

# **Recycled Water Design And Construction Standards**



**Ventura County  
Waterworks District No. 8**



**CITY OF SIMI VALLEY**

**DEPARTMENT OF PUBLIC WORKS  
2929 TAPO CANYON ROAD  
SIMI VALLEY, CA 93063**

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## 1.0 INTRODUCTION AND GENERAL POLICIES

### 1.1 INTRODUCTION

Ventura County Water Works District No. 8 (“District”) (“DISTRICT #8”) is in the process of expanding its current recycled water service. The District falls within the jurisdiction of the Los Angeles Regional Water Quality Control Board (LARWQCB), whose goal and mission statement is to promote the beneficial use of treated wastewater through reclamation. LARWQCB’s mission is to preserve and enhance the quality of California’s water resources for the benefit of present and future generations. In an effort to pursue this goal, the District has chosen to offer recycled water to future customers to protect, preserve, and conserve ground and surface water resources in Ventura County as well as surrounding counties, helping conserve California’s water supply.

### 1.2 PURPOSE

The purpose of these “Design and Construction Standards, Rules and Regulations for Recycled Water Use” (Recycled Water Standards and/or Rules and Regulations) is to establish standard procedures, specifications, and limitations for the safe and orderly development and operation of recycled water facilities and systems in the District’s jurisdictional area. These Standards/Regulations cover the administrative, design, construction, operation and maintenance requirements, for obtaining recycled water service and the use of recycled water in onsite facilities, and aspects of the relationship between customers and the District. Reference “Rules and Regulations” for recycled water use of LARWQCB and DHS for other coverage.

### 1.3 SCOPE

These regulations are adopted to:

#### 1.3.1 Promote Conservation

Achieve conservation of potable water supplies by using recycled water to the maximum extent possible for current and future demands. Recycled water uses shall be for the maximum public benefit and may include:

- agricultural irrigation
- commercial uses (including flushing toilets and urinals)
- construction use
- groundwater recharge
- industrial processes
- landscape irrigation
- landscape and/or recreational impoundments
- wildlife habitat

and others as may be approved by the District, LARWQCB, and State and County Departments of Health Services.

### **1.3.2 Prevent Human Consumption**

Prevent direct human consumption of recycled water through:

- adherence to all applicable rules and regulations in accordance with Title 22
- posting of identification signs by the customer in accordance with Title 22
- cross-connection/backflow prevention and testing programs in accordance with Title 17
- tagging and color coding recycled water equipment in accordance with Title 22

### **1.3.3 Provide Control and Enforcement**

Provide control over the use of the recycled water system to minimize the possibility of a nuisance or pollution as defined in the California Water Code, and provide provisions for enforcement.

### **1.3.4 Supplement Standard Specifications**

Supplement the District's **Water Design and Construction Standards for Domestic Water**.

## **1.4 DEFINITIONS AND TERMS**

Whenever in these specifications or in any documents or instruments where these specification govern, the following terms, abbreviations or definitions are used, the intent and meaning shall be interpreted as follows:

### Abbreviations

AASHTO	– American Association of State Highway and Transportation Officials
ACI	– American Concrete Institute
ANSI	– American National Standards Institute
API	– American Petroleum Institute
ASCE	– American Society of Civil Engineers
ASTM	– American Society for Testing and Materials
AWWA	– American Water Works Association
DHS	– The Department of Health Services
UBC	– Uniform Building Code
UPC	– Uniform Plumbing Code
VCFPD	– Ventura County Fire Protection District

## Definitions

“Aerosol”	(see Windblown Spray).
“Air-Gap Separation”	A physical break between a supply pipe and a receiving vessel. The air-gap shall be at least double the diameter of the supply pipe, measured vertically above the flood rim of the vessel, and in no case less than one inch. The design shall be to the satisfaction of the City of Simi Valley.
“American Water Works Association (AWWA)”	The American Water Works Association California-Nevada Section.
“Applicant”	An owner, developer, builder, engineer, or authorized representative, firm, corporation, association, or agency who applies for recycled water service under the terms of these regulations. A successful applicant becomes a customer.
“Application Rate”	The rate at which water is applied to an irrigation or construction area, expressed in inches per day or gallons per minute per acre.
“Approved Backflow Prevention Assembly”	A device installed to protect the potable water supply from contamination by recycled water, such as treated wastewater. This device shall be approved by the DOHS and the District in conformance with Title 17.
“Approved Check Valve”	A watertight semiautomatic device which seats readily and completely and is designed to permit flow in only one direction, as approved by California State Health Services Department and the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California, School of Engineering (USC).
“Approved Use”	An application of recycled water in a manner, and for a purpose, designated in a Use Permit issued by the District and in compliance with any and all applicable regulatory agency requirements.
“Approved Use Area”	A site with well-defined boundaries, designated in a Use Permit to receive recycled water for an approved use and acknowledged by the District and any and all applicable regulatory agencies.
“ASTM”	American Standard Testing and Materials.
“AWWA Guidelines”	American Water Works Association <b>Guidelines for Distribution of Nonpotable Water</b> , California-Nevada Section, latest edition.
“AWWA Standards”	American Water Works Association <b>Standards for Construction Materials</b> , latest edition.
“Board”	The Board of Directors of the Ventura County Waterworks District No. 8.
“City”	City of Simi Valley.

“Commercial Use”	Water used for toilets, urinals, decorative fountains, cooling towers, and other related uses.
“Construction Use”	An approved use of recycled water to support construction activities such as soil compaction and dust control during grading.
“Contractor”	The person(s), firm, or corporation entering into a contract with the District, owner, or user for the performance of work on all or any portion of facilities subject to these regulations.
“County”	The County of Ventura, State of California; more particularly for these standards, the Environmental Health Division of the Resource Management Agency.
“Cross Connection”	Any unprotected actual or potential connection between a potable water system and any source or system containing unapproved water or a substance that is not or cannot be approved safe, wholesome, and potable. By-pass arrangements, jumper connections, removable sections, swivel or change-over devices, and other devices through which backflow could occur, shall be considered to be cross-connections.
“Customer”	Any person, firm, corporation, association, or agency who holds a valid user permit issued by the City for use of its recycled water facilities. (User)
“Design Area”	A site, with well-defined boundaries, proposed to receive recycled water for an approved use, as delineated in an Application for Recycled Water Service.
“Design Consultant”	Any person or firm registered with the State of California providing site layout, landscaping, or irrigation system design services.
“Department of Health Services”	The Department of Health Services (DHS) of the State of California, Drinking Water Field Operations Branch in Carpinteria, California.
“DHS”	The Department of Health Services (DHS) of the State of California, Drinking Water Field Operations Branch in Carpinteria, California.
“Direct Beneficial Use”	The use of recycled water which has been transported from the point of production to the point of use without an intervening discharge to waters of the State.
“Direct Overspray”	Any discharge of water directly or indirectly onto areas other than that for which the application of recycled water is approved.
“Director”	The Director of Public Works of the City of Simi Valley, and shall include deputies and representatives as may be assigned to perform the duties of the District.
“Discharge”	Any release or distribution of recycled water to a use area or disposal (outfall, live stream). All discharges of recycled water must be approved by the regulatory agencies.

“Discharge Permit”	A permit issued by the LARWQCB for the discharge of recycled water.
“District”	The Ventura County Waterworks District No. 8.
“District Approval”	Approval of the District Engineer or supervising District Engineering staff.
“District Engineer”	The Director of Public Works of the City, or other registered civil engineer designated to oversee the interests and functions of the District.
“District Manager”	The City Manager acting in the capacity of Manager of the District.
“Effluent”	Treated wastewater discharged from a water reclamation plant.
“Engineer”	A professional engineer or firm of professional engineers appointed by and acting for the District Engineer on a District sponsored capital project. For a private development project, the term refers to the engineer hired by the developer and may also be referred to as the “developer’s engineer” or “engineer of record”.
“FEMA”	Federal Emergency Management Agency
“Fire Department”	Ventura County Fire Protection District.
“Fire Service Line”	A line whose sole function is to service a particular building or property with fire protection.
“General Public”	Any person(s) at large who may come in contact with facilities and/or areas where recycled water is approved for use.
“GPH”	The rate of water delivery in gallons per hour.
“GPM”	The rate of water delivery in gallons per minute.
“Gray Water”	Untreated wastewater other than toilet and/or urinal wastes.
“Greenbelt Areas”	Parcels of recreational or unoccupied public or private lands within the service area, including but not limited to, golf courses, cemeteries, parks and landscaping of common areas.
“HCF”	The unit of water quantity measurement delivered to the customer in hundreds of cubic feet.
“House Plumbing”	Plumbing fixtures, devices, and piping within a building or structure including pipes on the property from the meter. (Onsite Facilities)
“Improvement District (ID)”	Subarea of the District formed to set up assessments to pay for bonds sold to construct water and sewer facilities benefiting landowners in that subarea.

“Industrial Use”	Water used for industrial processes such as cooling, flushing, or construction, and other related uses.
“Infiltration Rate”	The rate at which soil will accept water without overland flow, expressed in inches per hour.
“Inspector”	An employee or agent of the District engaged to observe and record field compliance with design criteria, plans, construction standards.
“Installer”	A person(s) or firm performing work necessary to construct or install equipment or facilities subject to these Regulations.
“Landscape Impoundment”	A body of water which is used for aesthetic enjoyment or which otherwise serves a function not intended to include public contact.
“Landscape Irrigation”	Water used for the propagation and maintenance of trees, shrubs, groundcover and turf.
“LARWQCB”	California Regional Water Quality Control Board, Los Angeles.
“MGD”	The rate of water delivery in million gallons per day.
“Nonpotable Water”	Water that is not intended for human consumption.
“Offsite Facilities”	Existing or proposed facilities under the control of the District, from the source of supply to the point of connection with the customer’s onsite facilities, up to and including the District’s meter and meter box.
“Offsite” or “Off-Tract Water Line”	A water line beyond tract boundaries connecting the water lines with the District’s system.
“Onsite Facilities”	Existing or proposed facilities within property under the control of the customer or owner, normally downstream of the District’s meter tailpiece. (House Plumbing)
“Onsite Supervisor”	A qualified person designated by a recycled water customer and approved by the District to be responsible for the safe and efficient operation of the customer’s recycled water system. This person shall be knowledgeable in the construction and operation of recycled water and irrigation systems and in the application of Federal, State and local guidelines, criteria, standards and regulations governing the use of recycled water. This person shall be trained in cross-connection control to the satisfaction of the District.
“Operator”	Any person(s) or firm, who by entering into an agreement with a user is responsible for operating onsite facilities.
“Operator’s Personnel”	Any employee of the user, owner, or customer, whether permanent or temporary, or any contracted worker whose regular or assigned work involves the supervision, operation, or maintenance of equipment, facilities, or a system using recycled water.

“Owner”	Any holder of legal title, contract purchaser, or lessee under a lease with an unexpired term of more than one (1) year, of property for which recycled water service has been requested or established.
“Peak Moisture Demand”	The demand during the highest period of combined evapotranspiration (ET <sub>0</sub> ) and crop coefficient (K <sub>c</sub> ) for a specific site and plant material being irrigated on that site.
“Permit”	See Use Permit
“Permitted Capacity of Recycled Water”	The amount of recycled water that the customer is entitled to have for the area and use specified in the recycled water user permit.
“Permittee”	The permittee or customer operating under a Use Permit for recycled water or the installation or construction of recycled water facilities.
“Person”	Any public or private individual, partnership, corporation, agency, or association, including a homeowners’ association.
“Planning Department”	The Planning Department of the City of Simi Valley.
“Plans”	Drawings for the installation of water pipelines, reservoirs, pump stations, wells, valves and details.
“Plate No.”	Where not specified to the contrary, this refers to plates attached to these standards.
“POC”	The point of connection of the onsite facilities to the offsite facilities of the recycled water distribution system.
“Ponding”	The retention of recycled water on the surface of the ground or man-made surfaces, other than the designated use area, for a period of time following the cessation of an approved recycled water use activity such that a hazard or potential hazard to public health results.
“Potable Water”	Water that is pure, wholesome and suitable for human consumption, and which conforms to the latest edition of the United States Public Health Service Drinking Water Standards, the California Safe Drinking Water Act, and any other applicable standards.
“Pressure Zone”	The zone of operational pressure range within the District system as defined by elevation, i.e., Zone II, el. 1,090; same as service zone.
“Producer”	An agency which produces recycled water.
“Public Works Department”	The department established by the City to administer the public infrastructure systems, including those of the District.
“Record Drawings”	Drawings which show the constructed facilities, including all revisions to the original plans. (As-Built Plans)

“Recreational Impoundment”	A body of water used for recreational activities including, but not limited to, fishing, boating, and/or swimming. Allowable uses with recycled water depend on treatment level.
“Recycled Water”	Recycled water shall have the definition set forth in Title 22, Division 4 of the California Code of Regulations and shall mean water which, as a result of treatment of wastewater, is suitable for a direct beneficial use or a controlled use that otherwise would not occur. Specifically excluded from this definition is gray water.
“Recycled Water Facilities”	Systems, structures, etc., used in the treatment, storage, pumping, transmission and distribution of recycled water.
“Recycled Water Service Connection”	The point of connection (POC) of the customer’s recycled water line with the recycled water service line of the District, which shall normally be the downstream end of the recycled water meter tailpiece.
“Recycled Water Service Line”	The District’s pipeline between its recycled water distribution system and the recycled water service connection. Abbreviated as “RWSL”.
“Recycled Water System”	District facilities that produce, convey, supply, store and intercept recycled water.
“Reduced Pressure Principle Backflow Prevention Assembly”	A backflow prevention device incorporating not less than two check valves, an automatically-operated differential relief valve located between the two check valves, and a completely closing shut-off valve on each side of the check valve assembly, equipped with test cocks for testing.
“Regulations”	These “Design and Construction Standards, Rules and Regulations for Recycled Water Use” prepared pursuant to the Discharge Permit and all rules and regulations of any other local or State agency or other regulations referred to and incorporated herein.
“Regulatory Agencies”	Those public agencies legally constituted to protect the public health and water quality and having regulatory authority over the District, such as the Reclamation Authority, the California Department of Health Services, the California Regional Water Quality Control Board, Ventura County Environmental Health, and others as may be appropriate.
“Required”	Unless specifically otherwise indicated, this shall mean a requirement of the District.
“Required Fire Flow”	A requirement established for each project as determined by the VCFPD using Insurance Services Office guidelines.
“Runoff”	Flow of water along the surface of the ground or other natural or man-made surface, including but not limited to, pedestrian walkways, streets, playground surfaces and grassy slopes.

“RWQCB”	The Regional Water Quality Control Board of the State of California, Los Angeles Region.
“Schedule of Rates”	A schedule containing fees, charges, and deposits determined and issued by the City for the uses and services of recycled water.
“Separation”	The horizontal and/or vertical distance between a recycled water pipeline and a parallel potable water pipeline, sewer pipeline, or a sludge force main. The separation shall be the clear out-to-out distance between the pipelines in question.
“Service”	The furnishing of recycled water to a customer through a metered or unmetered connection to onsite facilities.
“Service Area”	All areas identified for potential or actual recycled water use in the Water Reclamation and Reuse Conceptual Master Plan, and the Recycled Water Distribution Master Plan, including all subsequent revisions and updates for use of recycled water within Ventura County.
“Service Lateral”	The facility between the onsite facilities and the offsite facilities to the POC.
“Spray Irrigation”	Application of water to land to maintain vegetation or support growth of vegetation by spraying it from sprinklers or orifices in piping.
“SSPWC”	The latest edition of the Standard Specifications for Public Works Construction, including the Regional Supplement Amendments of the County of Ventura, commonly known as the “Green Book”.
“Standard Specifications”	Specifications adopted by the District for construction of water and recycled water facilities.
“Surface Irrigation”	Application of water to land to maintain vegetation by means other than spraying.
“Tenant”	Any person, group, firm, partnership, corporation, association, or agency who pays rent to occupy and use land or a building.
“Terms”	All opinion or judgment, such as approvals, requirements, directions, or acceptances of the District.
“Tertiary Effluent”	Secondary effluent which as been disinfected and filtered consistent with provisions of California Code of Regulations Title 22.
“Transfer”	The conveyance or movement of water from one agency to another agency. Transfer includes the conveyance of control or responsibility of a volume of water stored in a storage facility commonly owned or controlled by more than one agency.
“Treated Wastewater”	Wastewater treated in accordance with the requirements of “Wastewater Reclamation Criteria,” of the California Code of Regulations Title 22.

