material shall pass a No. 200 sieve.
4. Sand shall have a sand equivalent (S.E.) of not less than 50, per ASTM D2419.

6.11 Trench Backfill

See STD. Detail 8.09 for typical trench requirements.

Private Roads and Easements - Native Material- Native material shall be used for trench-zone backfill in areas where trenches are cut in private roads and easements, unless the native material is unsuitable for trench backfill. Unsuitable material is defined as any material that falls under one of the following Unified Soils Classifications: OL, MH, CH, OH, or Pt or soil which cannot be compacted to 95% relative compaction (90% for unpaved areas).

If Native Material is unsuitable, then Class I backfill, as defined in the following paragraph shall be used.

Class 1 backfill shall be one of the following:

- ☐ Caltrans Class 2 Aggregate Base with 3/4-inch maximum aggregate per Section 26 of Caltrans Standard Specifications.
- ☐ Sand/Cement Slurry- Sand/cement slurry shall be a mixture of cement, sand and water and shall meet the following requirements:
 - Cement content shall be 1 sack of cement per cubic yard of slurry. (2-sack mixes shall not be allowed)
 - Sand shall be concrete sand, conforming to ASTM C33.
 - Cement shall be Portland cement, per ASTM C150.

Public Rights-of-Way – Backfill used for public roads shall meet the requirements of regulatory agencies having jurisdiction.

6.12 Corrosion Protection

The following are considered minimum corrosion protection requirements. Greater protection may be required, if deemed necessary by the District for particular circumstances.

Ductile iron pipe and fittings shall be manufactured with standard bituminous coating, per AWWA C151, shall be lined with cement mortar, per AWWA C104, and shall be encased in polyethylene, per AWWA C105. Pipe shall be installed per AWWA Manual M41.

Steel pipe shall be used, only with permission of the District, and shall be cement mortar lined and coated, per AWWA C205. Steel pipelines shall be installed per AWWA Manual M11. Cathodic protection shall be applied to steel pipelines, and shall be designed by a qualified professional engineer.

Type 316 stainless steel nuts, bolts and other hardware shall be used in flanges, mechanical couplings, valve bonnets, and other fittings, unless an appropriate other material is approved.

Corrosion protection grease (“NO-OX-ID”) shall be applied to bolt heads, nuts, and exposed portions of threads.

Bodies of valves shall be coated with fusion-bonded epoxy. Minimum dry-film thickness shall be 13 mils. Chips, holidays and other defects shall be repaired in accordance with the written instructions and products of the coating manufacturer.

Dissimilar metals shall be electrically insulated from each other, using approved dielectric couplings, nylon bushings, and similar devices.

Epoxy, paint or other coatings in contact with water shall be NSF51 approved.

The ends of fabricated thrust restraint and other bare steel components installed underground shall be protected from corrosion using a combination of ProtectoWrap 1170 Primer and 200/35 Pipe Wrap (cold-applied tape wrap) prior to burial.

SECTION 7.0 – PROJECT COMPLETION

7.01 General

At such time when all work has been completed by the Contractor and all improvements have been disinfected and tested, the Contractor shall prepare the project for completion by meeting the requirements of this section.

7.02 Final Inspection

When the Contractor determines that all work has been completed and successfully tested in accordance with the plans, standards and specifications of the District, the Contractor shall notify the District in writing. The District shall conduct a pre-final inspection and make a punch list of all items that need to be completed and/or corrected for final inspection. The punch list will be provided to the Contractor to perform.

Upon completion or correction by the Contractor of all of the items on the punch list, the District shall conduct a Final Inspection. If the work is completed to the satisfaction of the District, a notice of completion shall be prepared.

7.03 Record Drawings

Record drawings shall be prepared and submitted by the Project Engineer, in accordance with the requirements of Section 5.07 of these specifications, prior to District acceptance of the project.

7.04 District Acceptance

The District will provide a Notice of Completion when it has determined that all project requirements have been met. These requirements shall include, but not be limited to:

1. Final inspection and acceptance of the construction work
2. Receipt of acceptable record drawings and electronic files
3. Legal recordation of all project easements
4. Dedication of facilities, per Paragraph 7.05
5. Completed permits / records of inspection from other agencies
6. Letter of indemnification, per Paragraph 1.08 of these specifications
7. Minimum one-year written guarantee of materials and workmanship, per Paragraph 7.06
8. Lien releases or affidavits of payment, per Paragraph 4.6 of these specifications
9. Settlement with the District of all connection fees, inspection fees and any other financial issues

This Notice of Completion shall be prepared by the District and filed by the Applicant with the Santa Barbara County Recorder's Office. Verification of the filing shall be sent by the Applicant to the District office.

7.05 Dedication of Facilities

Applicant shall dedicate the water system facilities to the District by using a District form to dedicate said facilities.

7.06 Guarantee of Work

The Applicant shall provide the District with a certificate guaranteeing all materials and workmanship for a period of one year from the date the District accepts the water system improvements. The guarantee shall be backed by 10% of the original performance surety or as required by direction from the Board.

If any portion of the work should be found defective either in material or in workmanship during the period of guarantee, the Applicant and Contractor will be notified by the District and required to repair or replace the defects. If the Applicant or Contractor does not respond within 30 days of notification, the District may correct the defects and charge the cost to the Applicant or surety.

7.07 Financial Obligation

Prior to acceptance of the project the Applicant shall satisfy the financial obligation for all costs and expenses incurred by the District relating to the project.

7.08 Board Action

The District's General Manager will place acceptance of the project on the District's next scheduled Board meeting agenda for action, once he/she has determined that the all requirements have been fulfilled.

After acceptance of the project by the Board of Trustees, the original letter of credit or surety shall be released and replaced with the appropriate percentage of guarantee for one year.

7.09 Release of Surety

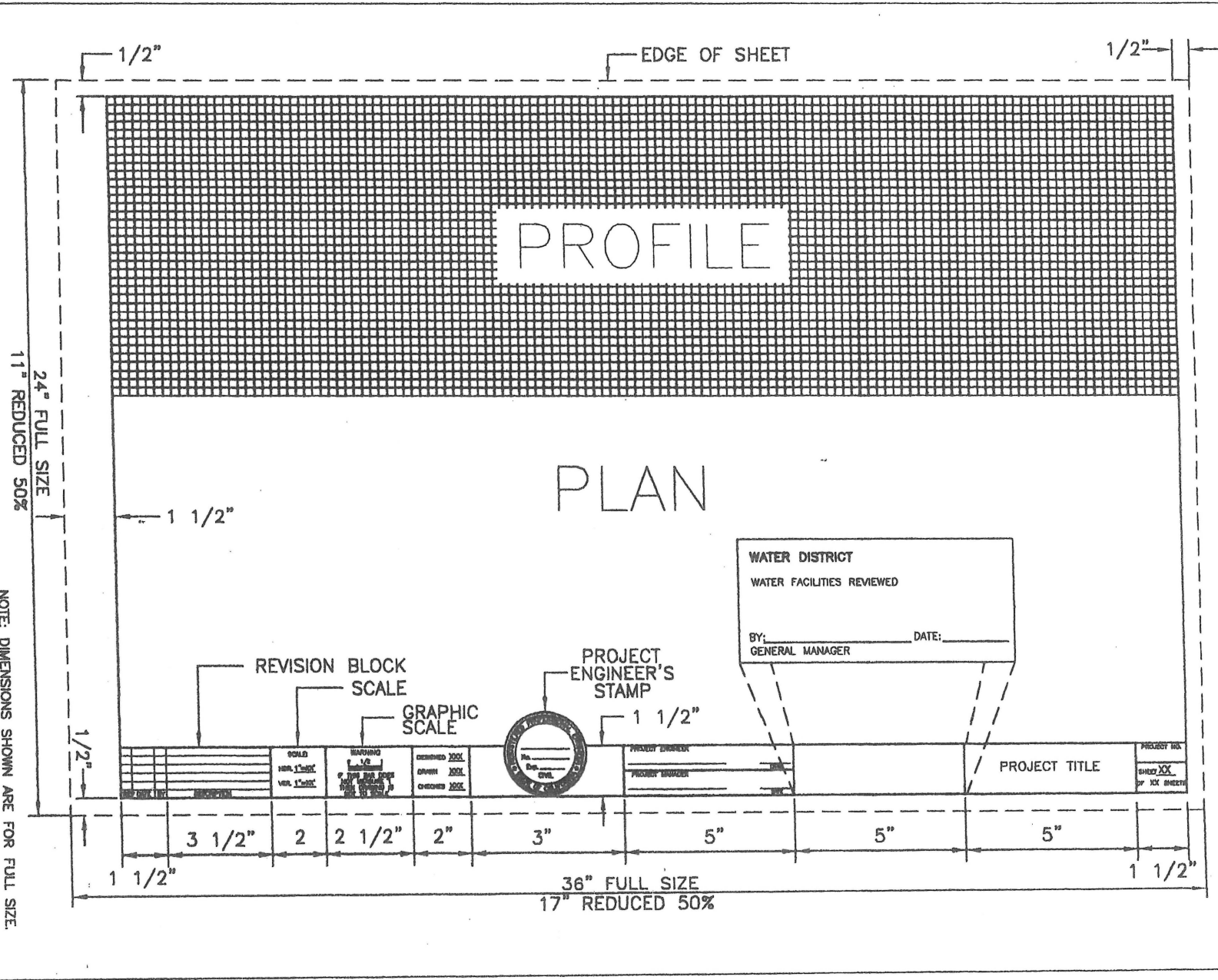
After a period of one year from the date of acceptance of the project by the District's Board of Trustees, and if the guarantee on the work is fulfilled, the District will release the remainder of the performance surety.

7.10 Certificate of Occupancy

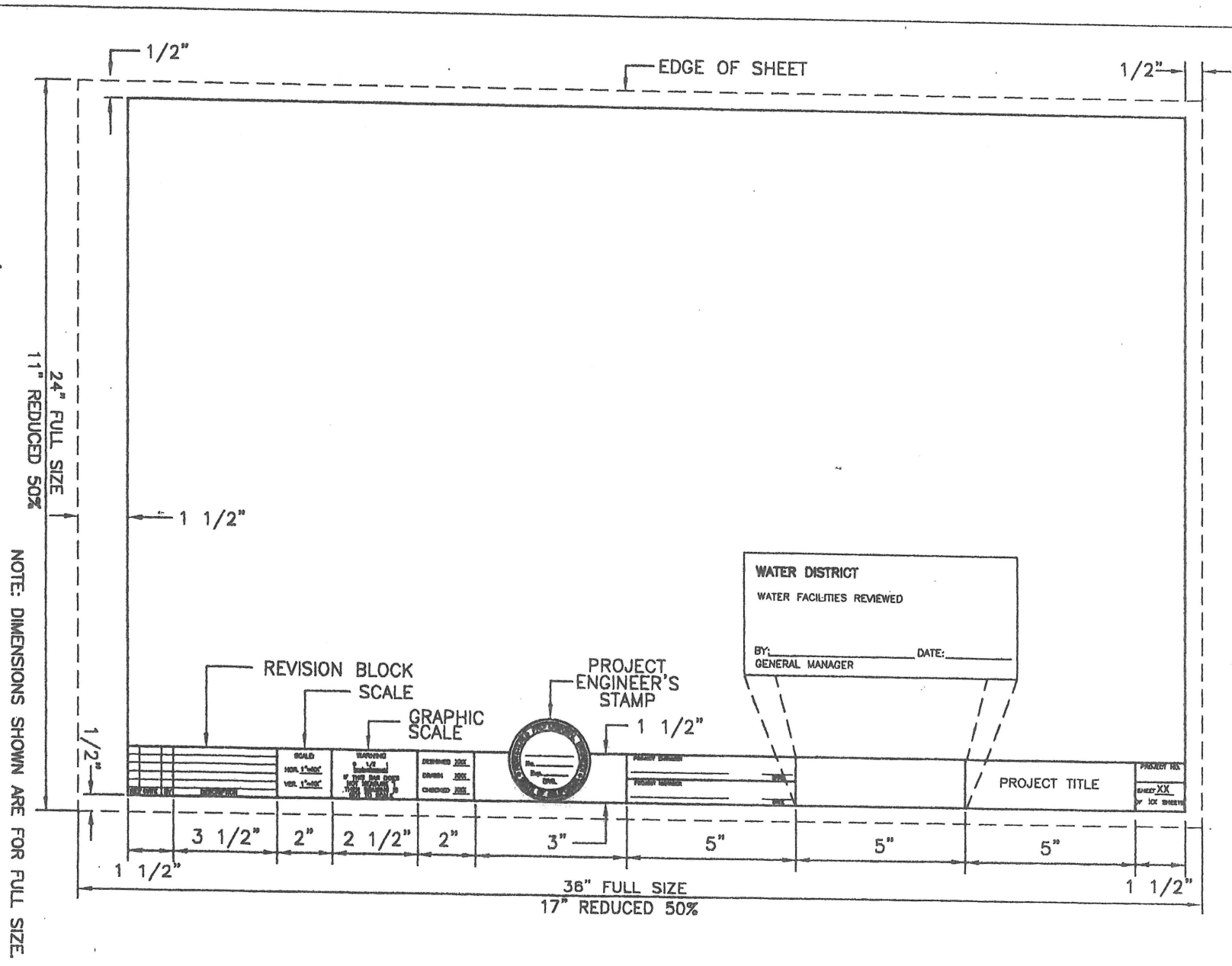
Prior to the District's signature for occupancy of habitable structures, the following conditions must be met:

1. Section 7.01 through Section 7.07 shall be satisfied, as applicable
2. All water system improvements shown on the construction drawings shall be constructed, tested and operational in accordance with the Districts standards and specifications.
3. All repairs of damage, defects or improper installation of meter boxes, lids, service connections or other water system improvements shall be completed.
4. The District shall install all meters.
5. All application fees, water system development fees, meter fees and other charges owed to the District shall be paid
6. All required backflow prevention devices shall be installed and tested by a certified tester as required by the District and State of California Safe Drinking Water Act, Title 17, California Department of Health Services

APPROVED		1/15/08	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT	STD. DETAIL
GENERAL MANAGER		DATE	IMPROVEMENT DISTRICT NO. 1	8.01
1	KB	9/24/07	STANDARD PLAN SIZE AND LAYOUT	
REVISION		DATE		




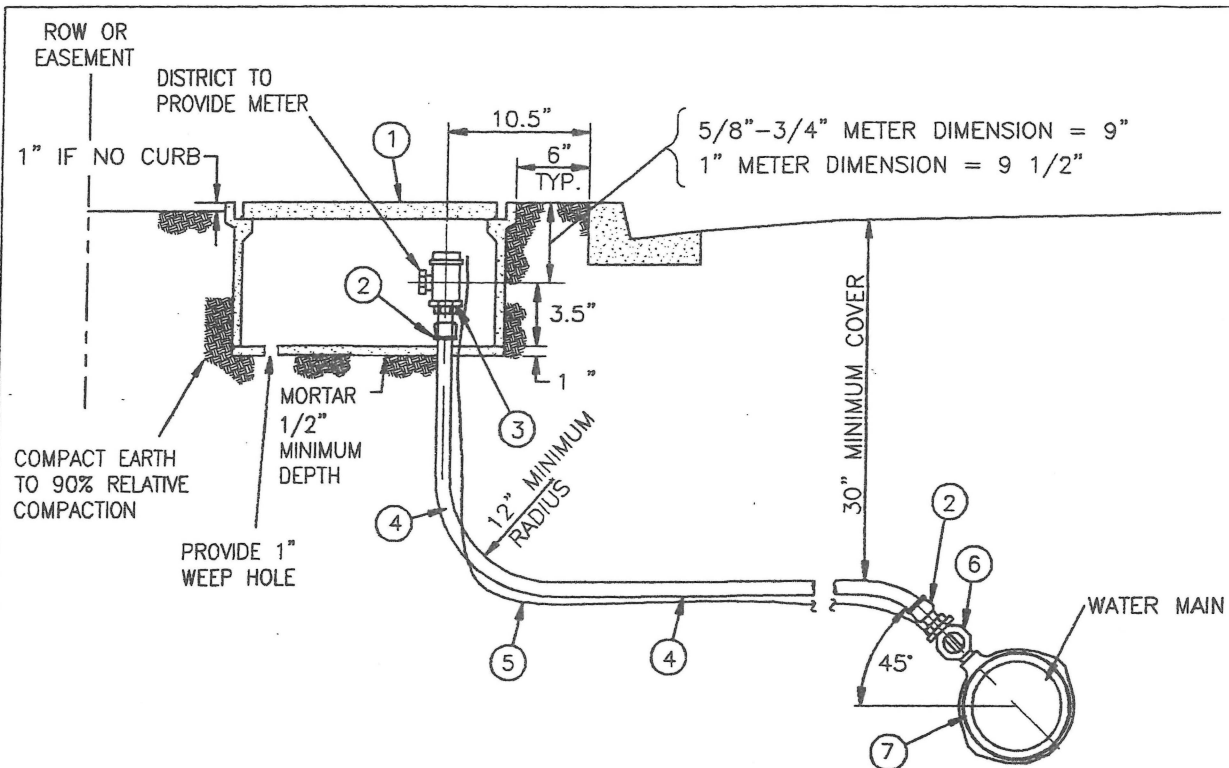
APPROVED		GENERAL MANAGER		DATE		SANTA YNEZ RIVER WATER CONSERVATION DISTRICT		STANDARD PLAN		STD. DETAIL	
1		KB		9/24/07		IMPROVEMENT DISTRICT NO. 1		BORDER		8.02	
REVISION		DATE									