“UL”	Underwriter’s Laboratory.
“Unauthorized Discharge”	Any release of recycled water that violates these Rules and Regulations or any applicable Federal, State, or local statutes, regulations, ordinances, contracts, or other requirements.
“UPC”	Uniform Plumbing Code.
“Use Area”	The specific area designated to be served with recycled water through onsite facilities.
“Use Permit”	A permit issued by the District to a recycled water service applicant after the satisfactory completion of the service application procedures set forth in these regulations. The permit constitutes a service agreement that legally binds the customer to all conditions in these Rules and Regulations and to any and all applicable regulatory agency requirements.
“User”	Any person, group, firm, partnership, corporation, association, or agency approved to use recycled water by having been issued a user permit by the District. (Customer)
“VCEHD”	Ventura County Environmental Health Division (of the Resource Management Agency).
“Violation”	Noncompliance with any condition or conditions of these regulations and/or a Use Permit by any person, action or occurrence, whether willfully or by accident.
“Water Reclamation”	The planned renovation of wastewater to produce an effluent that is approved for specific beneficial uses by the appropriate regulatory agency.
“Windblown Spray”	Dispersed, airborne irrigation water or recycled water capable of being transmitted through the air by natural or manmade wind to locations other than that for which the direct application of irrigation water or recycled water is approved.
“Work”	The entire improvement proposed to be constructed pursuant to a permit or legal agreement and consistent with these Rules and Regulations.

## **1.5 APPLICABLE CODES AND POLICY**

- A. Ordinances, requirements, and applicable standards of governmental agencies having jurisdiction within the District’s service area shall be observed in the design, construction, and operation of water systems. Such requirements include, but are not limited to current revisions of the following:
1. The American Water Works Association Standards.
  2. The Uniform Plumbing Code as amended by the City of Simi Valley Building and Safety Division.

3. Road encroachment regulations of the City of Simi Valley or the County of Ventura, as applicable.
4. Standard Specifications – State of California Business and Transportation Agency, Department of Transportation Standard Specifications, current edition (CALTRANS), or Building News, Inc. (BNI) publication entitled “Standard Specifications for Public Works Construction”, (commonly known as the “Greenbook”) current edition and supplements.
5. Ventura County Environmental Health Standards and Codes.
6. State Department of Health Services Standards and Codes.

## **1.6 DISTRICT JURISDICTION**

The District provides approval of plans and inspection of all public water and recycled water lines and service lines within public rights-of-way and easements of the District’s water service area. For potable water, the Building and Safety Division, City of Simi Valley, has jurisdiction for all onsite facilities beyond the water meter. Outside of the City limits, the Ventura County Building and Safety Department has jurisdiction. However, due to the nature of recycled water use requirements, including identification and periodic onsite inspections, the District will provide onsite recycled water permitting and inspection.

Inspection above the pipe zone (trench and pavement) in public street areas is provided by the Public Works Department, either City or County, as appropriate.

Where repairs or replacement of a service line on the District’s side of the meter is required subsequent to initial construction, it is the responsibility of the District, unless it is an upgrade situation. In such case, the owner or customer may either be permitted by the District to perform the work or may be required to post a cash deposit for the actual costs to be incurred by the District for the work. Conversely, repairs or replacement on the customer side of the meter are the responsibility of the property owner.

## **1.7 FIRE PROTECTION**

Within the District and surrounding Ventura County areas, fire protection is provided by the Ventura County Fire Protection District (VCFPD) although water systems are owned by the water purveyors. The District reserves the right to assess the suitability of recycled water use for fire protection purposes on a case-by-case basis; however, this use is not anticipated in the foreseeable future.

## **1.8 WATER PURVEYORS WITHIN CITY**

Within the City there are two water purveyors:

- Ventura County Water Works District No. 8
- Southern California Water Company

These standards address Ventura County Waterworks District No. 8 requirements.

## **1.9 DEVELOPER'S ENGINEER'S RESPONSIBILITY**

These standards establish uniform policies and procedures for the design and construction of the District recycled water system. They are not intended to be a substitute for engineering knowledge, judgment, or experience. The procedures shall be reviewed by the developer's engineer and applied as necessary to a project. Proposed deviations from these standards shall be submitted for approval, in writing, prior to tentative map and/or development project approval.

It is the developer's engineer's responsibility to be aware of the District's Water System Master Plan and/or any applicable specific plan for water system improvements and to indicate any necessary main line relocations, extensions or oversizing on the tentative tract map exhibit. This responsibility shall include investigating any changes from the Master Plan necessitated by development subsequent to the Master Plan, but shall not relieve the developer of the responsibility to provide an approved system consistent with District requirements. Verification of the adequacy of the surrounding water system rests jointly with the District Engineer and the developer.

All plans, specifications, reports, or documents shall be prepared by a registered civil engineer licensed by the State of California, Department of Consumer Affairs, or by a subordinate employee under the civil engineer's direct supervision, and shall be signed and stamped with the civil engineer's seal to indicate responsibility for each plan, specification, report, or document.

A "Review" and/or "Accepted" signature of the District Engineer on the plans does not in any way relieve the developer's engineer of responsibility to meet all of the District's requirements. The plans may be revised by change order. However, plans that are signed as being authorized for construction generally will not require revisions based upon subsequent revisions to these standards, unless in the District's opinion, a change is necessary due to a significant change in the standards, or unless a developer does not proceed to construction within a reasonable time.

## **1.10 REFERENCED SPECIFICATIONS**

References to standards such as AWWA or ASTM shall refer to the latest edition or revision of such standards unless otherwise specified.

## **1.11 BOARD OF DIRECTORS ACCEPTANCE**

The District will not recommend that a recycled water system be accepted until all applicable requirements of these standards and of the appropriate Public Works Department have been met. Acceptance by the Board of Directors/City Council shall be done in total with all other improvements of a development project.

## **1.12 SEVERABILITY**

If any section, subsection, sentence, clause, phrase, part, or portion of these Design and Construction Standards, and Rules and Regulations is for any reason held to be invalid or unconstitutional, such invalidity shall not affect any of the remaining portions. These Standards, and Rules and Regulations shall be interpreted so as to comply with applicable Federal and State laws and regulations.

## **1.13 RECYCLED WATER SERVICE REQUIREMENTS**

### **1.13.1 General**

The District shall provide recycled water service in accordance with these Rules and Regulations to all areas identified in the District Master Plan and subsequent updates, additions, revisions, or amendments for the use of recycled water, as and when such recycled water becomes available. Notwithstanding this, the District shall not be compelled to effect the availability of recycled water for any project or for any time frame.

### **1.13.2 Service Conditions**

The District shall control and schedule recycled water distribution to customers. The provision of recycled water service and the use of recycled water by any customer shall be subject to all the terms and conditions of these Rules and Regulations.

### **1.13.3 Application Procedure**

#### *1.13.3.1 Filing Application for Recycled Water Service*

An applicant meeting the requirements for recycled water service shall file an application for recycled water with the Customer Services Division of the City Department of Administrative Services on a standard form designated by the District.

The application form shall contain detailed information concerning the applicant as follows:

- a. The applicant's relationship to the property for which recycled water service is requested. In cases where the applicant is not the legal owner of the property, the legal owner shall consent to the application on a supplemental notarized form.
- b. The address and legal description of the property covered by the application may be required.
- c. The purpose for which the property will be used.
- d. The proposed use of recycled water within a specifically defined designated use area on the property.
- e. The estimated service requirements for recycled water.
- f. The designation of a proposed User's Recycled Water Supervisor.
- g. Any special condition for service pursuant to these Rules and Regulations.

An example of the necessary forms is presented in the Appendices section. The Checklist/Action Request Form for Obtaining Recycled Water Service is shown as Appendix 1. The Application for Recycled Water Service is Appendix 2. The Certification Form for Recycled Water Service is in Appendix 3. The onsite maintenance and rating form is in Appendix 4. The final release checklist is in Appendix 5.

The application form, signed by the owner, shall be accompanied by plans and specifications per Section 4 delineating the proposed recycled water designated use area, the proposed location, size,

and type of all recycled water service connections and onsite facilities, and any areas in which recycled water must be specifically excluded.

*1.13.3.2 Compliance of Application with Regulatory Requirements*

The applicant for recycled water shall agree to comply with the requirements of these Rules and Regulations and any and all applicable Federal, State and local statutes, ordinances, regulations and other requirements.

*1.13.3.3 Application Fees and Other Charges*

Application fees, deposits, and capacity charges shall be paid in accordance with the City Schedule of Service Charges and the schedule of rates of the District and shall be subject to all terms and conditions of these Rules and Regulations.

*1.13.3.4 Review of Application by the District*

Upon receipt of an application for recycled water service, the District shall review the application and conduct any necessary investigation in order to determine whether the District shall provide recycled water service. The District may prescribe requirements in writing to the applicant as to the facilities necessary to be constructed including design, manner of construction, method of operation, and conditions of service.

**1.13.4 Offsite Facilities/Agreements**

*1.13.4.1 Extension of Distribution Mains*

Unless otherwise provided by written agreement between the customer and the District, the customer shall pay for all onsite facilities, including their installation, as well as for recycled water service lines and extension of recycled water transmission and distribution mains in order to provide recycled water service to the customer.

*1.13.4.2 Reimbursement Agreement:*

In cases where a customer/developer requests recycled water services in areas where the District does not have existing transmission and distribution mains, the customer's request for recycled water service shall be subject to the following:

Where the District determines that oversized or additional facilities are needed to accommodate future development, the project may be conditioned upon the applicant financing and developing such extra work. In this event, the District and applicant shall enter into an agreement for cost reimbursement whereby subsequent developers of benefited property will reimburse the original developer for proportional shares of the improvements. Any such reimbursement agreement with a development project shall be a condition of approval, otherwise reimbursement shall not be permitted.

*1.13.4.3 Participation Agreement:*

In cases, where the District has planned capital improvement projects which are scheduled for undertaking and completion on a planned timetable, and where the customer/developer finds the District's plan of implementation and completion too long to wait for, and where the customer chooses to undertake and complete a specific planned capital improvement project of the District with

the customer's own financial resources, then a participation agreement shall be concluded with the customer and the District agreeing on equitable sharing of the financial outlay of the project, and the project shall be completed in accordance with the design and specifications of the District.

#### **1.13.5 Size and Location of Service Connections**

The District reserves the right to determine the size and location of recycled water service lines, the service connections, and the meters and shall also have the right to determine the kind and size of backflow prevention devices and any and all other appurtenances to the service.

The District reserves the right to supply recycled water to contiguous areas of a single ownership through a single recycled water service connection.

Common areas owned or operated by homeowners' associations or similar cooperatives should have only one recycled water service connection whenever it is practical.

The recycled water service line shall be extended to a curb line, or property line of the customer's property, abutting upon a public street, highway, road, or District easement in which a recycled water distribution main is installed.

#### **1.13.6 Permits**

Following acceptance of the improvement plans, the applicant shall obtain an encroachment permit from the Department of Public Works for the installation of recycled water facilities, both offsite and onsite. This permit shall constitute a District encroachment permit. A recycled water use permit shall also be required.

#### **1.13.7 Establishing Service**

Installation of a meter by the District shall constitute approval of service. The use of recycled water shall constitute acknowledgment to comply with all the provisions of these Rules and Regulations, and any additional requirements prescribed by the District, to protect public health and welfare.

The meter shall be installed only after all construction of recycled water facilities has been completed, tested, inspected, and found acceptable by the District, and after all outstanding fees for recycled water service have been paid.

Service shall be effective indefinitely and shall not require renewal, except that the District reserves the right to suspend or terminate service, or to modify its terms and conditions, if any of the following occurs:

- a. A change of the owner or customer of the property served by recycled water.
- b. A change in the use of the property served by recycled water.
- c. A change in the qualitative characteristics of recycled water.
- d. A violation of these Rules and Regulations and other applicable regulations.
- e. A change in regulations.

### **1.13.8 Conditions for Recycled Water Service**

Recycled water service and any connections for service made under these Rules and Regulations, shall be subject to the following conditions:

#### *1.13.8.1 Control of Facilities (Liability)*

- a. The District shall have control of and shall maintain and repair offsite facilities, recycled water service lines, and meters. The customer shall repair and maintain in good working condition the recycled water service connections and onsite facilities downstream from the meter. The District shall be entitled to inspect and test all connections and onsite facilities in the manner specified in Section 11.

A customer may request that the meter through which the recycled water is being furnished be examined and tested by the District for the purpose of ascertaining whether or not it is correctly registering the amount of recycled water being delivered through it. In such an event, the customer shall make a request to the Customer Services Division for a Meter Controversy Test.

- b. The District/City and its agents shall be indemnified and held harmless by the customer from and against all claims, damages, losses or expenses arising from the use of recycled water or from the use of facilities by which recycled water is conveyed.

#### *1.13.8.2 Hours of Operation:*

Irrigation with recycled water is restricted to the hours of 9:00 p.m. to 6:00 a.m. unless otherwise stated in the permit, or directed by the District.

#### *1.13.8.3 Prohibition of Changes:*

The customer shall not make any changes in, or additions to, the recycled water system without the written approval of the District. Any changes or damage to existing onsite facilities, whether the result of intention or unintended, shall be reported immediately to the District.

A recycled water service connection and water meter shall not be used to supply property not covered by the application requesting service.

#### *1.13.8.4 Subdividing an Approved Service Area*

- a. When a property provided with a recycled water service connection and meter is subdivided, such connection and meter shall be considered as serving the lot or parcel of land on which the meter is located. Additional recycled water distribution mains and/or service lines will be required for all subdivided areas in accordance with these Rules and Regulations, unless, with the express written approval of the District, the subdivider provides covenants, conditions, and restrictions (CC&Rs) properly recorded with the County's Recorder for the operation of onsite recycled water facilities serving more than one lot, and also provides easements for recycled water distribution mains and/or service lines or shows easement locations in the CC&Rs.
- b. All recycled water used on any premise where a recycled water meter is installed must pass through the meter. Customers shall be charged for all recycled water passing through the meters.

- c. Every recycled water service connection and meter assembly shall include an angle ball meter stop, as approved by the District, on the inlet side of the meter, which shall be used exclusively by the District for controlling the recycled water supply through the recycled water service line. If the angle ball meter stop is damaged by the customer's use, repair and/or replacement by the District shall be at the customer's expense.
- d. Each customer shall restrict the use of recycled water to those uses set forth in the application for recycled water services approved by the District.

#### *1.13.8.5      Discontinuation of Recycled Water Service*

By reason of circumstances beyond the control of the District, or in order to protect the facilities of the District, or for the protection of public health, safety, and welfare of the residents or property owners within the District, recycled water service may be reduced or terminated on a temporary or permanent basis under the conditions set forth below:

- a. In the event that recycled water is not available for any reason, including, but not limited to, reduced plant production, increased demand, or repairs to facilities.
- b. At any time the recycled water does not meet the requirements of the regulatory agencies, including but not limited to those prescribed by the California Code of Regulations, Title 22, Division 4. Recycled water service would, in such case, be renewed at such time that recycled water would again meet the requirements of the regulatory agencies, or at such time that the District would supplement the recycled water system from the potable water system.
- c. When the District determines that a water shortage exists, or is threatened, which prevents further recycled water service.
- d. At any time that the customer fails to maintain or operate the onsite system as required by these Rules and Regulations or other regulatory standards.

#### **1.13.9      Illegal Connections**

No person shall make any connection to recycled water facilities within the District without a use permit. The District reserves the right to terminate service at any time based upon the violations listed in Section 14 of these Rules and Regulations.

#### **1.13.10      Cross-Connection Prevention**

##### *1.13.10.1      Purpose*

The primary purpose of this Article is to protect the District's potable water supply from possible contamination by prohibiting and preventing cross-connections between the potable water distribution system and the recycled water distribution system, in accordance with Title 17, Chapter 5 of the California Code of Regulations. The secondary purpose is to protect the recycled water system from other contaminants.

These provisions are in addition to, and not in lieu of, the controls and requirements of other regulatory agencies, such as the Department of Health Services.

Cross-connection prevention is further discussed in Section 10.

#### 1.13.10.2 Backflow Prevention

Regulations governing backflow prevention devices are intended to protect the District's potable water supplies and are not intended to protect customers from potential hazards of cross-connections in the customer's onsite facilities.

- a. Approved backflow prevention for the District's recycled water supply shall be provided by the customer in accordance with the specifications and as required by the District and Ventura County Environmental Health.
- b. The backflow prevention devices required shall be in accordance with the requirements specified by the District.
- c. Provision, installation, maintenance and inspection of backflow prevention devices shall be the sole responsibility and duty of the customer, and at customer's expense. Inspection of backflow prevention devices shall be done at least once a year, or more often in those instances where successive inspections indicate repeated failures. These devices shall be inspected, repaired, overhauled, or replaced at the expense of the customer whenever they are found to be defective. Records of such tests, repairs and overhauls shall be provided to the District, and such records shall be made available to any concerned regulatory agency on request.

The installation and inspection of backflow prevention devices shall be done by a certified inspector at the expense of the customer. The customer shall submit to the District original inspection certificates as proof of compliance. All inspection and testing shall be done to the satisfaction of the District and the regulatory agencies concerned.

#### 1.13.10.3 Type of Protection

The level of protection required is related to the degree of hazard that the District determines may potentially exist on the premises served. Minimally a Reduced Pressure Principle Backflow Prevention Device (RPPD) shall be required and Air Gap Separation (AG) shall be required for higher levels of concern (See Plate RW31 and 41, respectively). Requirements relative to various situations, are listed below. Situations not listed shall be evaluated on a case-by-case basis and the appropriate level of protection required shall be determined by the District in consultation with Ventura County Environmental Health and the State Health Department.

##### 1.13.10.3.1 Degree of Hazard:

###### Sewage and Hazardous Substances:

- a. On premises where the District's potable water system is used to supplement the recycled water supply, an air gap separation shall be provided.
- b. On premises where recycled water is used and there is no interconnection with the potable water system, an RPPD separation may be used instead of an air gap if approved by the District, County and State.
- c. On premises where hazardous materials and toxic substances are stored, handled, or produced in any manner in which the substances may enter either the potable water or the recycled water system, an air gap separation to both systems shall be provided

to avoid contamination of the potable water as well as degradation of the recycled water system. An RPPD may be provided in lieu of an air gap if approved by the District, County, and State.

- d. On premises where entry is restricted so that cross-connection inspections cannot be made with sufficient frequency or at sufficiently short notice to assure that cross-connections do not exist, an air gap separation shall be used.
- e. On premises where there is a repeated history of cross-connections being established or re-established, an air gap separation shall be used.

#### 1.13.10.3.2 Color-Coding Recycled Water Systems:

Where any property subject to recycled water service utilizes existing facilities for the purpose or contains existing dual or multiple water systems and piping, the exposed portions of recycled water pipelines, valves, and other fittings shall be painted Pantone Purple 512, banded, or marked to distinguish clearly that they are used for recycled water. In addition, all new recycled water facilities, both exposed and unexposed, installed on any such property shall be similarly painted purple, banded, or marked. All recycled water outlets shall be posted with the wording "CAUTION: RECYCLED WATER - DO NOT DRINK". Main shut-off valves shall be clearly identified to distinguish between recycled water and potable water systems.

See Section 3 for specifications and Standard Plates RW73 through 77.

#### 1.13.10.4 Customer's Designated Recycled Water Supervisor

The customer's designated recycled water supervisor, whose qualifications and responsibilities are discussed in Article 5.2.2, shall be responsible for the prevention of any cross-connections on the property, and in the event of a cross-connection to the potable water system, the customer shall immediately shutoff the main recycled water supply valve and depressurize the recycled water system to prevent further mixing with the potable supply, and shall also immediately advise the District of the occurrence of the cross-connection so that appropriate measures may be taken to control any contamination or pollution. The District shall immediately advise local and State health officers.

The customer shall assume all responsibilities for the prevention of cross-connections between the onsite facilities and any potable water supply, and shall indemnify and hold the District/City harmless from and against any claim of damage or loss which is caused or is alleged to have been caused, in whole or in part, by cross-connections of onsite facilities. Notwithstanding this covenant, the customer shall be subject to the rules pertaining to the use of recycled water as otherwise provided herein, including but not limited to those allowing the District, or County Environmental Health to inspect and approve all onsite recycled water facilities as provided in Section 11.

### **1.13.11 Conversion to or from Recycled Water Service**

#### 1.13.11.1 Conversion to Recycled Water Service (See procedure in Appendix 6)

When a customer proposes the conversion of any existing potable water irrigation system to a recycled water irrigation system, a comprehensive investigation of the proposed recycled water system shall be performed for the District at the expense of the customer. On a case-by-case basis, the District, and Ventura County Environmental Health, shall review the as-built drawings and investigation reports to insure the adequacy of measures to be undertaken to bring the existing system

into full compliance with these Rules and Regulations. The District or County Environmental Health may deny issuance of a recycled water use permit if either determines that the proposed conversion cannot be safely made.

#### 1.13.11.2 Conversion from Recycled Water Service

If, due to onsite failure of the recycled water system, or use violations, the District determines it necessary to convert the onsite facilities from recycled water supply to a potable water system, or other water supply, it shall be the responsibility of the customer to pay all costs for such conversion, unless determined otherwise by the District. Conversion costs shall include the following:

##### 1.13.11.2.1 Isolation of the Recycled Water Supply:

Service shall be removed and plugged by the District at the recycled water main, or abandoned in a manner approved by the District.

##### 1.13.11.2.2 Installation of Backflow Prevention Device:

The customer shall install approved backflow devices on all water meter connections.

##### 1.13.11.2.3 Removal of Existing Fittings:

The customer shall be responsible for replacement of all fittings with approved potable water fittings.

##### 1.13.11.2.4 Hydraulic Testing and Disinfection:

The customer shall be responsible for hydraulic testing and disinfection of the converted pipeline, in accordance with Chapter 9 of the District potable water standards.

##### 1.13.11.2.5 Notification:

The customer shall notify all personnel involved with the operation of the abandoned recycled water service.

##### 1.13.11.2.6 Warning Signs/Labels/Color Coding:

The customer shall be responsible for the removal of all warning signs, labels, and color coding.

##### 1.13.11.2.7 Installation of Potable Water System:

Installation of all potable water lines and facilities and any capacity fees due, as provided for in these Rules and Regulations shall be the responsibility of the customer.

#### **1.13.12 Authorized Uses of Recycled Water**

The uses of recycled water may include, but are not limited to, landscape irrigation, agricultural irrigation, construction water, industrial process water, commercial use, groundwater recharge, enhancement of wildlife habitat, and recreational impoundment. Each such use must be considered for approval by the District on a case-by-case basis. Determinations as to specific uses to be allowed shall be in accordance with the standards set forth in Title 22, Division 4 of the California Code of Regulations. The District may, at its discretion, set forth specific requirements as conditions to providing such services and/or require specific approval from the appropriate regulatory agencies.

The use of recycled water in swimming pools is not permitted.

### **1.13.13 Scheduling Recycled Water**

The District will control and schedule the delivery of recycled water if, in the opinion of the District, scheduling is necessary for purposes including, but not limited to, the maintenance of an acceptable working pressure in the recycled water system and the provision for reasonable safeguards in relation to public health.

### **1.13.14 Temporary/Emergency Connections to the Potable Water System**

If, in the opinion of the District an emergency exists, or is threatened to occur, whereby all or a portion of the water in the recycled water system is not available, the District may approve a temporary connection to the potable water system. The decision to allow temporary service to the potable water system shall be at the sole discretion of the District as stipulated in Chapter 3.4.3 of the Potable rules and Regulations of the District, and the City shall maintain and operate all connections.

Before such temporary connection is made, the portion where potable water is to be supplied shall be isolated by an air gap separation from the remainder of the recycled water system. This isolation shall occur at either individual services or on the offsite system, as determined by the District. An approved backflow prevention device shall be installed on the potable water lines in accordance with Section 3 of these Rules and Regulations and all applicable regulations of the governing agencies. The emergency connection shall be removed before connection is re-established to the recycled water system. Re-establishment of recycled water service must be inspected and approved by a District inspector prior to resuming delivery of recycled water.

On a case-by-case basis, the District and all related regulatory agencies may approve a temporary potable water connection for a customer's recycled water system for irrigation or other uses, without an air gap. The temporary connection shall be designed to allow only one water source to serve the customer's system at any given time. An approved backflow device and meter shall be installed on the potable water service and the recycled water service prior to the customer's connection, in accordance with Section 3. At no time shall the potable water system be connected to a system simultaneously served by a non-potable source.

The District, at its own discretion, may provide potable water or disinfected raw water in lieu of recycled water.

### **1.13.15 Additional Restrictions on the Uses of Recycled Water**

#### ***1.13.15.1 Runoff and Ponding***

- a. The onsite facilities shall be designed to meet the peak moisture demand of all plant materials used within the design area and to apply irrigation water in a manner compatible with the infiltration rates of the soil types within the approved use area.

Conditions that directly or indirectly cause runoff of recycled water outside of the approved recycled water use area, cause unintended ponding of recycled water, or permit windblown spray to pass outside of the approved use area shall be eliminated or controlled to the greatest extent possible with the use of the best practicable technology or methodology. Where such control, in the opinion of the District, is not adequate, whether due to technology or otherwise, recycled water service may be terminated.

- b. The use of recycled water shall be limited to those uses permitted by Federal and State law, and to those uses approved by the District for the recycled water service area.

*1.13.15.2    Protection of Drinking Fountains and Public Facilities*

Any and all drinking fountains located within an approved recycled water use area shall be protected by re-siting or isolating them with a protective structure from contact with recycled water, whether by windblown spray or by direct application through irrigation or other approved uses.

Recycled water irrigation systems shall not be installed near food establishments or public facilities such as picnic tables. Design of systems near such facilities shall require County Environmental Health approval.

*1.13.15.3    Hose Bibbs and Quick Couplers*

No customer shall use or install any hose bibbs on a recycled water system regardless of style, construction or identifications. The use of quick couplers is at the sole discretion of the District. Their intended use shall require a separate plan review from the District. Only quick couplers with the approved color and identification will be allowed. (See Plate RW34)

*1.13.15.4    Fire Hydrants*

No customer or other party shall use or install fire hydrants or other connections for fire services on any onsite system that presently operates or is designed to operate with recycled water, regardless of the construction and identification of the fire hydrant or other connection for fire services. Although such use is not anticipated in the foreseeable future, the District does have full discretion to evaluate the need for recycled water use to meet fire service requirements, on a case-by-case basis.

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## 2.0 DESIGN CRITERIA

### 2.1 DISTRICT WATER SYSTEM

The District is one of two water purveyors within the City of Simi Valley. The other is the Southern California Water Company. The District's service area generally includes the City of Simi Valley's Sphere of Influence. The service area consists of five operating sub-systems: 1) Western; 2) Eastern; 3) Knolls; 4) Box Canyon; and 5) Wood Ranch.

The District purchases most of its potable water from the Calleguas Municipal Water District who, in turn, purchases water from the Metropolitan Water District (MWD). The remainder of the potable water is pumped from groundwater wells located in the vicinity of Tapo Canyon.

The Simi Valley Water Treatment Plant is rated to treat 12.5 million gallons of wastewater per day, with peak flows up to 18 million gallons. The treatment plant is currently permitted to treat 4 mgd to full secondary treatment. Presently, the plant pumps approximately 60,000 gallons per day to the Simi Valley Landfill. Additional amounts are used for irrigation purposes at the treatment plant.

A detailed description of the District water system is contained in the District's Water Master Plan.

### 2.2 GENERAL

All potential uses of recycled water, including, but not limited to, uses for landscape irrigation systems, agricultural irrigation systems, systems used for industrial process or construction purposes, or recreational impoundment systems, or flushing toilets and urinals in non-residential buildings shall be reviewed by the District. If recycled water is to be used, the facilities shall be constructed in accordance with the procedures and requirements set forth below.

The District's recycled water program is subject to the regulations of the California Department of Health Services and the Ventura County Environmental Health Division. As set forth in the District's "Rules and Regulations for Water", the District shall determine whether a given service will be furnished with recycled water or potable water. The determination shall be in accordance with the standards of treatment and water quality requirements set forth in Title 22, Chapter 4 of the California Code of Regulations, with the intent of the District to work in conjunction with the health agencies to protect the public health, and with the availability and/or feasibility of making available recycled water facilities. All on-site facilities using recycled water will have an annual cross-connection test unless otherwise approved by the State and County health agencies. Details of specific cross-connection tests can be found in Appendix 7. Verification of inspections and any cross-connection found are reportable to both State and County health agencies.

### 2.3 DESIGN AND CONSTRUCTION CRITERIA

The design criteria for recycled water facilities is separated into two categories. Offsite recycled water facilities typically consist of those recycled water facilities which are, or will be, owned, operated, and maintained by the District, such as transmission or distribution mains in public rights-of-way. Typically, these are facilities on the upstream side of the water meter. Onsite recycled water facilities typically consist of facilities which will be operated and maintained by the customer, and are downstream of the water meter.

## **2.4           ONSITE SYSTEMS**

### **2.4.1         Design Responsibility**

The design of an onsite system that will use recycled water, including the preparation of plans, construction specifications, and record (As-Built) documents shall be under the responsibility of a civil engineer registered with the State of California, or such other design consultant as may be specifically authorized by the State for the use. Offsite facilities shall be designed by a State registered civil engineer unless otherwise specifically authorized by the District.

### **2.4.2         Provisions for Recycled Water**

In those areas where recycled water is not immediately available for use when the area is ready for construction, an approved backflow prevention assembly shall be required for any potable water use. This assembly shall be provided, installed and tested at least annually by the customer. All maintenance of the onsite backflow prevention assembly shall be the responsibility of the customer. In those cases where the District uses a master backflow prevention assembly at the intertie between the recycled water distribution system and the potable water system, District may waive the requirement for the customer to install an onsite approved backflow prevention assembly.

Only the District, or the customer in accordance with District's requirements and under the inspection of the District, shall remove the backflow prevention assembly and make the connection to the recycled water distribution system when recycled water becomes available. At such time, if the District removes the assembly, District shall return the assembly to the customer. All points of connection to District's offsite facilities shall be determined by the District.

Backflow prevention assemblies required by the District on recycled water systems shall be clearly identified and/or installed in protective enclosures. The customer shall test these recycled water backflow prevention assemblies with the appropriate equipment, used only for recycled water backflow prevention assemblies.

Notification of all action taken with backflow prevention assemblies shall be made by the District to County Environmental Health.

### **2.4.3         Service Line**

District reserves the right to specify the size and location and/or type of all offsite facilities. The recycled water service lines shall be extended to a location in compliance with District's standard drawings or the right-of-way line at the customer's property abutting upon a public street, highway, road or utility easement in which recycled water mains are installed.

### **2.4.4         Service Pressure**

Static service pressure shall be as provided by the District. The design consultant must prepare and submit a hydraulic worksheet indicating hydraulic constraints.