SANTA YNEZ RIVER WATER CONSERVATION DISTRICT
IMPROVEMENT DISTRICT NO. 1
GENERAL NOTES

1. All work shall be performed in accordance with the State of California Division of Industrial Safety, Construction and Safety Orders.
2. Contractor shall notify all utility companies with facilities in the construction area a minimum of 48 hrs prior to commencing construction. Call Underground Service Alert (USA) at 1-800-422-4133.
3. The term "District Manager" shall mean the Santa Ynez River Water Conservation District, Improvement District No. 1's General Manager or authorized agent.
4. Commencement of construction shall not begin until all such time as submittals are approved, the District has signed all Plans, all required easements have been acquired and recorded and all construction permits have been obtained through the appropriate agencies. A "Notice to Proceed" may be required.
5. All barricades, traffic control & warning signs shall be placed in accordance with the Caltrans Standard requirements.
6. Contractor shall verify water, sewer and storm drain flow line elevations within the project area prior to commencement of construction. Contractor shall immediately notify the District and the Applicant's Project Engineer of any potential conflicts between existing facilities and the construction of the proposed improvements.
7. Contractor shall verify the location, depth, material & size of existing water lines at points of proposed connection. If pipe data is misrepresented on plans the Applicant's Project Engineer shall be notified immediately & no connection shall be made to the water system at that point until the contractor has received approval from the Applicant's Project Engineer and the District.
8. During construction a tracer wire shall be installed along the top of any and all water main and brought to the finished surface at each valve box, meter and blow-off. Continuity test shall be performed after installation of tracer wire.
9. A 4 mil blue metallic tape marked "Caution-Buried Water Lines" shall be installed above the top of constructed water mains.
10. Minimum coverage over new water mains is to be 36-inches.
11. All newly installed lines shall be disinfected and tested for bacteria by a laboratory specified by the District. All water line improvements and extensions shall then be pressure tested per the District's Standards and Specifications.
12. A valve shall be installed in the closed position at the connection point to the existing District water system. This valve shall remain closed throughout construction and during the disinfection process.
13. Contractor shall submit in writing to the District all proposed shutdowns of existing in-service water mains when making the connection to the new water main. The Contractor shall notify the District a minimum of 10 working days prior to the proposed date the service will need to be shutdown. The District shall determine the actual date of any and all shutdowns.


APPROVED	 GENERAL MANAGER	1/15/08 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL
1	KB	9/24/07	GENERAL NOTES	
			8.03	
	REVISION	DATE		

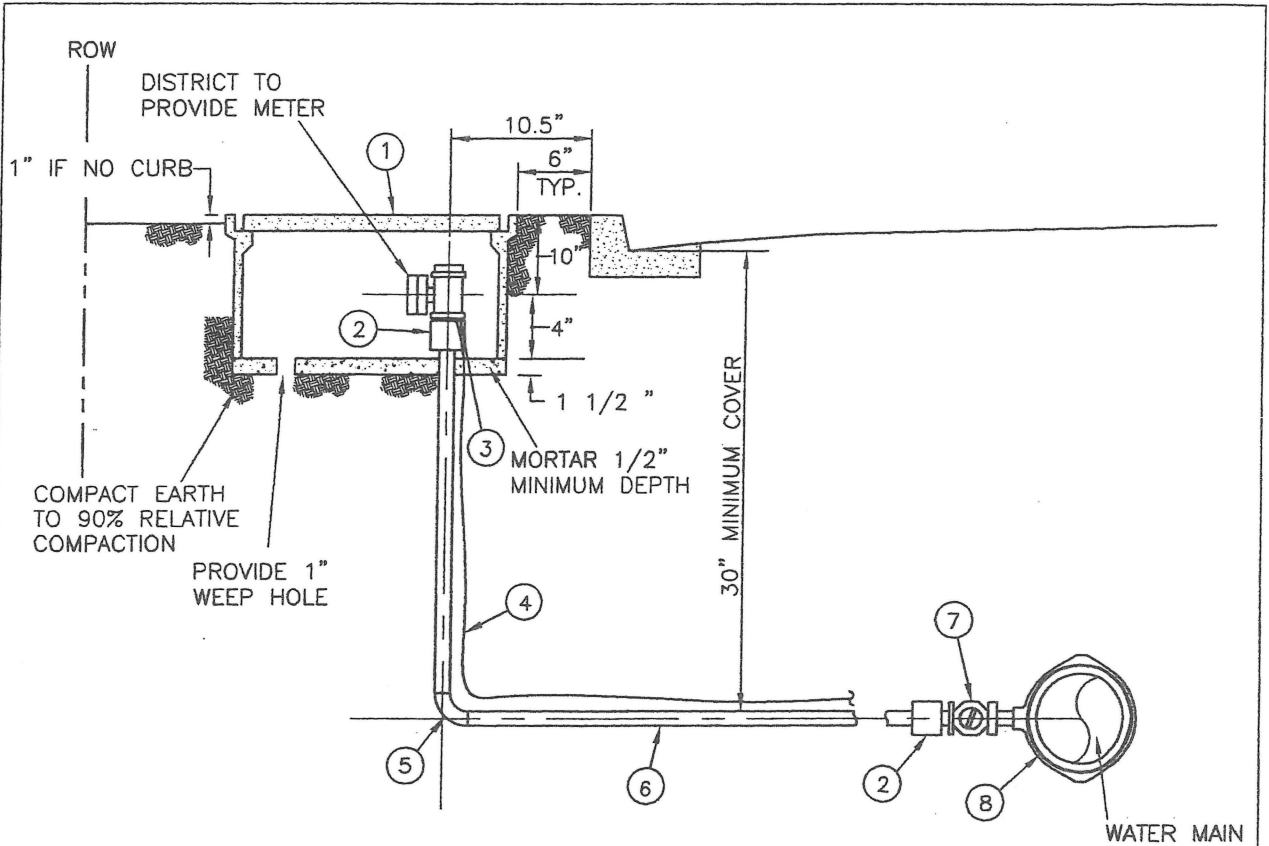


ITEM	QTY.	DESCRIPTION—(SEE APPROVED MATERIALS LIST)
1	1	STANDARD METER BOX "TRAFFIC" OR "NON TRAFFIC" RATED
2	2	COMPRESSION-TYPE FITTING WITH TAPE WRAP ON PIPE
3	1	ANGLE METER VALVE
4	VAR	1" P.E. IPS SDR-7 200 PSI
5	1	TRACER WIRE REQUIRED. TIE ONTO EXISTING WIRE AND TO SADDLE. COMPRESSION-TYPE FITTING NEEDS 10 MIL TAPE AFTER PIPE INSERTION
6	1	CORP. STOP IRON PIPE (AWWA IP X COMPRESSION-TYPE IPS)
7	1	SERVICE SADDLE

NOTES

1. SIZE SERVICE AS INDICATED ON PROJECT PLANS.
2. PIPE THREADS SHALL BE CLEAN AND SHARP AND WATER TIGHT SEALED WITH APPROVED JOINT COMPOUND.
3. CUSTOMER BALL VALVE SHALL BE LOCATED DIRECTLY AFTER METER AND BEFORE THE BACK FLOW PREVENTER DEVICE WHERE SUCH DEVICES ARE REQUIRED.
4. ALL TUBING SHALL BE LAID STRAIGHT AND AT RIGHT ANGLES TO THE WATER MAIN.
5. OBTAIN CURRENT LIST OF APPROVED MATERIALS FROM DISTRICT.
6. 18" SEPARATION BETWEEN MULTIPLE SERVICES.
7. IF SERVICE LINE IS USED FOR FIRE PROTECTION ONLY, LID MUST BE MARKED ACCORDINGLY.
8. SOLDER ALL WIRE SPLICES AND WRAP W/ELECTRICAL TAPE. RECORD THE LOCATION OF SPLICES ON AS-BUILT DRAWINGS. ELECTRICAL CONTINUITY TO BE VERIFIED.
9. LOCATION OF METER TO BE ESTABLISHED DURING PLAN CHECK.


APPROVED		1/15/08	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL 8.04
	GENERAL MANAGER	DATE		
1	YM	4/18/00	1" WATER SERVICE CONNECTION	
2	KB	9/24/07		
	REVISION	DATE		

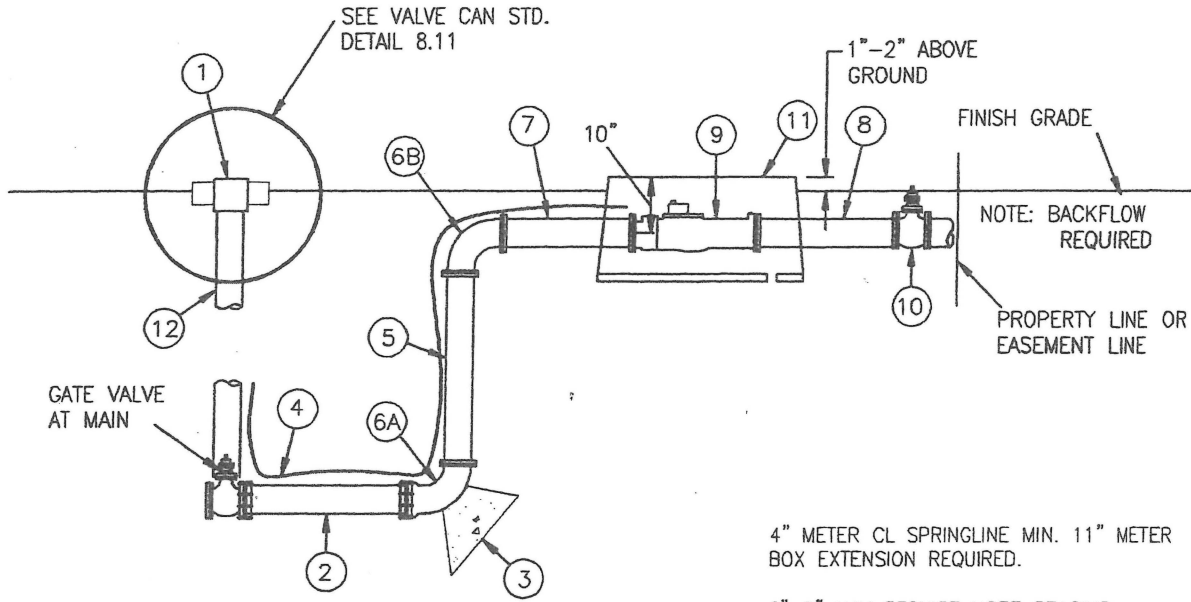


ITEM	QTY.	DESCRIPTION--(SEE APPROVED MATERIALS LIST)
1	1	STANDARD METER BOX "TRAFFIC" OR "NON TRAFFIC" RATED
2	2	2" FEMALE ADAPTOR, PVC, SCHED 80
3	1	2" ANGLE METER STOP THREAD X METER FLANGE. BRASS NIPPLE.
4	VAR	TRACER WIRE REQUIRED TIE ONTO EXISTING WIRE OR SADDLE IF NO WIRE.
5	1	2" SLIP BY SLIP SCHEDULE 80 90° ANGLE POINT OR BEND
6	VAR	2" SCHEDULE 80 PVC. ONLY HEAVY BODY GRAY P.V.C. GLUE + CURE 24 HRS.
7	1	2" CORP. MIP THREAD x MIP THREAD
8	1	SERVICE SADDLE INSTALLED

NOTES

1. SIZE SERVICE AS INDICATED ON PROJECT PLANS.
2. PIPE THREADS SHALL BE CLEAN AND SHARP AND WATER TIGHT SEALED WITH APPROVED JOINT COMPOUND.
3. CUSTOMER BALL VALVE SHALL BE LOCATED DIRECTLY AFTER THE METER AND BEFORE THE BACK FLOW PREVENTER DEVICE WHERE SUCH DEVICES ARE REQUIRED.
4. ALL SCHEDULE 80 SHALL BE LAID STRAIGHT AND AT RIGHT ANGLES TO THE WATER MAIN
5. OBTAIN CURRENT LIST OF APPROVED MATERIALS FROM DISTRICT.
6. SOLDER ALL WIRE SPLICES AND WRAP W/ELECTRICAL TAPE. RECORD THE LOCATION OF SPLICES ON AS-BUILT DRAWINGS. ELECTRICAL CONTINUITY TO BE VERIFIED.

APPROVED 		1/15/08 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL 8.05
1	YM	4/18/00	2" WATER SERVICE CONNECTION	
2	KB	9/24/07		
	REVISION	DATE		



4" METER CL SPRINGLINE MIN. 11" METER BOX EXTENSION REQUIRED.


6"-8" MAY REQUIRE MORE SPACING.

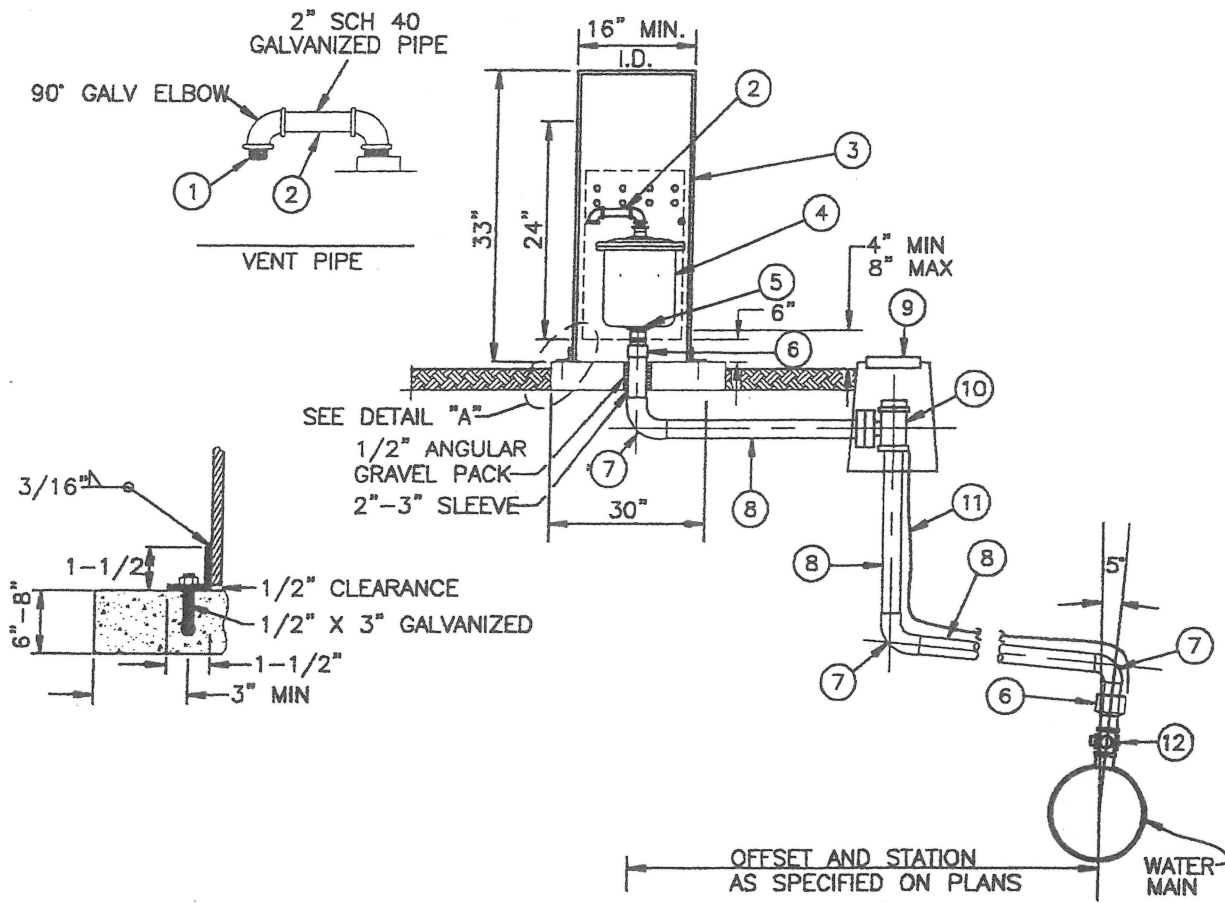
METER LID IS 2" THICK

ITEM	QTY.	DESCRIPTION--(SEE APPROVED MATERIALS LIST)
1	1	VALVE BOX
2	VAR	4", 6", 8" P.V.C. C-900 OR DUCTILE IRON
3	2	CONCRETE THRUST BLOCK
4	VAR	TRACER WIRE REQUIRED TIE ONTO EXISTING WIRE OR SADDLE IF NO WIRE.
5	VAR	DUCTILE IRON SPOOL FLG. X FLG.
6A	2	DUCTILE IRON 90° BEND M.J. X FLG.
6B	1	DUCTILE IRON 90° BEND FLG. X FLG.
7	VAR	DUCTILE SPOOL FLG. X FLG. 3x THE DIAMETER IN LENGTH. (EXAMPLE: 4", SERVICE = 4"x12" SPOOL)
8	1	DUCTILE SPOOL FLG. X FLG. 5x THE DIAMETER IN LENGTH. (EXAMPLE: 4", SERVICE = 4"x20" SPOOL)
9	1	METER PROVIDED BY DISTRICT
10	1	CUSTOMER GATE VALVE
11	1	METER BOX
12	1	8" SDR 35 P.V.C. "LENGTH VARIES"

NOTE

- OBTAIN CURRENT LIST OF APPROVED MATERIALS FROM DISTRICT.
- SOLDER ALL WIRE SPLICES AND WRAP W/ELECTRICAL TAPE. RECORD THE LOCATION OF SPLICES ON AS-BUILT DRAWINGS. ELECTRICAL CONTINUITY TO BE VERIFIED.