When a reasonable service pressure would not be available to onsite facilities previously served from the potable water system, correcting this situation upon conversion to the recycled system shall be handled as follows:

- If a booster pump or pressure regulation was required for onsite facilities when service was provided from the potable system, then any booster pump or pressure regulation required for recycled water service shall be provided and maintained by the customer.
- If reasonable service pressure was available for the onsite facilities when service was provided from the potable system, then any action needed to provide recycled water service will be considered on a case-by-case basis in conjunction with the use permit application review.

**2.4.5 Design Capacity**

The onsite recycled water system shall be designed to meet the peak-demand requirements for all uses within the design area. Peak demand for plant materials must be determined utilizing performance evapotranspiration rates (ET<sub>o</sub>), crop coefficients (K<sub>c</sub>), distribution of uniformity (D.U.), irrigation efficiency (I.E.), and a 9-hour irrigation period per day.

**2.4.6 Design Application Rates for Irrigation**

An onsite irrigation system shall be designed to apply irrigation water in a manner compatible with the infiltration rates of the soil types within the approved use area. Evidence that infiltration rates have been assessed shall be included with the design. Where varying soil types are present to the extent that they cannot be adequately addressed by separate zones (hydrozone), the design of the irrigation system shall be compatible with the lowest infiltration rate present.

Average and maximum application rates. Irrigation systems must not exceed the following application rates:

Flat area:	Average Application Rate	15 gpm/acre
	Maximum Application Rate	20 gpm/acre
Slope area:	Average Application Rate	10 gpm/acre
	Maximum Application	15 gpm/acre

**2.4.7 System Layout**

- The recycled water system shall be designed based on peak-application rate requirements to prevent discharge onto areas that are not approved for use. Adjustable arc, adjustable radius sprinklers with anti-drain/check valves shall be used adjacent to roadways, boundary lines, and hardscape to confine the discharge from the system to the design area. No recycled water shall leave the intended areas, whether by direct overspray, ponding, runoff, or sprinkler break. A drainage device under control of the owner shall be installed at the toe of any slope receiving recycled water and draining to single-family residential lots.
- The onsite recycled water system shall be required to automatically shut off in the event of a line break.
- The recycled water system design shall avoid spray patterns that include obstructions that tend to concentrate recycled water to produce ponding and/or runoff, such as direct or indirect spraying against structures.
- The District reserves the right to limit the area of land under one ownership or homeowners association to be supplied by one recycled water service connection and corresponding meter.

- A recycled water service connection and its corresponding meter shall not be used to supply adjoining property of a different owner.
- Irrigation systems where landscaping around homes and in common areas served with one meter and maintained by the same customer, e.g. a homeowners association, may be allowed to cross roads, streets, or other public rights-of-way. When a property provided with a recycled water connection and corresponding meter is subdivided and no longer to be maintained by a single operator, such connection and meter shall be considered as serving the lot or parcel of land on which the meter is located. In such event, additional recycled water mains and/or recycled water service lines will be required for all subdivided areas in accordance with these regulations.
- For properties of the same customer, irrigation systems shall be allowed to cross roads, streets, or other public rights-of-way to serve medians and slopes along streets.
- All recycled water used on any property must pass through the meter. Customers shall be held responsible and charged for all recycled water passing through their meters.

#### **2.4.8 System Control Devices**

Every recycled water service line shall be equipped with an angle stop on the inlet side of the meter and ball valve on the discharge side of the meter. The angle stop is to be used only by District personnel to control the recycled water supply through the water service line. If the angle stop is damaged by the customer or his use of recycled water to an extent requiring replacement, then the customer shall bear full financial responsibility.

The onsite irrigation system shall be required to automatically shut off in the event of a line break. A master valve connected to a flow sensor should be used to provide automatic system shut down in the event of a pipeline break.

### **2.5 CONSTRUCTION WATER FACILITIES**

#### **2.5.1 Service Connections**

Service connections for the construction use of recycled water may be provided by the District at locations as convenient as practicable to the customer, but at the discretion of the District. The service shall include a valved connection to a recycled water distribution main and water meter whose capacity shall be determined by the District from information supplied by the customer in his use permit application. The customer shall make the connection to the main in accordance with the District's requirements or contract with the District to do so. The meter shall be supplied by the District and installed by the customer in accordance with District requirements.

#### **2.5.2 Onsite Minimum Cover Requirements**

Transmission lines for conveying recycled water from the metered service connection to a storage container or water distribution vehicle shall be of adequate size and structural integrity to ensure that leaks or ruptures will not occur in the course of normal construction activity. These lines shall be provided by the customer. Lines crossing construction roadways or other areas receiving regular vehicular traffic must be buried to a depth of at least 18 inches for pipes less than 2 inch diameter or greater than 24 inches deep if pipe diameter is 2 inches or greater. Rigid pipe able to withstand the planned vehicular loads shall be employed for such installations.

### **2.5.3 Storage Facilities**

Recycled water storage tanks and distribution vehicles shall be of adequate design and structural integrity to ensure that leaks or ruptures will not occur in the course of normal use. These tanks or ponds shall be provided by the customer. All storage ponds and any storage tanks not supported more than six feet above ground-level shall be contained within a fence or other enclosure that will restrict access by the general public to these facilities at all times when operations personnel are not present. Outlet control with positive shut-off shall be provided at each storage facility.

All recycled water storage facilities owned and/or operated by the customer shall be protected against erosion, overland runoff, and other impacts resulting from a 100-year frequency 24-hour storm as defined by FEMA.

### **2.5.4 Distribution Vehicles**

Vehicles used for distributing recycled water for soil compaction and dust control shall be provided with adequate tanks and plumbing systems to ensure that leaks and ruptures will not occur in the course of normal use. Control valves shall be provided such that the recycled water can be applied in a controlled fashion on the approved use area and completely retained during transit in all other areas. Spray heads or nozzles shall be provided and configured such that the discharge is uniformly distributed and runoff, ponding or windblown overspray conditions are prevented.

## **2.6 PROTECTIVE MEASURES**

The following provisions are intended to protect the potable water supply against actual, undiscovered, unauthorized, or potential cross-connection to the customer's recycled water system. These provisions are in addition to, not in lieu of, the controls and requirements of other regulatory agencies and are in accordance with Title 17 (Public Health) of the California Code of Regulations. They are not intended to provide regulatory measures for protection of customers from the hazards of cross-connections within their own property.

Approved backflow prevention methods on the potable water services to the property, as required in these provisions, shall be provided, installed, tested, and maintained by the customer at customer expense. These methods shall be located on the property served immediately downstream of the meter and shall not be on District facilities. All devices used shall be readily accessible for testing and maintenance and no device shall be submerged or exposed to recycled water direct overspray or runoff at any time.

When recycled water service is requested, the applicant must provide sufficient information, including plumbing and building plans, to enable the District to determine the level of backflow protection required. The proper backflow protection, as determined by the District and approved by DHS and other appropriate regulatory agencies, shall then be installed, inspected, and tested before recycled water service is provided.

The customer shall notify the District not less than 30 days prior to a change of use, user, onsite supervisor, owner, tenant, or operator. District will then reassess the level of protection required. Any and all proposed alterations to existing onsite facilities must be reported to and approved by the District prior to the proposed change.

At their discretion, representatives of the District, the City, or any regulatory agency having jurisdiction may conduct surveys of property where recycled water service is provided by the District to determine if any actual or potential cross-connection exists. Cross-connection protection in accordance with Title 17 is addressed in Section 1.13.10.

Water meters used for recycled water service shall not be interchanged or used for potable water service after repairs and/or meter testing have been performed.

It is each owner's responsibility to inspect and test, at least annually, each site using recycled water for compliance with all District, State and County regulations regarding the use of recycled water; and the District reserves the right to verify compliance at each site at any time. The testing and inspections shall include, but not be limited to the following:

- Operational test
- Cross-connection tests on all onsite systems
- Review of recycled, potable, potable fire protection, and potable water used for irrigation systems
- Identification tags and labels
- Painted surfaces
- Covers, caps, signs
- Other items that indicate recycled water is being used
- Irrigation controller time schedule
- Backflow protection
- All recycled and potable water related appurtenances

## **2.7 OFFSITE RECYCLED WATER FACILITIES INSTALLATION**

Offsite recycled water facilities not subject to special assessments or made a condition to a private development permit shall be provided by the District. Where extension or replacement of recycled water distribution mains is required or approved by the District, the cost shall be borne by the benefited property owners or the District as provided in Section 5 of these Rules and Regulations.

## **2.8 OFFSITE RECYCLED WATER FACILITIES**

### **2.8.1 Minimum Size**

The minimum size distribution main shall be a 4-inch looped line. Smaller diameter mains may be individually approved by the District on dead-end mains. These mains shall be sized so that sufficient water is regularly drawn to prevent stagnation. Service lines shall be 1-inch or 2-inch copper, or ductile iron pipe (DIP) for larger sizes.

Required developer facilities shall be designed by the developer and mains shall be transferred to the District upon satisfactory completion of the project. Capital facilities are those provided by the District, generally 6-inch diameter and larger.

### **2.8.2 Approved Pipe Materials**

C-900 PVC pipe either Class 150 or 200 may be used for offsite water mains up to 10-inches in diameter. The pipe shall be purple in color, and exposed facilities shall be marked in accordance with District standards to warn that there is recycled water in the pipe. DIP is required for District mains in easements other than public roadways, and shall be properly marked with purple marking tape.

### 2.8.3 Minimum Cover Requirements

- (A) The top of distribution mains, 4-inch and smaller, shall be a minimum of 42 inches below the finished street grade unless indicated otherwise on job plans or directed otherwise by the District Inspector because of unusual field conditions.
- (B) The top of transmission mains, 6-inch and larger, shall be a minimum of 48 inches below the finished street grade unless indicated otherwise on job plans or directed otherwise by the District Inspector because of unusual field conditions.

### 2.8.4 Standard Location

Offsite recycled water facilities shall typically be located either four (4) feet, or eight (8) feet from the curb face on the opposite side of the street from the potable water mains.

### 2.8.5 Easements

Easement widths provided for transmission mains shall be based on the existing conditions and are subject to approval by the District. The minimum easement width for a transmission main is 20 feet. The normal location of the transmission main shall be in the center of the easement.

## 2.9 DESIGN FOR PROPER FLUSHING

Proper flushing of water mains and the prevention of sediment buildup are important aspects of the District's maintenance program. Therefore, the following criteria apply:

- A. Low points in the lines shall be eliminated wherever possible to prevent sediment accumulation.
- B. Piping systems shall be looped wherever possible. Dead-end pipelines may be approved by the District on a case-by-case basis.

## 2.10 HORIZONTAL AND VERTICAL CURVES

- A. General: The horizontal alignment of water pipelines in curved streets shall follow the street curvature or radius. Pipeline alignments shall not cross nor meander about the street centerline. Allowable joint deflections shall be as set forth in Table 2-1 or the manufacturer's recommendations, whichever criteria is more stringent. Vertical grade breaks in excess of the allowable joint deflections shall not be permitted. Fittings shall be required in such cases.

**Table 2-1**

Normal Pipe Size Inches	Minimum Radius Of Curvature
6"	175' (53 m)
8"	225' (69 m)
10"	275' (84 m)
12"	325' (99 m)

## **2.11 SEPARATIONS** (See Plate RW5)

### **2.11.1 Horizontal**

A 10-foot separation of the recycled water pipeline is required from a parallel potable water pipeline, a parallel storm drain, and/or a parallel sanitary sewer pipeline. If a 10-foot separation is not possible, approval for special construction requirements shall be obtained from the City and the Ventura County Environmental Health Division prior to commencement of construction. In any event, a horizontal separation less than 4 feet shall not be allowed. Common trench construction shall not be permitted.

### **2.11.2 Vertical**

On new systems, potable water, recycled water, storm drain, and sewer lines should be located from the ground surface in order of descending quality. Potable water shall be above recycled water, which should be above storm drains and sewers. Minimum vertical separation should be one foot between top and bottom surfaces of crossing pipes. Exceptions to this general rule are as follows:

- a. On irrigation systems where intermittently pressurized recycled water lines (laterals) serve sprinkler heads, crossing potable water line(s) may be placed under the recycled water laterals. No special construction requirements are necessary provided that one foot vertical separation is maintained.
- b. On sites using pressurized irrigation laterals with valve-in-head sprinklers, crossing potable water line(s) may be placed under the recycled water laterals if additional protection is provided for the potable line. Common practices include sleeving or automatic flow control/shut off devices installed and functioning properly on each lateral that crosses a potable line.

No additional special construction requirements are necessary provided that one foot vertical separation is maintained.

## **2.12 SERVICES** (See Plates RW13 through 17)

- A. One separate service shall be installed to each lot and a "RW" shall be stamped/incised on the curb face at the lateral location.
- B. Minimum size shall be 1-inch copper.
- C. No service shall be installed in a driveway.
- D. Where site improvements or building pad orientation for a lot are not known at the time of street construction, a service lateral shall be installed to the back of the curb for a meter connection. Location of the service lateral should be located 5 feet off the side lot line to preclude conflict with future driveways.
- E. Minimum separation between water and recycled laterals shall be 10 feet, unless otherwise approved by the District.
- F. Unless otherwise approved, all services shall be perpendicular to the main.

## **2.13 VALVES**

- A. Maximum valve spacing on Distribution Mains
  - 1. 1000 feet for pipelines 8 inches or less in diameter.
  - 2. 750 feet for pipelines 10 inches and larger in diameter.
- B. Valve Locations: As required by the District.
- C. Butterfly valves shall normally be used for mains 12 inches and larger if operation pressures do not exceed 250 psi. Valve types for pressures over 250 psi need special approval by the District.
- D. All dead ends shall be equipped with 2-inch blow-off assembly (Per Plate RW29).
- E. All tee intersections and cross intersections shall have a valve at each branch.
- F. Valve locations shall be designed so that no more than three valves have to be operated to shut down a line.
- G. Valve box and covers shall conform to Plate RW19.

### **2.13.1 Blow-Offs and Air and Vacuum Valves**

Blow-off or drain assembly shall be either an in-line type or end-of-line type and should be installed for removing water and sediment from the pipe. The line tap for the assembly should be no closer than 18 inches to a valve, coupling, joint or fitting unless it is at the end of the line. If there are restrictions on discharge or runoff, the regulatory agencies should be consulted for compliance.

Air/vacuum relief valve assemblies shall be installed at high points in the transmission main at locations approved by the District.

## **2.14 STRAINERS AT METER/POINT OF CONNECTION**

Depending on the quality of the recycled water and type of storage utilized, strainers may be required at the consumer's meter. Strainers of the following types are generally satisfactory:

- A. WYE Strainers: Not recommended for below ground (in vaults) installations.
- B. Basket Strainers: Suitable for above or below ground (in vaults) installations.
- C. Filter Strainers: Normally used above ground on drip irrigation systems.

Strainers are normally the same size as the line and should generally be installed after the meter.

- A. Before Meter: Installation before the meter should only be used where protection of the meter as well as the onsite system is necessary, as determined by the District.

- B. After Meter: Installation may be provided after the meter to benefit the onsite system, and maintenance in this case is not the responsibility of the District. However, it should be determined in advance whether there is a potential for debris in the water that would plug the meter.

Strainers can range in mesh size from 20 to 325. A mesh 80 is the minimum allowable. An analysis of potential debris will aid in prescribing the optimum size. In order to reduce maintenance, material that will not plug onsite irrigation nozzles should normally be allowed to pass. See Section 3 “Materials” and Plate RW44 for further information.

### 3.1 GENERAL REQUIREMENTS

This section discusses the materials involved in recycled water pipeline systems and associated construction activities. The materials selected have been chosen for their strength, durability and ease of maintenance. All materials, unless specifically approved otherwise by the District, shall be new and unused.