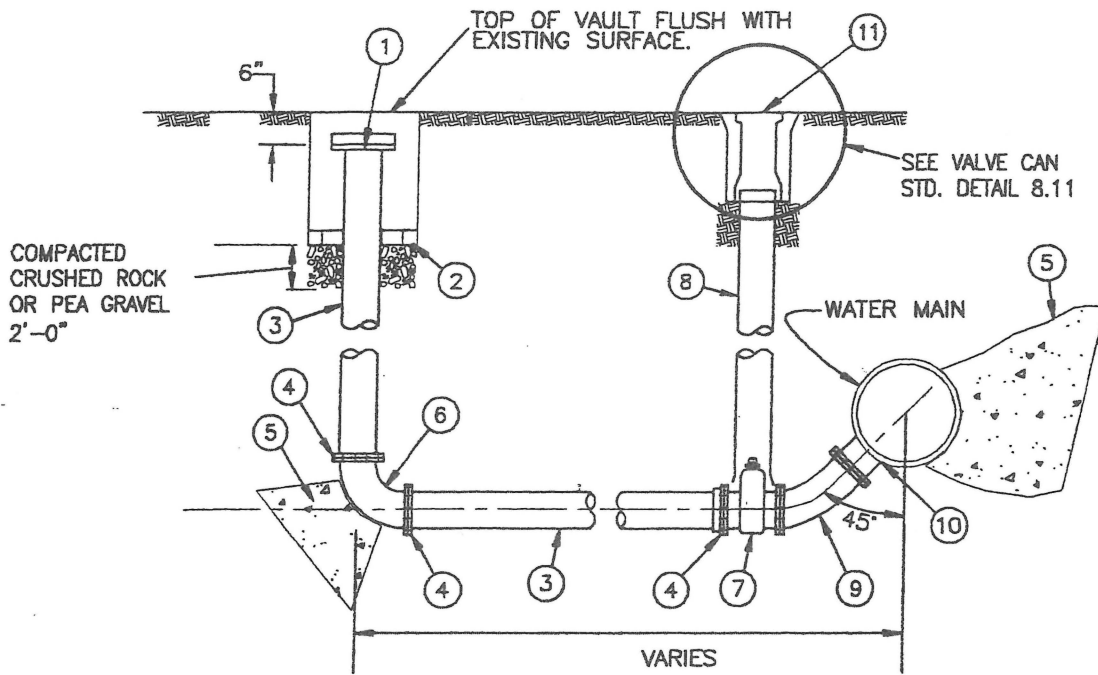
APPROVED			1/15/08 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL 8.06
1	KB		9/24/07	4", 6", 8" WATER SERVICE CONNECTION	
	REVISION		DATE		



ITEM	QTY.	DESCRIPTION--(SEE APPROVED MATERIALS LIST)
1	1	VENT CAP. STAINLESS MESH
2	1	VENT PIPE PER DETAIL
3	1	16" MIN. ID #10 GAUGE STEEL PIPE, FABRICATED COVER, FACTORY EPOXY COATED
4	1	1"-2" COMBINATION AIR RELEASE-AIR/VAC VALVE
5	1	NIPPLE, BRONZE OR BRASS
6	1	2" FEMALE ADAPTER SCHEDULE 80
7	3	1"-2" 90° ELBOW SCHEDULE 80 PVC SLIP BY SLIP
8	VAR	1"-2" SCHEDULE 80 PVC
9	1	VALVE BOX - TRAFFIC-RATED (BROOKS 3RT) IN TRAFFIC AREAS
10	1	1" ANGLE STOP. 1"x1", I.P.S. x I.P.S.
11	VAR	TRACER WIRE REQUIRED TIE ONTO EXISTING WIRE OR SADDLE IF NO WIRE.
12	1	1"-2" CORPORATION STOP IPT

- NOTES**
1. CANS 1" OR 2"
 2. CAN SECURED IN CONCRETE WITH 1/2" BOLTS AND NUTS.
 3. PROTECTIVE 3" POST IN TRAFFIC AREA'S.
 4. SOLDER ALL WIRE SPLICES AND WRAP W/ELECTRICAL TAPE. RECORD THE LOCATION OF SPLICES ON AS-BUILT DRAWINGS. ELECTRICAL CONTINUITY TO BE VERIFIED.
 5. WHERE NO CURB EXISTS, PROTECT WITH GUARD POSTS
 6. OBTAIN CURRENT LIST OF APPROVED MATERIALS FROM DISTRICT.
 7. LOCATE VALVE IN ROW OR DISTRICT EASEMENT.


APPROVED			1/15/08 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL 8.07
1	YM		4/18/00	1"-2" COMBINATION AIR AND VACUUM VALVE	
2	KB		9/24/07		
	REVISION		DATE		

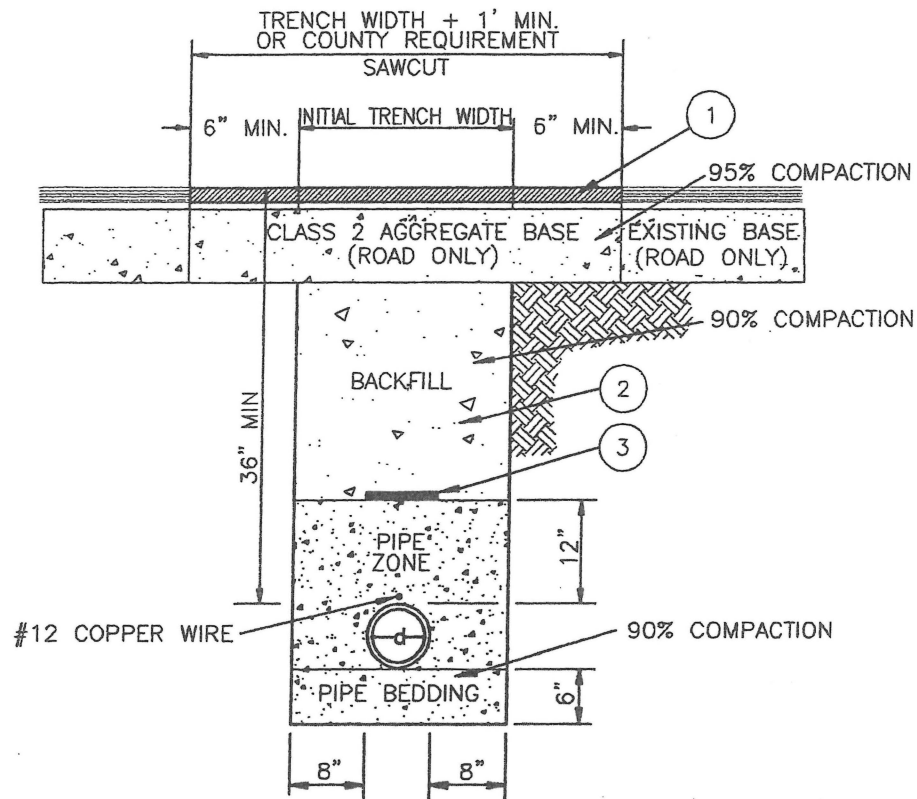


ITEM	QTY.	DESCRIPTION--(SEE APPROVED MATERIALS LIST)
1	1	6" BLIND FLANGE
2	1	24" X 36" BOX (TRAFFIC RATED CONCRETE)
3	VAR	6" DUCTILE IRON (NOTE: VERTICAL SHOULD BE FLANGE X M.J. SPOOL)
4	5	M.J.
5	2	THRUST BLOCK
6	1	90° DIP BEND M.J. X M.J.
7	1	6" GATE VALVE FLG. X M.J.
8	1	8" S.D.R. 35 VALVE RISER (3RT VALVE BOX)
9	1	45° D.I.P. BEND FLG. X FLG.
10	1	(PIPE MAIN) X 6" TEE WITH 6" FLG. OUTLET
11	1	VALVE CAN MARKED "WATER"

NOTES

1. ALL EXPOSED PIPING AND VAULT INTERIOR SHALL BE FIELD PAINTED IN ACCORDANCE WITH DISTRICT PAINT SPECIFICATIONS.
2. ALL BOLTS AND NUTS SHALL BE STAINLESS STEEL.
3. OBTAIN CURRENT LIST OF APPROVED MATERIALS FROM DISTRICT.
4. LOCATE BLOWOFF IN ROW OR DISTRICT EASEMENT.


APPROVED			4/15/08 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL 8.08
1	KB		9/24/07	6" BLOWOFF	
	REVISION		DATE		



ITEM	QTY.	DESCRIPTION--(SEE APPROVED MATERIALS LIST)
1	VAR	ASPHALT SHALL BE REPLACED AS PER PLAN
2	VAR	SLURRY REQUIRED UNDER ASPHALT ROADWAY
3	VAR	WARNING TAPE - METALLIC MARKED "BURIED WATER"

NOTES

1. WHERE PIPE IS NOT LOCATED IN THE COUNTY OR STATE RIGHT OF WAY, ASPHALT AND BASE REPLACEMENT SHALL MATCH EXISTING.
2. SOLDER ALL WIRE SPLICES AND WRAP W/ELECTRICAL TAPE. RECORD THE LOCATION OF SPLICES ON AS-BUILT DRAWINGS. ELECTRICAL CONTINUITY TO BE VERIFIED.
3. SLURRY, IF USED, SHALL BE MAXIMUM 1-SACK. SLURRY REQUIRED FOR BACKFILL UNDER COUNTY ROAD R/W ONLY.
4. COMPACTION AS DETAILED OR AS OTHERWISE REQUIRED.

APPROVED			1/15/08 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL 8.09
1	YM		4/18/00	TYPICAL UTILITY TRENCH	
2	KB		9/24/07		
	REVISION		DATE		

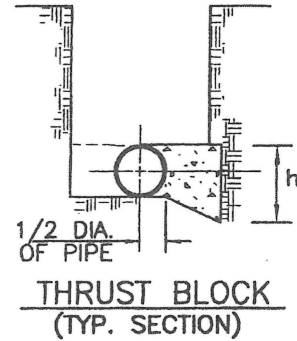
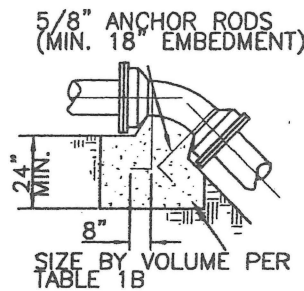
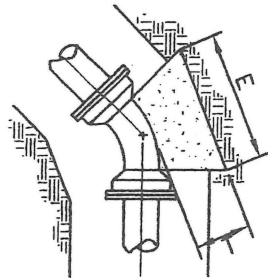
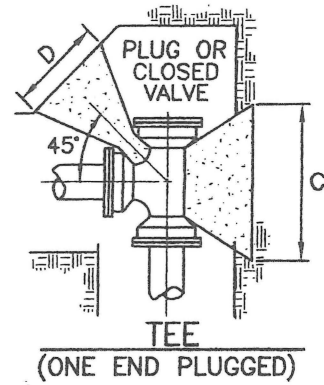
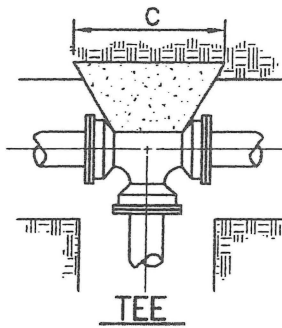
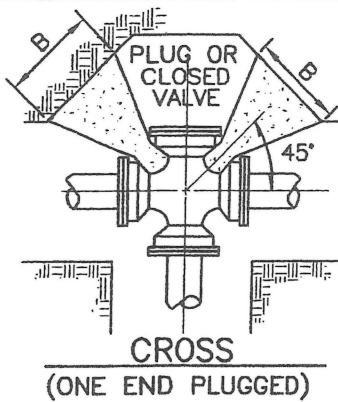


TABLE 1A

PIPE SIZE (IN.)	CROSSES, TEES, ENDS AND VALVES DIMENSIONS ARE IN FEET				90 & 45 DEGREE HORIZ. BENDS DIMENSIONS ARE IN FEET	
	h	B	C	D	E _{90°}	E _{45°}
4	2.00	1.75	1.75	2.00	2.75	2.00
6	2.50	2.00	3.00	3.50	5.00	2.75
8	3.00	3.00	4.25	5.00	7.25	4.00

BLOCK SIZED BASED ON 200 PSI WATER PRESSURE AND 1000 PSF SOIL BEARING PRESSURE

NOTES:

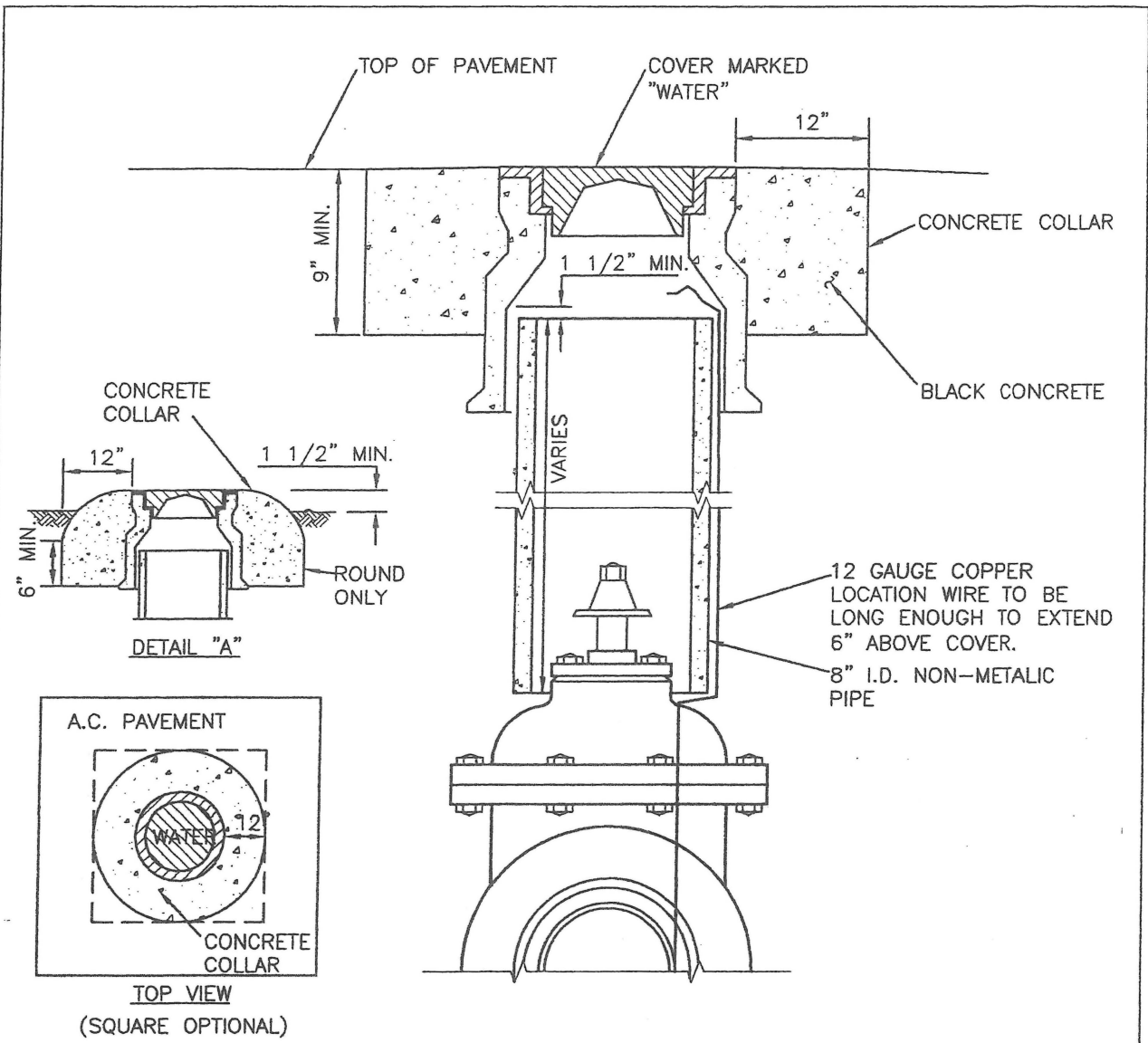
1. BEARING AREA OF THRUST BLOCKS SHALL BE DETERMINED USING 200 PSI WORKING PRESSURE AND 1000 PSF SOIL BEARING PRESSURE EXCEPT AS APPROVED BY THE DISTRICT.
2. CONCRETE MIX SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 2500 PSI
3. CONCRETE THRUST BLOCKS SHALL BE INSTALLED TO THE DIMENSIONS & CONFIGURATIONS AS SHOWN.
4. CONCRETE THRUST BLOCKS SHALL BE POURED SOLIDLY AGAINST FIRM UNDISTURBED NATIVE SOIL.
5. CONCRETE POURED AGAINST THE PIPE FITTING SHALL NOT EXTEND BEYOND THE JOINTS.
6. FITTING SHALL BE WRAPPED WITH 3 MIL PLASTIC BEFORE POURING CONCRETE.
7. WOOD FORMS SHALL BE USED FOR FORMING BLOCKS EXCEPT ON BEARING FACE OF BLOCK.
8. IF THRUST BLOCKS ARE SIZED BY ENGINEER USING A DIFFERENT EARTH BEARING PRESSURE, DIMENSIONS OF THRUST BLOCKS SHALL BE SHOWN ON THE PLANS.
9. THRUST BLOCKS ON VERTICAL BENDS ARE PROHIBITED.
10. THRUST RESTRAINT FOR ALL OTHER PIPE AND FITTING CONFIGURATIONS SHALL BE DESIGNED BY PROJECT ENGINEER.
11. THE ABOVE VALUES IN TABLES 1A AND 1B FOR SIZE OF THRUST BLOCK ARE BASED ON A WATER PRESSURE OF 200 PSI AND EARTH BEARING PRESSURE OF 1000 PSF. A HIGHER VALUE FOR SOIL BEARING PRESSURE MAY BE USED, WHEN THE PROJECT ENGINEER SUBMITS TO THE DISTRICT A REPORT STAMPED BY A LICENSED ENGINEER PROVIDING A HIGHER SOIL BEARING PRESSURE THAN 1000 PSF DETERMINED FOR THE NATIVE SOILS AT THE PROJECT SITE.