Colors and materials used for identification of all recycled water pipe; appurtenances, equipment, storage facilities and approved use areas shall be in accordance with the latest edition of the American Water Works Association (AWWA) guidelines, and it shall be the responsibility of the developer/engineer/contractor to be familiar with those standards to insure compliance. Titles corresponding to the specific numbers are given in the reference section of these standards. Identification requirements are shown on Plate RW47.

In some instances, and in order to establish some degree of parts standardization, particular manufacturers and product names are listed, for guidance, as being approved. Other products may also meet the requirements, but first must be certified in writing by the product/material manufacturer as being equal and shall be approved in writing by the District for use.

The District reserves the right to discontinue or disallow the use of any specific product or material. The District Engineer has the authority to make such changes based upon engineering judgment, product performance, or maintenance criteria at no cost to the District.

### 3.2 TESTING AND FINAL ACCEPTABILITY OF MATERIAL

The District shall require such tests and certifications as deemed necessary to show that the specified materials have been employed. Notwithstanding prior factory or yard inspections, the District shall have the right to reject any damaged or defective materials found on the job which may affect the durability or performance of the installation and order its removal from the site.

### 3.3 MAINLINE PIPE MATERIALS

Main pipeline materials for nominal pipe diameters 6-inch through 18-inch shall be either polyvinyl chloride (PVC), high density polyethylene (HDPE), or ductile iron pipe (DIP) as described in this section or as otherwise directed by the District. Main pipeline materials for nominal pipe diameters larger than 18-inches shall be either steel or ductile iron pipe (DIP) as described in this section or as otherwise directed by the District.

#### A. PVC Pipe

1. PVC pipe shall conform to the requirements of AWWA C900, which covers PVC (polyvinyl chloride) pipe in sizes 4-12 inches, or AWWA C905, which covers PVC pipe in sizes 14 inches and larger. Each length of pipe shall be clearly marked with the following:
  - Nominal size and O.D. base (e.g., 8" cast iron pipe size);
  - Material code (e.g., "PVC 1120");

- Dimensional ratio (e.g., DR 25 where DR is equal to outside diameter "divided by" thickness);
- AWWA pressure class (e.g., PC 150)
- AWWA designation "AWWA C900" or "AWWA C905"
- Manufacturer's trade name and production record code.
- Seal (mark) of testing agency

The standard laying length shall be 20 feet (plus/minus 1 inch) in all classes and sizes. A maximum of 15 percent may be furnished in random lengths of not less than 10 feet each.

One gasket shall be furnished with each length of elastomeric-gasket bell-end pipe and two gaskets shall be furnished with each coupling where couplings are used.

Pipe surfaces shall be free from nicks, scratches and other blemishes. The joining surfaces of pipe spigots and of integral bell and sleeve reinforced bell sockets shall be free from gouges or other imperfections that might cause leakage.

2. Joint Mechanisms: The joints shall be either of the following:

- Integral wall - Thickened bell end (bell and spigot with rubber gasket).
- Integral sleeve reinforced bell end
- Elastomeric gasket couplings

PVC solvent cement joints shall not be used at any time on distribution pipelines or fittings.

3. Couplings and Fittings: Where couplings are used, they shall meet the requirements of AWWA C900 for PVC pipe less than 14 inches in diameter or AWWA C905 for PVC pipe 14 inches in diameter or larger. Couplings shall be as furnished by the manufacturer. Couplings shall be marked with the same information as the pipe.

Ductile iron fittings shall be used with PVC pipe and these are discussed in Section 3.4 (Mainline Fittings).

4. Physical Test Requirements: Inspection and testing by the manufacturer shall be in accordance with AWWA C900 for PVC pipe less than 14 inches in diameter or AWWA C905 for PVC pipe 14 inches in diameter or larger. All testing shall be done by a certified testing laboratory with such testing available for inspection by the District. If requested by the District, the manufacturer shall supply a letter of certification attesting to their pipe meeting these specifications.

**B. Ductile Iron Pipe (DIP)**

1. Pipe - The pipe shall conform to AWWA C151 for both quality and strength. Each pipe shall include the letters "DI" or word "DUCTILE" to indicate the pipe material.
2. Joints - These shall be of the rubber gasket push-on joint type conforming to the requirements of AWWA C111 and being of the "tyton" type.
3. Fittings - All fittings shall conform to AWWA C110.

4. Lining and Coating - Unless otherwise approved, the internal surfaces shall be lined with a uniform thickness of cement mortar and then sealed with a bituminous coating in accordance with AWWA C104. With the approval of the District, ductile iron fittings can be coated with fusion-bonded epoxy in accordance with AWWA C116.

The outside surface shall be protected with a polyethylene encasement furnished and installed in accordance with AWWA C105.

C. Steel Pipe

1. Steel pipe shall conform to the requirements of ASTM Standard A120 which covers steel pipe less than 4 inches in diameter. Unless otherwise designated, it shall be of the wall thickness known as Schedule 40.

Steel pipe 4 inches to 10 inches in diameter shall conform to the requirements of ASTM Standard A53. All dimensions and thicknesses shall comply with ANSI Standard B36.10.

Steel pipe 12 inches and larger shall conform to the requirements of ASTM A53 or AWWA C200.

Pipe and fittings shall be mortar-lined and coated except where otherwise indicated and shall be in accordance with AWWA Standards C205 and Section D3.

2. Joints: Steel pipe joint shall be welded bell and spigot joints, butt-strap, or full penetration butt-welded.
3. Fittings: Where fittings are used, they shall meet the requirements of AWWA C208 for steel fittings. Thickness of the steel fitting shall not be less than ¼ inch.
4. Lining and Coating: Steel pipe shall be supplied with a Type II cement mortar lining, shop-applied, conforming to AWWA C205. Steel pipe shall be supplied with an exterior protective coating in accordance with AWWA C203 or AWWA C214.

D. HDPE

1. HDPE pipe shall conform to the requirements of AWWA C901, which covers HDPE pipe ½ inch to 3 inches in diameter.

HDPE pipe 4 inches to 54 inches in diameter shall conform to the requirements of AWWA C906.

2. Joints: Refer to DIP joints.
3. Fittings: Where fittings are used, they shall meet the requirements of AWWA C906 for HDPE fittings. In addition ASTM D2683, ASTM D3261, and ASTM D3350 shall all be referenced for HDPE fittings when using Socket-Type, Butt Heat Fusion, and Standard Specifications.

### 3.4 MAINLINE FITTINGS

Typical materials for mainline fittings are included below.

- A. Ductile Iron Fittings - These fittings shall meet the requirements of AWWA C110. All fittings shall be rated for 250 psi. This standard covers, but is not limited to, fittings with combinations of ends, including mechanical joint, plain end, flange, and push joint. The fitting types are as follows:

90° bend, 45° bend, 22-1/2° bend, 11-1/4° bend.

Tees, reducers, caps & plugs, connecting pieces, flanged bends, flanged tees, flanged reducers.

- B. Flanges, Bolts & Gaskets - These shall be flat-faced and meet the requirements of AWWA C207 and should be AWWA standard steel hub flanges, Class E (275 psi) (these flanges meet ANSI B-16.5). The flanges shall be marked with the size, name or trademark of manufacturer, and with the AWWA class, i.e., "E". Bolts and nuts shall be stainless steel type 316. Gaskets shall be of the drop-in gasket type, 1/8" thick. All bolts shall be coated with a nickel base anti-seize designed for use with stainless steel bolts, prior to installation.

**Table 3-5**

Pipe Size (Inches)	Bolt Hole Diameter (Inches)	Bolt Diameter x Length (Inches)	Number of Bolts
6	7/8	3/4 x 3 1/2	8
8	7/8	3/4 x 3 1/2	8
10	1	7/8 x 4	12
12	1	7/8 x 4	12
14	1-1/8	1 x 4 1/2	12
16	1-1/8	1 x 4 1/2	16
18	1-1/4	1 1/8 x 5	16

The inherent problem with flanges is that they are rigid and do not provide flexibility. Two keys to their installation are (1) uniform tightening of the bolts, and (2) prevention of bending or torsional strains. Proper anchorage is important to meet the latter objective.

- C. Mechanical Joint Fittings - This is a bolted joint of the stuffing box type. Each joint has a bell provided with an exterior flange having bolt holes or slots, and a socket with gaskets to receive the plain end of the pipe or fitting. The joint also has a sealing gasket, follower gland with bolt holes and tee head bolts with hexagonal nuts. Mechanical joint ends shall not be connected to flanged joint ends.

The mechanical joints shall meet AWWA C111. That standard covers the joint as well as gaskets and bolts.

**Table 3-6**

<b>Pipe Size (Inches)</b>	<b>Number of Bolts</b>	<b>Bolt Diameter x Length (Inches)</b>
6	6	¾ x 3½
8	6	¾ x 4
10	8	¾ x 4
12	8	¾ x 4
14	10	¾ x 4½
16	12	¾ x 4½
18	12	¾ x 4½

- D. Flexible Couplings - These are designed to connect plain end pipes with a mechanical compression joint to provide a stress relieving, flexible, leak proof joint. They can be ordered in steel or cast iron pipe sizes (note: C900 PVC pipe has same O.D. as cast iron). The couplings shall either be Dresser Style 38, Romac 501, or Smith-Blair Series 411. The center barrel length for pipe diameters greater than 8-inches shall be a minimum of 14-inches. All flexible couplings shall be fusion-bonded epoxy lined and coated in accordance with AWWA C213. Fasteners, nuts, and bolts shall be Type 316 stainless steel.
  
- E. Transition Couplings - These are used to connect pipes of the same nominal size, but different materials. Approved are Dresser Style 162, Romac 501, or Smith-Blair Series 413 transition couplings. The center barrel length shall be a minimum of 10-inches for pipe diameters 8-inches or less, a minimum of 14-inches for pipe diameters greater than 8-inches. All transition couplings shall be fusion-bonded epoxy lined and coated in accordance with AWWA C213. Fasteners, nuts, and bolts shall be Type 316 stainless steel.
  
- F. Flanged Coupling Adapters - These are used to connect plain end pipe to flanged valves, pumps, meters, etc. They eliminate the need for both a flanged spool and coupling. Generally, they are available in sizes through 12 inches. Approved are Dresser style 127 cast iron, Romac style FCA501 (for cast iron and steel pipe sizes up to 16-inch) and Smith-Blair series 912 cast iron or 913 steel flanged coupling adapters. All flanged coupling adapters shall be fusion-bonded epoxy lined and coated in accordance with AWWA C213. Fasteners, nuts, and bolts shall be Type 316 stainless steel.
  
- G. Insulating Couplings - These are used to stop the flow of electric current across the joint by means of an insulating boot. Approved are Smith-Blair Series 438, Romac IC501, and Dresser Style 39 insulating couplings. All insulated couplings shall be fusion-bonded epoxy lined and coated in accordance with AWWA C213. Fasteners, nuts, and bolts shall be Type 316 stainless steel.
  
- H. Expansion Joints - Expansion joints shall be manufactured of ductile iron conforming to AWWA C153. All expansion joints shall have a capability to expand and contract a minimum of 4 inches or as otherwise indicated on the approved plans. All expansion joints shall have restrained joints at each point of connection to the distribution piping, and be self-restrained at full expansion. Approved are EBBA Iron “Ex-Tend” 200 style or U.S. Pipe “TR-Flex” style expansion joints. All expansion joints shall be lined with 15-mil fusion bonded epoxy in accordance with AWWA C213.

- I. Flexible Ball Joints - Flexible ball joints shall be manufactured of ductile iron conforming to AWWA C153. All flexible ball joints shall consist of a ball and socket type of joint capable of at least 15 degrees minimum deflection. All flexible ball joints shall have restrained joints at each point of connection to the distribution piping. Approved are EBBA Iron FLEX 900 flexible ball joints. All flexible ball joints shall be lined with a minimum of 15 mils of fusion bonded epoxy in accordance with AWWA C213.
- J. Flexible Expansion Joints - Flexible expansion joints shall be manufactured of ductile iron in accordance with AWWA C153. Each flexible expansion joint shall consist of an expansion joint designed and cast as an integral part of a ball and socket type flexible joint. Each integrated ball shall have a minimum of 15 degrees of deflection per ball and each integral expansion joint shall have a minimum of 4 inches of expansion (or as otherwise indicated on the approved plans). Flexible expansion joints shall be the double ball configuration. Single ball models may only be used with the prior written permission of the District Engineer. All flexible expansion joints shall have restrained joints at each point of connection to the distribution piping, and be self-restrained at full expansion. Approved for cast iron pipe sizes are EBBA Iron "Flex-Tend" style double ball flexible expansion joints. All flexible expansion joints shall be lined with 15-mil fusion bonded epoxy in accordance with AWWA C213.
- K. Special Steel Pipe Fittings - AWWA C208 covers special fittings such as elbows, tees, crosses, reducers, etc., and should be consulted for a specific application.

### **3.5 SERVICE LINE MATERIALS AND FITTINGS**

The materials covered in this section include the service line copper pipe, corporation (corp) stop, and saddles as well as the valves inside the meter box. Unless stated otherwise in this section, Service Line materials and fittings shall comply with the provisions of AWWA Standard C800. Also, see Plate Nos. RW13 through RW17 of these standards for design and construction considerations. The minimum service line size is 1".

- A. Pipe - Type K soft copper tubing, continuous from corporation stop to curb stop, is approved with solder fittings for 1-inch and 1 ½-inch service lines. 2-inch service lines shall be type K rigid copper pipe with all joints silver soldered. All copper pipe shall be encased in an 8-mil Poly Sleeve. Solder fittings shall be lead-free. Solder shall be of the type certified for use in potable water applications as specified in AWWA Standard C800 Paragraph 4.4.1. 4-inch and larger service lines shall be ductile iron pipe (DIP).
- B. Service Saddles - Service saddles shall be either the doublewide strap type made of bronze with bronze nuts, or the stainless double steel strap type. The thread shall be female iron pipe. Service saddles for 1" through 2" service lines connecting to C-900, PVC pipe shall be James Jones J-969, Mueller BR2S, or Ford 202B. Service saddles for 1" through 2" service lines connecting to AC or DI pipe shall be James Jones J-979, Mueller BR2B, or Ford 202BS.
- C. Corporation Stops - These shall be bronze with a male iron pipe thread on the inlet side. One-inch and 2" corp stops shall be of the ball valve type. The outlet for the pipes shown below shall be as follows:

**Table 3-7**

Service Pipe	Corp Stop Outlet	Corp Stop
1" copper	Compression	Ford - FB1100-4-Q James Jones – J-1935SG Mueller – B-25028
2" copper	Compression or Copper tubing	Ford- FB1100-7-Q James Jones – J-1957SG Mueller - B-25028-00 (Tee-Head)

- D. Angle Meter Ball Valve Stop - These shall be bronze and in the 1- inch size they shall be a standard angle meter ball valve. In a 2-inch size they shall be a flanged angle meter ball valve. Refer to the table below.

**Table 3-8**

Service Line	Angle Meter Stop	Inlet	Outlet	Type
1" copper	Standard*	Compression	Meter coupling nut	Mueller - B-24258 (1"x1") Ford - BA43-444WQ (1"x 1") Ford - BA43-342WQ (1"x 3/4") James Jones – J-1963WSG (1"x 3/4")
1½"*** or 2" copper	Flanged Angle**	Compression	Flanged, Slotted for 1½" meters	Ford BFA 43-777WQ (1½" to 2") James Jones – J-1975WSG

\* For a ¾" meter use a 1 x ¾" angle meter stop and for a 1" meter use a 1" angle meter stop.

\*\* For a 2" service and 1½" meter, a 2" meter stop slotted for 1½" is used.

\*\*\* Use of 1½" service lines by special permission only.

- E. Customer Hand Valve - These are to be full-flow bronze ball valves with a customer handle. The outlets are always female iron pipe threads. Refer to the table below.