TABLE 1B

PIPE SIZE (IN.)	22 1/2 & 11 1/4 DEGREE HORIZONTAL BENDS DIMENSIONS ARE IN FEET			
	T	h	E _{22 1/2°}	E _{11 1/4°}
4	2.50	2.00	1.75	1.75
6	2.50	2.00	1.75	1.75
8	3.00	2.00	2.50	1.75

BLOCK SIZED BASED ON 200 PSI WATER PRESSURE AND 1000 PSF SOIL BEARING PRESSURE

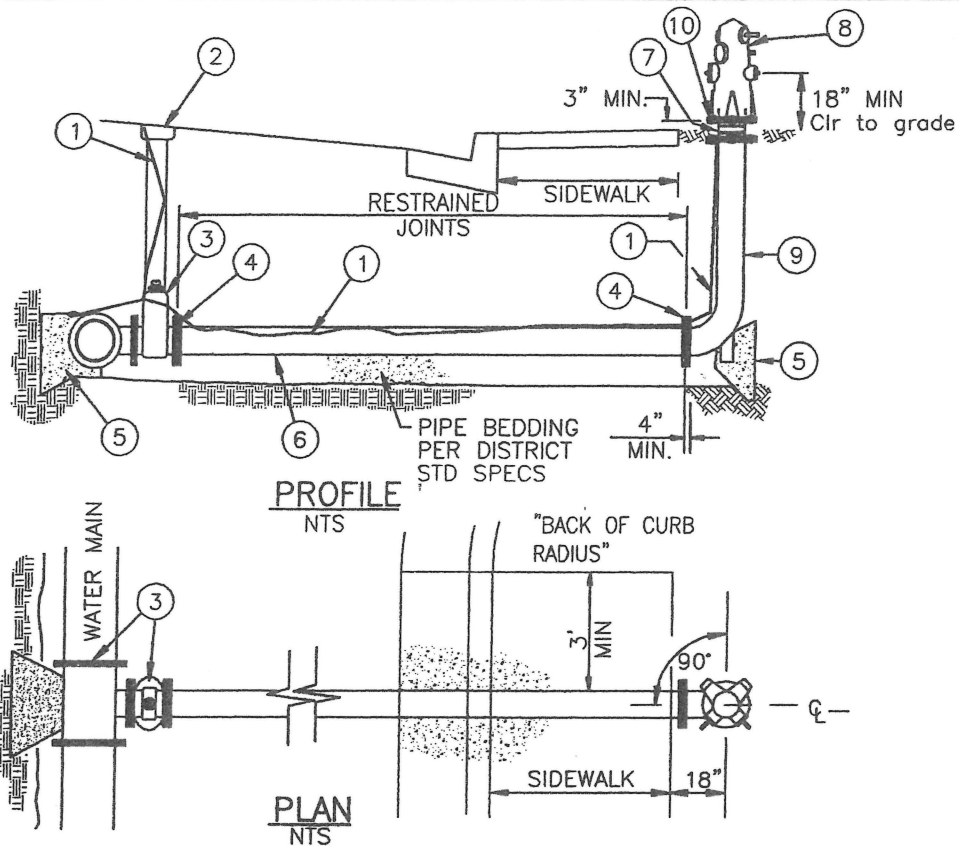
APPROVED			1/15/08 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL 8.10
1	KB		9/24/07	CONCRETE THRUST BLOCKS	
		REVISION	DATE		



TOP VIEW
(SQUARE OPTIONAL)

- NOTES**
1. VALVE BOXES SET IN ROAD SHOULDERS, FIELDS, ETC. SHALL BE AS SHOWN ON DETAIL "A". (ROUND ONLY)
 2. LID SHALL BE MARKED "WATER".
 3. OBTAIN CURRENT LIST OF APPROVED MATERIALS FROM DISTRICT.
 4. SOLDER ALL WIRE SPLICES AND WRAP W/ELECTRICAL TAPE. RECORD THE LOCATION OF SPLICES ON AS-BUILT DRAWINGS. ELECTRICAL CONTINUITY TO BE VERIFIED.


APPROVED		<i>[Signature]</i> GENERAL MANAGER	1/15/08 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL 8.11
1	KB		9/24/07	ADJUSTABLE VALVE BOX	
	REVISION		DATE		



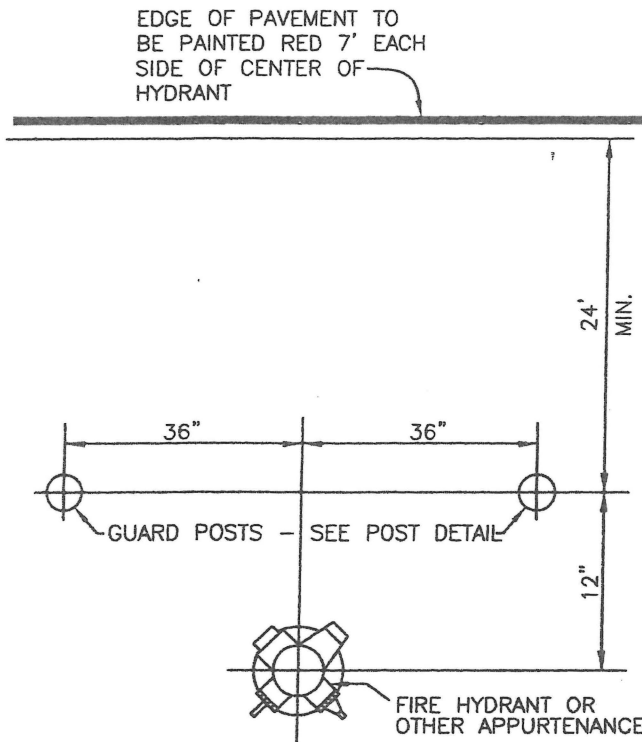
ITEM	QTY.	DESCRIPTION—(SEE APPROVED MATERIALS LIST)
1	VAR	COATED COPPER TRACER WIRE, #12 AWG, ATTACH ALONG TOP OF PIPE — LOOP UP THE OUTSIDE OF RISER PIPE
2	1	VALVE BOX
3	1	TEE OR TAPPING SLEEVE WITH 6" FL X M.J. GATE VALVE
4	1	RESTRAINED M.J. JOINT
5	2	CONCRETE THRUST BLOCKS
6	VAR	6" DIAMETER PIPE PER SPECIFICATION (DUCTILE IRON)
7	1	6 HOLE DRILL— BREAKAWAY SPOOL
8	1	WET BARREL FIRE HYDRANT
9	1	6" DUCTILE IRON BURY WITH 90° BEND M.J. x FL W/ POLY WRAP (LENGTHS VARY)
10	1	NUTS AND BOLTS SHALL BE STANDARD HEX HEAD AND MACHINED PER ASTM A325. THREADS SHALL BE COATED WITH AN APPROVED ANTI-SEIZE COMPOUND. ALL EXPOSED STEEL PARTS SHALL BE COATED WITH AN APPROVED COATING. BREAKAWAY BOLTS SHALL BE INSTALLED TIPS POINTING DOWN.

NOTES.

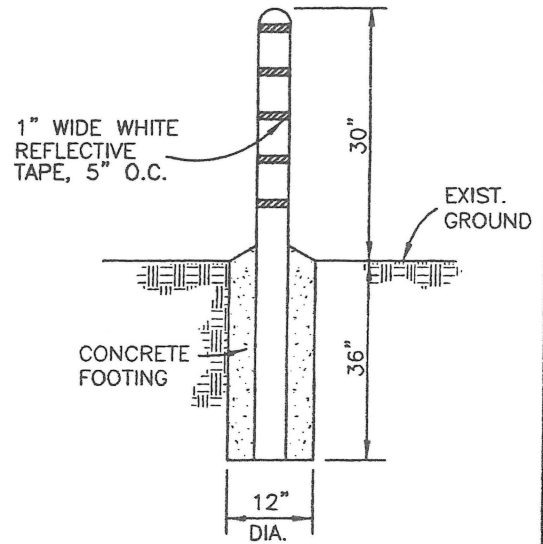
1. WRAP ALL DUCTILE IRON AND CAST IRON MATERIALS WITH 6 MIL POLYETHYLENE SHEETS.
2. IF HYDRANT IS NOT PROTECTED BY CURB, GUARD POSTS SHALL BE PLACED TO PROTECT HYDRANT.
3. FIRE HYDRANT SHALL BE INSTALLED PLUMB.
4. OBTAIN CURRENT LIST OF APPROVED MATERIALS FROM DISTRICT.
5. ALL M.J. AND FLANGE NUT AND BOLTS SHALL BE COATED WITH NO-OX-IDE BOLT GREASE AND POLY WRAPPED.
6. SOLDER ALL WIRE SPLICES AND WRAP W/ELECTRICAL TAPE. RECORD THE LOCATION OF SPLICES ON AS-BUILT DRAWINGS. ELECTRICAL CONTINUITY TO BE VERIFIED.
7. WHERE A SIDEWALK IS PRESENT, LOCATION OF HYDRANT SHALL BE RESTRICTED BY EASEMENT OR RIGHT-OF-WAY.

APPROVED  GENERAL MANAGER		1/15/08 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL 8.12
1	KB	9/24/07	FIRE HYDRANT	
	REVISION	DATE		

4" DIA. STANDARD WEIGHT STEEL PIPE, CONCRETE FILLED, PAINTED WITH 1 COAT OF RED PRIMER AND 2 COATS OF SHINY WHITE FINISH.




PLAN
NTS

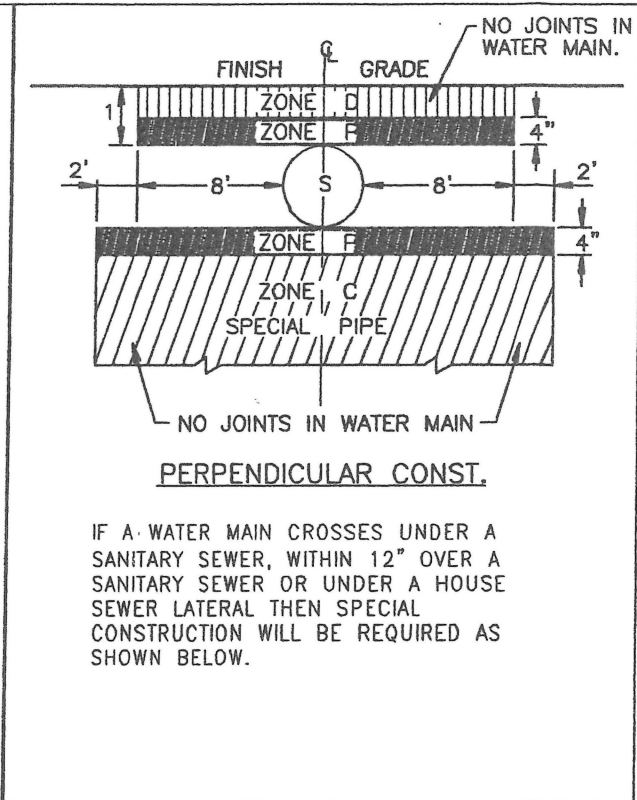
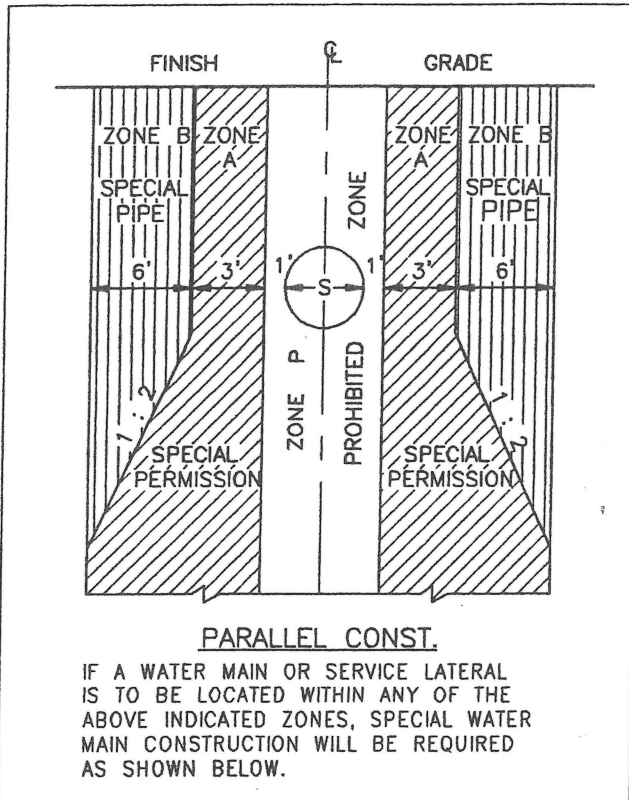


POST DETAIL
NTS

NOTES:


1. GUARD POSTS SHALL BE INSTALLED PLUMB
2. CONCRETE SHALL BE PLACED AGAINST FIRM UNDISTURBED NATIVE SOIL AND SHALL BE THOROUGHLY CONSOLIDATED.
3. CONCRETE SHALL HAVE 28 DAY COMPRESSIVE STRENGTH OF 2500 PSI.

APPROVED 		1/15/08 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL 8.13
1	KB	9/24/07	GUARD POSTS	
	REVISION	DATE		



ZONE	WATER CONSTRUCTION REQUIREMENTS
A	NO WATER MAINS PARALLEL TO SEWERS SHALL BE CONSTRUCTED WITHOUT DISTRICT APPROVAL.
B	A WATER MAIN PLACED PARALLEL TO A SANITARY SEWER SHALL BE CONSTRUCTED OF: DIPPED AND WRAPPED QUARTER INCH THICK WELDED STEEL PIPE, DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING, CLASS 200 PRESSURE RATED PVC WATER PIPE (DR-14 PER AWWA C-900) OR EQUIVALENT OR REINFORCED CONCRETE PRESSURE PIPE, STEEL CYLINDER TYPE, PER AWWA C300-97 OR C302-99 OR C303-95.
C	A WATER MAIN CROSSING A SANITARY SEWER SHALL HAVE NO JOINTS WITHIN 10' FROM EITHER SIDE OF THE WATER MAIN IN THIS ZONE AND SHALL BE CONSTRUCTED OF: DIPPED AND WRAPPED QUARTER INCH THICK WELDED STEEL PIPE, DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING, CLASS 200 PRESSURE RATED PVC WATER PIPE (DR-14 PER AWWA C-900) OR EQUIVALENT OR REINFORCED CONCRETE PRESSURE PIPE, STEEL CYLINDER TYPE, PER AWWA C300-97 OR C302-99 OR C303-95.
D	A WATER MAIN CROSSING A SANITARY SEWER SHALL HAVE NO JOINTS WITHIN EIGHT FEET FROM EITHER SIDE OF THE SANITARY SEWER AND SHALL BE CONSTRUCTED OF: DIPPED AND WRAPPED QUARTER INCH THICK WELDED STEEL PIPE, DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING, OR CLASS 200 PRESSURE RATED PVC WATER PIPE (DR-14 PER AWWA C-900) OR EQUIVALENT.
P	PROHIBITED ZONE PER SECTION 64630(E) (2) CALIFORNIA CODE OF REGULATIONS, TITLE 22.
S	INDICATES SEWER OR HOUSE LATERAL.

REFER TO DEPARTMENT OF HEALTH SERVICES (DHS) GUIDANCE MEMO #2003-02 FOR FURTHER DETAILS.

APPROVED	 GENERAL MANAGER	1/15/08 DATE	SANTA YNEZ RIVER WATER CONSERVATION DISTRICT IMPROVEMENT DISTRICT NO. 1	STD. DETAIL
1	KB	9/24/07	SANITARY PROTECTION FOR WATER MAINS FROM SEWERS	8.14
	REVISION	DATE		