**Table 3-9**

Meter Size	Inlet	Outlet Size (Customer Side)	Type
¾"	¾" meter coupling nut	1"	Ford - B13-342WHB34S James Jones – J-1908 Mueller-B-24351 w/B-20298 Handle
1"	1" meter coupling nut	1"	Ford - B13-444WHB34S James Jones – J-1908
1½"	Flanged	1½"	James Jones – J-1913W Ford- BF13-676WHB67S Mueller - B-24337 w/B-20298 Handle
2"	Flanged	2"	James Jones - J-1913W Ford - BF13-676WHB67S

### 3.6 METER BOXES

All meter boxes shall have provisions for a touch/radio read receptacle. The meter boxes for 3/4", 1", 1 1/2" and 2" meters shall be polymer concrete with polymer concrete cover and drop-in read lid painted Pantone Purple imprinted with "RW".

Table 3-10

Meter Size	Box Inside Dimensions	Model Numbers
3/4" or 1"	12" x 20"	Brooks Products 37 or Eisel Enterprises No. 437
1 1/2" or 2"	17" x 30"	Brooks Products 66 or Eisel Enterprises No. 666

Traffic lids are not generally approved since the meter boxes are to be placed outside the traveled right-of-way, including driveways. Where the District Engineer concurs that no other alternative is available and permits the meter box to be in the traveled right-of-way or in a driveway, a steel traffic lid shall be used. Again, it must be emphasized that the engineer is required to design the location of meter boxes so that they are outside of driveways.

### 3.7 WATER METERS

Water meters, types and manufacturers, shall be selected and provided by the District. The District shall install the meter after purchase by the customer. A temporary jumper supplied by the District shall be installed pending installation of the meter.

### 3.8 MAINLINE VALVES

All mainline valves shall include a valve extension if top of operating nut is 5 feet deep or greater. All valve extensions shall be pinned to the operating nut.

#### A. Butterfly Valves

1. General - All butterfly valves shall be of the tight-closing, rubber-seat type conforming to AWWA C504 latest revision, except where noted herein. Valves shall be bubble-tight at the rated pressure in either direction and shall be suitable for throttling service and/or operation after long periods of inactivity. Manufacturer shall be ISO 9001 Certified or have similar certification up and above AWWA. Valve disc shall rotate 90° from fully open to tightly closed position.
2. Valve body - Shall be cast iron ASTM A126, Class B with integrally cast mechanical joints, ends for the pipe or flanged ends. All flanged ends shall be ANSI B16.1 flange drilling.
3. Disc - Discs for valve size 10" – 24" shall be of the concentric design. Valve discs shall be constructed of ductile iron ASTM A536, Grade 65-45-12 with a 316 stainless steel edge.

4. Shaft - Valves 10"- 24" shall have a one-piece through shaft of 18-8 stainless steel, corresponding to the requirements of AWWA C504, latest revision. The shafts shall fasten to the disc by means of a threaded disc pin or through pin providing a positive leak-proof connection of the shaft to the disc.
5. Valve Seats - Seats for valves 10" – 24" shall be peroxide-cured EPDM (ethylene-propylene-diene monomer) bonded to the body of the valve. All interior surfaces in contact with water, excluding stainless steel and disc, shall be rubber lined or epoxy coated. Valves with the seat located on the valve disc will not be permitted. Seats shall be designed so that no adjustments or maintenance is required.
6. Bearings - All shaft bearings shall be of the self-lubricating, corrosion-resistant, sleeve type. Bearings shall be designed for horizontal and/or vertical shaft loading.
7. Packing - Shaft packing shall be self-adjusting and suitable for pressure or vacuum service. Packing for valves 30" and larger shall incorporate an adjustable packing gland and the packing shall be adjustable and/or replaceable without removing the valve actuator.
8. Valve Operators - Shall be of the manual traveling nut type and conform to AWWA C504. Operators shall be equipped with a 2" AWWA square operating nut. They shall be sealed and gasketed and lubricated for underground service. The operator shall be capable of withstanding an input torque of 450 ft-lbs at extreme operator position without damage. All valve operators are to be installed and tested at the factory by the valve manufacturer. Bonnet and packing bolts shall be 316 stainless steel.
9. Painting and Coating - All valves shall be epoxy coated overall in accordance with Section 3.16 (MATERIALS-PAINTING). The valve disc shall be Fusion Bonded Epoxy Coated with an AWWA NSF-61 coating system or liquid epoxy on wetted interior surfaces 16 mils, holiday free. Exterior coating shall have 16 mils of liquid epoxy.
10. Testing - All valves shall be hydrostatic and leak tested in accordance with ANSI/AWWA C504, latest revision with the following modification: Buried service valves shall be tested and rated to 200 psi to facilitate field system hydro-test.
11. Proof of Design - Contractor shall provide to the District and shall obtain from the Manufacturer furnishing the valves an Affidavit of Compliance certifying that all required tests have been performed. This Affidavit of Compliance shall serve as proof of compliance with ANSI/AWWA C504, latest revision.
12. Marking - The manufacturer shall show on the valve the valve size, manufacturer, class, and year of manufacture.
13. Approved Valves – Valves shall be either Pratt Groundhog, K-FLO 500 Series, or Mueller Linesal.

14. Number of Turns - The number of turns to open or close is as follows:

**Table 3-11**

<b>Valve Size</b>	<b>Pratt Groundhog No. Turns</b>	<b>Mueller Lineseal No. Turns</b>	<b>K-FLO 500 Series No. Turns</b>
6"	32	32	29
8"	32	32	29
10" & 12"	32	32	29
14" & 16"	30	30	42
18" & 20"	40	40	42

15. End types Available. Information of typical cases is as follows:

**Table 3-12  
Ends Available by Valve Size**

<b>Type</b>	<b>Pratt Groundhog</b>	<b>Mueller Line Seal</b>	<b>K-FLO 500 Series</b>
Flange x Flange	6" - 24"	6" - 24"	6" - 24"
Flange x P.J.	6" - 12"	6" - 16", 24"	NA
P.J. x P.J.	6" - 16"	6" - 16", 24"	NA
M.J. x M.J.	6" - 24"	6" - 24"	6" - 20"

**B. Resilient-Seated Gate Valves**

1. General - This specification pertains to resilient-seated gate valves for underground services 3 inches to 10 inches in size, where design working pressures are less than 200 psig. Resilient-seated gate valves shall meet the requirements of AWWA standard specification C509 or latest revision thereof, and shall be of the same size as the main in which they are installed. All such valves shall be of the non-rising stem type, with O-ring seal, equipped with 2 inch square operating nut which shall turn to the left in a counter-clockwise direction to open the valve. Valve seats shall be EPDM (ethylene-propylene-diene monomer) peroxide cured when available, otherwise sulfide cured. All bonnet, seal plate, and packing plate nuts and bolts shall be high strength type 316 stainless steel. Valve bodies and gates shall be manufactured of ductile iron with internal working parts machined from the grades of bronze specified as follows:

<b>Part</b>	<b>Grade of Bronze*</b>
Stem	E
Stem Nut	A

\* Based on Table I, AWWA C509

Currently approved valves are manufactured by the Clow Corporation, the Mueller Company, and American Water Company.

See Section 3.16 (MATERIALS-PAINTING) for painting and coating requirements.

C. Plug Valves

1. General - Plug valves are to be used where the water main pressures are expected to exceed 150 psi or where required by the District. They shall be pressure lubricated, concentric venturi pattern type with flanged ends.
2. Valve Operators - When located below ground, they shall be spur gear operated with water tight gear housings, lubricant pipe, and road box. When located above ground or in vaults, they shall be worm-gear operated. Outside locations shall include watertight gear housings.
3. Painting. See Section 3.16 (MATERIALS-PAINTING).

D. Gate Valves

1. General - Whenever "Gate Valves" are specified, resilient-seated gate valves shall be understood. Gate valves may only be used with special permission and approval of the District Engineer. When allowed, gate valves shall meet the requirements of AWWA C-500 and shall be the same size as the main or service in which they are installed. This specification shall pertain to valves 10 inches and smaller for which the design working pressure is 200 psi. All gate valves shall be counter-clockwise opening. Buried gate valves shall be equipped with 2 inch square cast iron operating nuts. Exposed gate valves shall have hand-wheels.
2. Gate Valves - 2 inches or smaller are not allowed. Ball valves as described in section 3.8 paragraph E below shall be used instead.
3. Gate Valves - 3 inches through 10 inches. Gate valves shall have a non-rising stem, iron body, solid bronze internal working parts, parallel faced, with EPDM bottom wedging double discs and O-ring stuffing box. Bronze for all internal working parts, except stems, shall be ASTM B-62-70 (85-5-5-5).

Currently approved, when allowed, are:

Mueller A2380  
Clow 5062, 65, 68, 70, 80

4. Painting - The painting requirements are identical to those for butterfly valves. See Section 3.16 (MATERIALS - PAINTING).
5. Marking - The manufacturer shall show the manufacturer's name or mark, the year of manufacturer, valve size, and the designation of working pressure.

E. Mainline Ball Valves

1. General - Ball valves used in the main pipelines and/or service runs shall be the same size as the pipeline. The valve shall be non-rising stem type, fluorocoated ball valves, in sizes through 2-inches, installed where full-open, full-closed, 360-degree tee-head rotation, non-throttling control is required. The valve shall be manufactured of bronze alloys meeting the requirements of AWWA Specifications C800, latest revision.

2. The valve body shall be generously proportioned heavy-duty type, with iron pipe thread end connections.
3. The valve body shall be rated at 300 psi WSP, 200 psi WOG rated, and appropriately identified on the valve body.
4. The stem shall be manufactured of copper-silicon-bronze alloys meeting the requirements of ASTM Specifications B371, or ASTM Specifications B62, and contain less than 15% zinc.
5. All ball valves installed in distribution pipelines shall be equipped with a 2" gate valve operation nut for operation with standard gate valve wrenches. All other ball valves used in meter service or air-vac installations shall be equipped with tee-heads as described in the specific section.
6. The packing shall be Teflon (non-asbestos containing) material approved for potable water service.
7. Approved manufacturers and models are James Jones 1900 or Ford B11-777 with required features as described above.

F. Tapping Sleeves and Valves

1. Tapping Sleeves - Tapping sleeves shall be of high tensile ductile iron or stainless steel construction specifically designed to withstand the strains and vibrations of the tapping machine and shall include a stainless steel tapping saddle.

The tapping sleeve shall have gaskets at each end of the sleeve. Sleeves with only an O-ring around the tapped hole are not approved.

Approved tapping sleeves are as follows:

Sleeve	Use
Romac SST III;	AC pipe, Class 150-200, Sizes 6-12 inches PVC pipe, C-900, Sizes 6-12 inches DI pipe, Class 50 and up, Sizes 6-12 inches
Ford FTSS	AC pipe, Class 150-200, Sizes 6-12 inches PVC pipe, C-900, Sizes 6-12 inches DI pipe, Class 50 and up, Sizes 6-12 inches

Note: Larger sizes require special approval.

In selecting the class of the tapping sleeve, a Class 200 should be used wherever the mainline is Class 200, or if the operating pressure exceeds 125 psi.

2. Tapping Valve - Tapping valves shall meet all of the requirements for resilient-seated gate valves as described in Section 3.8 B. The tapping valve shall have a clear unobstructed waterway. The seat rings shall be of a large diameter to allow entry of the full diameter tapping machine cutter.
3. Painting - See Section 3.16 (MATERIALS-PAINTING).

- G. Valve Stacks and Covers - The valve stack shall be Schedule 40 PVC pipe 8 inches in diameter (see Plate No. RW19).

The valve box cap shall be of the heavy duty, long body type. Approved is: Christy G-4 or approved equal, with "RW" "VCWWD No. 8" imprinted on top.

**3.9 COMBINATION AIR RELEASE ASSEMBLIES (PLATE NOS. RW26 - 28)**

- A. Mechanical Assembly - The combination air release assembly has the features of an air release valve and a vacuum valve. Both units shall be housed in a cast iron body and all internal parts such as the float, bushings, level pins, seat, and baffle shall be either stainless steel or brass as furnished by the manufacturer. All assemblies shall be rated at 300 psi maximum operating pressure.

Approved assemblies are as follows:

Size	APCO Valve No.	Clow Model Design	Val-Matic Model Design	Crispen Model Design
1"	143C	A	201C	U10
2"	145C	B	202C	U20
3"	147C	C	203C	U30
4"	149C	D	204C	U40

The inlet threads shall be iron pipe threads of the same size as the valve.

- B. Metal Housing or "Can" - Shall be per Plate Nos. RW26 through 28.
- C. Service Lines - Type K soft copper per Section 3.5 (SERVICE LINE MATERIALS AND FITTINGS). There shall be a corp stop at the main per Section 3.5.
- D. Ball Valves - James Jones 1900 or Ford B11-777 with a female iron pipe thread on each end and tee head.
- E. Guard Posts - See Section 3.28 (MARKER AND GUARD POSTS).

**3.10 BLOW-OFF ASSEMBLIES (PLATE NOS. RW29 & RW30)**

- A. 2 Inch Blow-Off. Refer to Plate No. RW29. Material shall be as follows:
1. Service Line - Type K copper Section 3.5 (SERVICE LINE MATERIALS AND FITTINGS), with a corp stop and saddle at main per Section 3.5.
  2. 2" Ball Valve - James Jones 1900 or Ford B11-777 with female iron pipe thread on each end and tee head.
  3. Vault - The same as for a meter installation up to 1". See Section 3.6 (METER BOXES).
  4. Plastic Plug - This shall protect top of ball valve.
  5. Corporation Stop - James Jones 1957SG or Ford FB 1100-7-Q-TA.

- B. 2 Inch and 4 Inch Blow-Off – Refer to Plate Nos. RW29 and 30. Material shall be as follows:
1. Service Line - 2" copper per Section 3.5 or 4" PVC per Section 3.3. There shall be a bottom outlet tee on the main per Section 3.4.
  2. 2" or 4" Valve - Resilient-seated gate valve per Section 3.8.
  3. Flanged Spool - Made of ductile iron per Section 3.4
  4. 2" or 4" Brass Nipple.
  5. 2" Ball Valve. James Jones 1900 or Ford B11-777 with female iron pipe thread on each end and tee head.
  6. Vault - Concrete box with one-piece concrete cover with reading lid. Approved are Brooks 66-S or Quikset W30 which are 24"x36".
  7. Guard Posts - Required where an above ground blow-off is located in undeveloped areas. See Section 3.28 (MARKER AND GUARD POSTS).

### 3.11 FIRE HYDRANT ASSEMBLIES

The use of recycled water for fire protection is not contemplated for the foreseeable future. At such time as a system is in place which can provide the necessary quantity, flow, and reliability, the District and State DHS may consider it on a case-by-case basis.

### 3.12 PIPE TRENCH MATERIALS

Refer to Plate No. RW5 for trench cross section terminology.

- A. Within Pipe Zone - The pipe zone extends from the bottom of the trench to 12 inches above the top of the pipe. The material within this zone shall be a clean, well graded imported sand with sizes within the following ranges:

Sieve Size	Percent Passing
No. 4	100
No. 8	80-95
No. 200	0-10

Gravel bedding may be approved where warranted by high groundwater or washout potential.

- B. Above Pipe Zone - Materials shall conform to the requirements of the City's Public Works Department. Native material compacted to 90% or two-sack cement slurry is permitted.

### 3.13 ROADWAY MATERIALS

Pavement materials (asphalt and aggregate base) for resurfacing of trenches cut into existing pavement shall comply with the requirements of the City's Public Works Department, or Ventura County Public Works Department if in the unincorporated area. Typically AC replacement thickness is one inch greater than existing. New pavement requires geotechnical recommendation and approval.

### 3.14 CONCRETE MATERIAL

Approved concrete material shall be based on the 28 day compressive design strength and shall be chosen according to the following chart showing its intended use:

Class	Application	28 Day Strength (Min.)	Max. Aggregate Size	Slump Min.	Slump Max.
A	Walls, structures and reinforced structural encasement	3,500 psi	1 1/2"	3"	6"
B	Trust blocks, non-reinforced pipe encasement, non-structural use	2,000 psi	1 1/2"	2"	6"
C	Pump mix for abandoning lines	2,000 psi	3/8"	Adequate for Pumping	Adequate for Pumping

### 3.15 REINFORCING STEEL

- A. Bar Reinforcement - Shall be Grade 40 minimum deformed bars conforming to ASTM A615, accurately placed securely in position. Where bars are spliced they shall be lapped at least twenty (20) diameters or butt welded, except where otherwise shown on the plans.
- B. Mesh Reinforcement - Mesh reinforcement shall conform to the requirements of ASTM A185; wire gauge and mesh dimensions will be as shown on the plans.

### 3.16 PAINTING

- A. General - This section will only cover the paint materials. "Painting" as it relates to construction is discussed in Section 7.20 (CONSTRUCTION-PAINTING).

All paint used for color coding shall be Pantone Purple or as otherwise specified by the District. Paints shall be delivered to the job site in original, unopened cans or packages bearing the brand name and manufacturer's name; and the contractor shall submit color samples to the District for approval.

Paints specified shall be used unless specific written approval is obtained in advance to use other products.

- B. Specific Material Requirements

1. Combination Air Release Cans - These shall be painted as follows: Use Carboline's Rust Bond SG-epoxy (1 coat), Carboline's Shop primer (1 coat), Pantone Purple, color coding (2 coats) in such pattern as directed by the District, and with background color of Bayberry by De Voe, or approved alternate, (2 coats).
2. Cast Iron Valves, Fittings and Miscellaneous Metal (except bronze) - Exterior surface to receive 2 coats of Carboline's Bitumastic No. 50 (15 mil each).

In addition to the bitumastic coating, encapsulate all exterior surfaces including nuts and bolts with a 10 mil layer of plastic film wrap described in "C" (Plastic film wrap) below.

The interior of valves with the exception of bronze and working parts (see exceptions below) shall be coated with 100 percent solids, catalytically setting epoxy which is manufactured for use in the interior of potable water systems. The fusion method of coating 100 percent solid epoxy is acceptable. The two components shall be of different colors to aid in complete mixing. The epoxy lining shall be factory applied and field applications will not be allowed.

Exceptions to the above policy for interior coating require written District approval in advance of delivery to the job site.

Fittings shall all be cement mortar lined or epoxy lined.

3. Detector Checks/RP Devices – These shall be printed as specified for combination air release cans.
4. Steel Surfaces - Use one shop coat of rust penetrating Carboline's Multi-Bond 150 and one field coat of Carboline's Shop primer 1. Finish coats for inside locations to be 2 coats of Carboline's 890 (epoxy mastic). Finish coats for outside locations to be 2 coats of Carboline's 139 Alkyd Polyurethane (alkyd) color coded as directed by the District.

Cast iron and other bitumen coated metals located above ground and/or in vaults shall receive two coats of Carboline's Multi-Bond 120 (synthetic resin with 48 hours drying time between coats). Finish coats in pressure regulating station vaults and other inside locations except meter vaults shall be two coats of Carboline's 890 (epoxy mastic). Finish coats for outside locations shall be two coats of Carboline's 139 Alkyd Polyurethane (alkyd) color coded as directed by the District.

5. Concrete and Masonry - Exterior surfaces shall receive one coat of Carboline's Flexxide Masonry Block Sealer, or Dutch Boy Block Coat No. 30W01; one coat of Dutch Boy Nalprep No. 019; and two coats Carboline's Flexxide HB Elastamameric or 3359.

Exterior surfaces below ground shall receive two coats of Carboline's Bitumastic Super Service Black, 12 mils/coat, or approved equivalent.

Interior above ground surfaces shall receive one coat of Dutch Boy Masonry Vinyl Speed Primer No. 30W10 or Sentry's 500 resurfacer, and one coat of Dutch Boy Masonry Vinyl No. 32W11, or Koppers 601 Interior.

Interior below ground surfaces, such as in pressure reducing stations and lift stations, shall receive a cementitious seal coat of Sentry Semcrete 610. After at least three days, two coats of Carboline's flexxide HB Elastomeric or 3359 shall be applied.

6. Wood - Exterior locations shall receive one primer coat and two finish coats. Primer shall be one coat Carboline's 139 Alkyd Polyurethane (alkyd) thinned 20%. Finish shall be two coats of Carboline's 139 Alkyd Polyurethane (alkyd). Interior wood surfaces shall receive one primer coat and two finish coats. Primer shall be one coat of Carboline's Multi-Bond 120. Finish coat shall be two coats of Carboline's 139 Alkyd Polyurethane(Alkyd). Color shall be as directed by the District.

- C. Plastic Film Wrap - This wrap shall be used around all buried valves, bolted flanges and other fittings. The polyethylene film shall be of virgin polyethylene as produced by DuPont as

Alathon resin and shall meet the requirements of ASTM Designation D 1248 for Type 1, Class A, Grade E-1, and shall have a flow rate or nominal melt index of 0.4 g/min. maximum.

The polyethylene film shall be 8 mils in thickness. The length shall be sufficient to firmly attach the film to the pipe on either side of the valve, flange or fitting. The following minimum flat sheet widths shall be used for the specified valve sizes:

<b>Nominal Valve Size</b>	<b>Minimum Flat Sheet Width</b>
4"	24"
6"	24"
8"	24"
10"	30"
12"	36"
16"	48"
18"	48"

At the contractor's option, tubular material may be purchased and cut with one side to fold out to the required width.

Tape for securing the polyethylene wrap shall be two (2) inch wide adhesive tape such as Polyken No. 900 (Polyethylene), Scotchrap No. 5 (Polyvinyl), or approved equal. The tape shall be such that the adhesive will bond securely to both metal surfaces and polyethylene film.

### **3.17 QUICK COUPLING VALVE**

Quick coupling valves shall be permitted for use only during the initial landscape germination period and shall be removed at the end of that period unless approved by the District. Quick coupling valves shall conform to the following:

*Rating* – Quick coupling valves shall be ¾-inch or one-inch nominal size with brass construction, Acme thread body and key, and a normal working pressure of 150 psi. All quick coupler valves used for recycled water shall be of a design that prevents the quick coupler key (spike) from being used in potable water quick couplers. Only Acme threaded couplings with approved color identification will be allowed.

*Cover* – The cover shall be permanently attached to the quick coupling valve. It shall be Pantone Purple 512 in color and made of rubber or vinyl with the following information stamped or molded on the cover:

1. “Recycled Water”;
2. “Do Not Drink”; or
3. The international “Do Not Drink” symbol: A glass of water in a circle with a slash through it;
4. Locking cover.

### **3.18 WYE STRAINER/BASKET STRAINER**

Strainers shall have cast bronze body. Screen shall be 80 mesh minimum, stainless steel screens. Automatic flushing is prohibited. It is the developer's obligation to analyze conditions to obtain the most suitable mesh size.

### **3.19 IRRIGATION HEADS**

Recycled water irrigation heads and snap-on recycled water identification caps shall be used whenever possible. All onsite irrigation (sprinkler) heads shall conform to the following:

*Rating* – Sprinkler heads shall be the types and sizes with the radius of throw, pressure, discharge and any other designations, as indicated on the plans. The irrigation heads shall have internal check valves.

*Manufacture* – Unless otherwise specified and approved by the District, all heads shall be Rainbird 1800 with Rainbird 1800 recycled water caps.

*Adjustable-arc, adjustable-radius heads/nozzles* – To be used at site perimeters, walks, play areas, along non-vegetated areas and near picnic tables and drinking fountains.

*Risers* – All sprinkler risers shall be as shown on the plans. All risers shall be considered an aboveground new pipe. This includes existing risers on systems to be converted to recycled water use.

*Substitutions* – Any substitutions by the contractor for items specified on the plans must be submitted to the user and District for approval.

### **3.20 SPRINKLER HEAD STABILIZER**

Sprinkler heads shall be securely installed to minimize breakage.

### **3.21 EXTERNAL CHECK VALVES**

Install external check valves at all heads or bubblers that exceed manufacturer's internal check valve requirements.

### **3.22 SYSTEM CONTROL DEVICES**

All onsite irrigation controllers and appurtenances shall conform to the following:

*Type* – Automatic controllers shall be UL listed of the type and manufacture shown on the plans or approved equal. Each controller shall be capable of eight repeats daily with 16-day variable cycles minimum. The controller shall have a water budget feature. It shall have remote start capability. It must be compatible with the master valve and flow sensor. It must have power outage time keeping capability.

### **3.23 INLINE PRESSURE REGULATOR**

Recycled water inline pressure regulators smaller than 3 inches shall have a cast bronze body. The screens shall be stainless steel.

### **3.24 MASTER VALVE**

Recycled water master valve shall be a pressure regulating (manually and electrically), normally-closed position valve.

### **3.25 FLOW SENSOR**

The recycled water flow sensor must be compatible with the controller and master valve. The flow sensor must have high flow shut-off capability.

### **3.26 REMOTE CONTROL VALVES**

Recycled water remote control valves shall have purple plastic bodies or painted purple brass bodies and bonnets. They shall be contamination proof, self-flushing/cleaning style, pressure regulating (manually and electrically), normally-closed positioned valves.

### **3.27 BOOSTER PUMPS**

Booster pumps may be approved by the District on a case-by-case basis.

### **3.28 MARKER AND GUARD POSTS**

In easements or where required on the plans, marker or guard posts shall be installed per the requirements of the District. Marker or guard posts shall be constructed of 4" diameter, schedule 40 steel pipe, 5'-6" in length. The posts shall be filled with concrete and set 2'-6" into the ground, centered in a concrete base of not less than 18" in diameter with a minimum of 3" of end cover and cambered to shed water.

Marker and guard posts shall be painted as steel surfaces per Section 3.16 (MATERIALS-PAINTING). Color shall be Syn-Lux 876 C (International Yellow) or Rustoleum Enamel "School Bus Yellow" #7448, or as otherwise directed by the District.

## 4.0 PLAN PREPARATION

### 4.1 GENERAL

The District has established procedures for the preparation of plans. Deviation from these requirements, unless specifically authorized, will be cause for rejection. Plans shall be prepared by a civil engineer registered in California, and familiar with all aspects of these Standards. The engineer shall sign the plans at the time of initial submittal to attest to their accuracy and completeness, and shall follow the progress of the work, submit change orders, and provide "as-built" certification and information on the record drawings.

The responsibility for accuracy and completeness of the drawings rests with the developer's engineer. By signing the drawings, the District Engineer attests to the fact that they have been reviewed and are sufficient for permit issuance.

### 4.2 SHEET CHARACTERISTICS

Work shall be in ink on 4-mil double-mat Mylar sheets with overall dimensions of 24" x 36". Margins shall be two inches on the left, all others ½ inch. Minimum lettering size is 0.08". North shall be oriented to the top or left. The engineer's signature and seal shall be placed on each sheet.

### 4.3 SIGNATURE BLOCK

All sheets shall have an approved signature block (see Plate No. RW1). Changes to the plans after approval shall require change order approval by the District, unless changes are specifically authorized to be made without a change order and shown on the record drawings.

### 4.4 COVER SHEET

This shall be the first recycled water plan sheet in the set and shall contain:

- A. An Index Map with an overall plan at a scale of 1" = 300 ft. showing general layout of water lines, sizes, valve locations, named streets, tract boundaries, lot boundaries and numbers, a sheet index, and other pertinent information. The cover sheet shall include a note as to the pressure zone by number and elevation. Care must be exercised to make sure scale and orientation are correct since these index maps are used to produce a water atlas. Incorrectly drawn maps will have to be redrawn. (Use of a secondary, key map, sheet may be approved).
- B. A Vicinity Map with a scale of 1" = 1,000 ft. showing tract boundary, streets, adjacent tracts, major streets outside of tract boundaries, and the location of the benchmark.
- C. All Benchmarks used in the project shall be graphically shown on this sheet and the elevations, descriptions, location, etc., spelled out as illustrated below:

BM No. _____	Elev. _____	F.B. _____	Page. _____
Type of Marker _____			
Location _____			

Elevations used in the preparation of plans shall be based on either National Geodetic Vertical Datum of 1929 (NGVD 29) or the North American Vertical Datum of 1988 (NAVD 88).

D. The general notes shall be shown on the cover sheet (see Section 4.11).

E. A Certification block shall be placed on the cover or key map sheet worded as follows:

<u>CERTIFICATION</u>		
I hereby certify that the recycled water system as shown on City Drawing Number(s) _____ through _____ has been designed in conformance with District Standards and Regulations.		
_____	_____	_____
Registered Civil Engineer	RCE No.	Date

F. A record drawing (as-built) Material List shall be placed on the cover or key sheet as follows:

Material List

Item	Supplier and/or Manufacturer	Model/Type No.	No. Each
Pipe			
Services			
Valves			
Brass Products			

The information shall be completed by the developer’s engineer prior to submittal of record drawings.

G. A Record Drawing Certificate shall be placed on the cover sheet as follows:

<u>RECORD DRAWINGS CERTIFICATE</u>		
I hereby certify that the work shown on City Drawing Number(s) _____ through _____ inclusive, marked “Record Drawing” has been constructed in conformance with said plans and referenced specifications.		
_____	_____	_____
Registered Civil Engineer	RCE No.	Date

**4.5 PLAN OF RECYCLED WATER SYSTEM**

Plan drawings shall show the location of recycled water mains, service lines, and other structures in relation to survey lines and stations. Included shall be blow-offs, combination air release valves, main line valves, thrust blocks, etc. The plans shall provide all data for horizontal deflections or curves and indicate limits of any easements. Any known pad locations which are adjacent to an easement should be shown, as well as fences, walls, trees, etc., which are within or directly adjacent to the easement. The size and ownership of all existing and/or proposed underground utilities that cross or parallel the recycled water line, including facilities of other water purveyors, shall be included on the plans.

#### **4.6 PROFILE OF RECYCLED WATER SYSTEM**

Profiles shall show the grade, including any vertical curve data, size and type of pipe, and the overall segment length of each pipe type or size. Any special encasement required to carry loads on the pipe shall also be shown. Items such as valves and the other structures or appurtenant features listed on the plan shall be shown on the profile. Any pipeline two inches (2") or more in diameter which crosses the recycled water line, including water, wastewater, gas, telephone, power, storm drain, television, and oil lines, shall be shown and labeled on the profile. The grade of parallel lines within 5 feet of the water line shall also be shown.

The District is not responsible for the accuracy of the location of underground facilities, and approval of recycled water plans by the District does not constitute a representation as to the accuracy of the location of, or the existence or nonexistence of, any underground utility, pipe, or structure within the limits of the project. The contractor shall be responsible for locating such lines prior to or during excavation or boring.

#### **4.7 GRAPHIC SCALES AND NORTH ARROW**

Each plan and profile sheets shall contain:

- A. A graphic scale, horizontal as well as vertical, illustrated such that a true representation is produced when the plans are reduced in size. The scales shall be as follows:

Horizontal 1" = 40 feet (25mm = 7.6m)

Vertical 1" = 4 feet (25mm = 1.2m)

Double vertical scale drawings (i.e., 1" – 8 feet) may be submitted where the predominant slope of the existing ground surface on any sheet exceeds 15 percent. In such cases, the works "Double Scale" shall be boldly shown.

- B. A north arrow oriented toward the top or to the left.

#### **4.8 PROCEDURE FOR APPROVAL**

Approval for improvement plans consists of two phases. Each phase consists of a series of requirements which must be met before final acceptance.

- A. Requirements for authorization of construction (see Section 5 of these Standards).  
B. Requirements for final acceptance (see Section 11 of these Standards).

#### **4.9 PLAN CHECKING LIST**

The following list is intended as a guideline to assist the preparer; it is not represented to be a complete list of requirements:

## CHECK LIST FOR PLAN CHECKING AND PROJECT REQUIREMENTS

### COVER SHEET

Standard size, title block, signature block  
Revision and engineer's block  
Index and vicinity map, including lot numbers and lot lines  
Sheet index (with multiple sheets)  
Key map (with multiple sheets)  
Pressure zone(s) and elevation  
Adjacent tracts and street layout  
Benchmark  
Design and record drawing certificates  
Pressure requirement  
General notes  
Underground Service Alert note  
Engineer's signature  
Engineer's stamp and expiration date

### GENERAL DESIGN

Recycled water need (area to be served, peak demand, annual use)  
Conformity to master plans  
Oversizing requirements  
Pressure analysis  
Selection of pipe type(s)  
Instructions relative to sequencing, timing, and thrust blocks for tie-ins to the existing system

### PLAN AND PROFILE SHEETS

Graphic scales  
North arrows  
Water line stationing left to right  
Elevations at top of pipe  
Cover  
Curve data  
Pipe size(s) and type(s)  
Street dimensions, street names  
Lot boundaries  
Easements, including line bearings  
Angle points, with deflection or fitting angle  
Valves, combination air release, and blow-offs  
Meter box detail where not in sidewalk  
Size of meters  
Lot numbers and pad elevations  
Topography (including drainage paths, floodplain boundary, wells)  
Location of storm drains, water lines, and sanitary sewers  
Cross connection separation  
Thrust blocks

## ADMINISTRATIVE COMPLIANCE BEFORE CONSTRUCTION

Plan Check fee  
Cost estimate  
Agreement for construction and bonds  
Insurance  
Inspection fees  
Connection fees  
Encroachment permit  
Preconstruction conference

## ADMINISTRATIVE COMPLIANCE DURING OR AFTER CONSTRUCTION

Change Order Requests and Fees  
Meter installation requests  
Certifications  
Record Drawings  
Punch List

### 4.10 DEDICATION OF EASEMENTS AND FACILITIES TO THE DISTRICT

Dedications of easements, and in some cases of fee title, are to be provided on the face of subdivision maps; and the completed facilities are dedicated by language of the subdivision agreement. Where a subdivision is not involved, an offer of dedication or grant deed shall be recorded. The following language is intended as an example of standard language for the dedication of easements and facilities to the District. It shall be modified if necessary to fit a particular set of circumstances.

A. Easement. An easement to install, repair, maintain, renew, and replace recycled water mains and appurtenances with the rights of access, in, over, under, and across the following described real property in the County of Ventura, State of California:

B. Facilities. All rights, title, and interests in and to the recycled water system and appurtenances shown on City Drawing Nos. \_\_\_\_\_ through \_\_\_\_\_.

Additional language may be added by the District as required, such as an acknowledgement that the District shall not be responsible for the replacement of decorative pavement.

### 4.11 GENERAL NOTES

The General Notes shown on Plate RW49 shall be included on the Recycled Water Plan cover sheet. These notes are subject to modification as deemed necessary by the District.

## **5.0 FEES, CHARGES, AND REQUIREMENTS FOR AUTHORIZATION AND CONSTRUCTION**

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### **5.1 GENERAL**

Specific fee/charge amounts are adopted annually by either Board resolution or ordinance following public hearings as required by law. Water service charges for metered accounts, unmetered construction purposes, interconnection between existing and new systems, and capital improvement are addressed in the District Charges, Rates and Fees. Water service fees for installation, relocation, or replacement of services, meters, and meter boxes are included in the City Schedule of Service Charges.

### **5.2 PLAN CHECK FEE**

When recycled water plans are first submitted, a plan check fee shall be paid to the District by the developer. This fee is established by the City Schedule of Service Charges and is collected with City plan check fees. It shall be based upon an estimate of the cost of the improvements, provided by the developer's engineer utilizing the City's unit costs, with verification by the District. The fee may be increased if actual or subsequently estimated costs exceed that used for the initial fee calculation, if consultant services are required, or if extraordinary plan check time is incurred.

### **5.3 SUBMITTAL OF PRINTS (PLAN CHECK)**

Recycled water plans shall be submitted as part of the complete improvement plan submittal for development projects. In stand-alone recycled water projects, two sets of prints of the proposed recycled water improvements and the engineer's estimate shall be submitted with the plan check fee for the first plan check.

### **5.4 SPECIAL PROVISIONS**

If there is an unusual condition which may affect the feasibility of the project or which may require special consideration, it should be identified in writing prior to tentative map and/or development project approval.

### **5.5 INSPECTION FEE**

At the time of encroachment permit application, the developer shall pay an inspection fee based upon the approved cost estimate, as established by the City Schedule of Service Charges. Overtime, weekend, and holiday time are subject to availability of inspection and to additional fees as established by the City Schedule.

### **5.6 EASEMENTS**

Required easements shall be shown on the subdivision map, if applicable, or otherwise provided in offer/deed form for checking at the time of first submittal. Also, see Section 4.10.

## **5.7 AGREEMENTS, BONDS, AND INSURANCE CERTIFICATES**

Prior to issuance of a permit for construction, the developer shall submit the following on City forms:

- A. Agreement for construction of subdivision improvements (in triplicate with notarized signatures), modified as necessary if no subdivision is involved.
- B. Insurance policy certificate on City endorsement form with limits as stated in the Agreement. The insurance certificate shall include general liability, auto liability and workers' compensation insurance in amounts as required by the City/District. The District, its officers, employees and agents, shall be named as additional insureds. The notice of cancellation period must be no less than 30 days. Any reference in the cancellation clause to "endeavor to" or "but failure to mail such notice shall impose no obligation or liability of any kind upon the company" must be deleted. Also, the words "This certificate is issued as a matter of information only and confers no rights on the certificate holder" must be deleted. If disclaimers cannot be deleted, then a signed warranty letter must be attached to the certificate.
- C. A faithful performance bond (in triplicate and notarized) equivalent to 100 percent of the estimated cost, including contingencies, of construction. A certificate of deposit or letter of credit, in form acceptable to the City, may be substituted.
- D. A labor and materials bond (in triplicate and notarized) equivalent to 100 percent of the estimated cost. A certificate of deposit or letter of credit, in form acceptable to the City, may be substituted.
- E. A copy of a "release" from the Calleguas Municipal Water District acknowledging satisfaction of their requirements of fees for capital projects (Not a City Form).

## **5.8 "WILL-SERVE" LETTER**

Prior to issuance of a permit to construct facilities, the developer shall obtain a recycled water "Will-Serve" letter indicating that the subject property lies within the District's service area and that the District will provide recycled water service subject to the terms, conditions, and limitations outlined by these standards.

## **5.9 APPROVAL FOR CONSTRUCTION**

Upon review and acceptance of all improvement plans for a project and of all documents, bonds, and fees, staff shall notify the developer's engineer that the plans are signed and available for reproduction. The developer's engineer shall then provide the District with two sets of prints and return the original drawings to the District until they are "as-built". Once signed as accepted, the originals become District property.

No construction shall occur before the plans are signed and authorization is given for construction, generally an encroachment permit. A pre-construction meeting of all interested parties should be arranged by the developer, and may be required by the District.

This process should be conducted as part of the overall development process for a project.

## **5.10 CAPITAL IMPROVEMENT CHARGE**

A capital improvement charge shall be paid, as a but-in to the existing system, when any person, firm, corporation, or other entity requests a new recycled water connection or in any way causes an increase in the recycled water usage. Unless approved by the Director, no will-serve letter shall be issued until the capital improvement charge has been paid. The capital improvement charge is based upon meter size and acreage as provided in the District Charges, Rates and Fees.

## **5.11 SERVICE LINE OR METER INSTALLATION**

Normally, a developer will install the required service lines as part of the development project. The District will then install the meter.

Single service line connections to existing District owned pipelines may be done by the District along with the installation of the meter when no other work is needed.

All work by the District shall be paid by the owner or developer. The charge for installation of a service connection shall be based upon prevailing costs of materials and labor plus fringe benefits and an allowance for overhead. Deposit amounts shall be required prior to installation of the meter or service. After installation, the actual cost will be determined and adjustments made, either in the form of a refund of part of the deposit amount or additional payment by the owner/developer.

## **5.12 MAINLINE EXTENSION AND OVERSIZING AGREEMENTS**

If any developer desires to enter into a reimbursement agreement with the District, such arrangements shall be made a condition of approval of the project. Thereafter, no such agreement shall be made. Reimbursement agreements for main line extensions involve future payments to the developer installing the improvement if and when the District receives funds from other benefiting properties within the term of the agreement. As a condition of approval of such benefiting property, a pro-rated share of the total cost of the improvement shall be required based on the proportionate use of the improvement as determined by the District. This shall be in addition to other fees, deposits, and charges. In the case of a District contribution for oversizing a line, no District contribution can be considered unless the line is 10" or greater in diameter. The District contribution will generally be the incremental difference of the pipeline cost. For tanks and pump stations, a proportional contribution will generally be considered.

## **5.13 TESTING OF BACKFLOW DEVICES**

See Section 10 (CROSS CONNECTION AND BACKFLOW PREVENTION).

## **5.14 CUSTOMER'S GUARANTEE DEPOSIT**

The District requires all applicants for recycled water service to post a guarantee deposit. An exception to this requirement is applicants who have at least one other active water service account with the District and who have no record of delinquent payments with respect to their water account(s). The deposit required herein shall be equal to the estimated amount payable by the applicant for one month of recycled water service but, shall in no event be less than the sum stipulated in the schedule of rates.

Guarantee deposits may be refunded upon application by the customer after a twelve (12) month period from the date of receipt in which a satisfactory payment record has been established. The District reserves the right to disallow or withhold the refund of any deposit after the twelve (12) month period if settlement of service bills becomes irregular or is delayed for any reason. Where service has been discontinued for non-payment of service bills, for whatever reason, and subsequently where the recycled water service is permanently revoked or terminated, the outstanding amount as well as the separation costs shall be settled against the deposit account and the balance of the deposit returned to the customer, provided nothing is owed to the District by the customer for recycled water services at other addresses. The service contract is then closed.

Any request for re-establishment of a recycled water service subsequent to permanent revocation or termination of the permit shall be handled per Article 11.4 of these Rules and Regulations.

## **5.15 RECYCLED WATER SERVICE RATES**

### **5.15.1 Establishment of Rates**

Recycled water service rates within the District shall be established by a resolution of the Board of Directors.

### **5.15.2 Change of Rates**

The District reserves the right to change its rates for recycled water service. However, prior to considering any change in said recycled water service rates, a notice of the proposed change shall be posted by the District Secretary at least ten (10) days prior to consideration of such a resolution by the Board of Directors.

### **5.15.3 Capacity Charge**

A capacity charge may be established by resolution of the Board of Directors to provide for system improvements. Said charge shall be paid as a component of the recycled water rates.

### **5.15.4 Recycled Water Meter**

#### ***5.15.4.1 Meter Reading Period***

Recycled water meters are read at the same time as the potable water meter.

If a recycled water meter fails to register during any period or is known to register inaccurately, the customer shall be charged for that period pursuant to an average daily consumption rate based upon a reading of the meter when in use and registering accurately during the same season or as close to the same season as is reasonably possible. Any customer may request that the meter through which the recycled water is being furnished be examined and tested.

## **6.0 CONSTRUCTION STAKING**

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### **6.1 GENERAL REQUIREMENTS**

Construction staking on development projects is the responsibility of the developer's engineer or contractor. The term encompasses markings which may not involve any staking, such as markings on pavement. Stakes or marks should be set parallel to the pipeline alignment at an offset distance generally not more than 10 feet. Stakes or marks should be set at no greater interval than 50 feet on straight alignments when the pipeline slope is 0.6 percent or more. For horizontally curved pipelines at less than 0.6 percent slope, the stake or mark interval should be 10 feet. For horizontally curved pipelines above 0.6 percent slope and for straight pipe lines below 0.6 percent slope, the stake or mark interval should be 25 feet. It is recommended that cut sheets indicating station, offset, and cut be provided to the District Inspector.

### **6.2 PRESERVATION OF STAKES**

Construction stakes or construction markings shall be carefully preserved by the contractor until after the installation has been inspected. If two or more consecutive stakes are knocked out during construction, new stakes should be set at the contractor's expense.

### **6.3 SERVICE LINES**

For each service line, a stake shall be placed near the property line, to show its location if the meter box is not installed. The stake shall be a minimum 2" x 4" redwood post 2 feet in length with 18 inches buried.

### **6.4 RECORD DRAWINGS**

The stationing for each service line is required on the record drawings.

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## 7.0 CONSTRUCTION

### 7.1 GENERAL REQUIREMENTS

This section describes the use of materials and workmanship to be employed in construction of the water system. The developer/engineer shall prepare such general and special specifications as are necessary to define the nature and location of the work, contractual arrangements, payment for work and any other matters discussed within the standards presented here.

- A. Use of This Section: The construction section is intended to highlight the features of construction, which are deemed to be most significant. In any construction activity, the recommendations of the manufacturer of a product, especially where more stringent, should apply. Also, the omission from this section of a particular practice which is considered to be a good construction technique common to the construction industry, should not be construed to mean that it is not required.

Specific standards incorporated into this section by reference include:

- AWWA C900 “Polyvinyl Chloride (PVC) Pressure Pipe, 4 inches through 12 inches”.
- AWWA Manual M11 “Steel Pipe – Design and Installation”.
- AWWA Manual M23 “PVC Pipe – Design and Installation”.
- AWWA Manual M41 “Ductile – Iron Pipe and Fittings”.
- AWWA C901 “Polyethylene (PE) Pressure Pipe and Tubing, ½ in. through 3 in. for Water Service”.
- AWWA C906 “Polyethylene (PE) Pressure Pipe and Fittings, 4 in. through 63 in. for Water Distribution”.
- Standard Specifications for Public Works Construction.

The developer/contractor should refer to Section 3 (MATERIALS), along with this section and the respective plates, and Section 11 (TESTING AND INSPECTION).

- B. Protection/Operation of Existing Recycled Water System: No developer or contractor will be allowed to operate any existing water valves or to cause a shutdown of any portion of the District’s recycled water system without prior approval from the District’s representative. That representative may be either the District Engineer, Superintendent, or the construction inspector with approval from the Superintendent. In general, any operation of valves in a planned shutdown will be done by District personnel. When shutdowns are required in a part of the District system, the District will expect evaluation of whether the shutdown should be done during the day or during the night. Contractor/developer economies shall be weighed less heavily in the decision than the interruption and inconvenience to existing customers. Any shutdown shall involve a thorough notification plan for existing customers.
- C. Quality of Materials: Materials and equipment to be incorporated into the work shall be new and unused unless otherwise approved. In case a reference is not clear as to which of several available grades is desired, the highest quality material shall be used. When construction bids are received directly by the District, such bids shall show the proposed pipe material and the manufacture’s name, if more than one type is allowed.

The contractor shall have at the job site or be able to supply upon request, certified copies of factory or laboratory test reports showing the strength characteristics of any materials used in the work. For reinforced concrete work, the contractor shall furnish, in advance of pouring, the mix design and rated strength as prepared by the concrete supplier.

- D. Substitutions: Where articles or materials are specified by trade name, alternate materials or articles equal to those specified may be approved, provided the request for approval is in writing accompanied by supporting data in ample time to permit investigations without delaying the work. Unless substitutions have received prior approval, no deviation from the Standards will be allowed.
- E. Quality of Workmanship: Work should be done by persons experienced in the specific work, under competent supervision, and to the District's complete satisfaction. When work is being done directly for the District, the contractor shall name each subcontractor in the proposal; and no substitutions shall be made without prior approval.
- F. Defective Work: Any defective material or workmanship which becomes evident within one year of acceptance shall be replaced or repaired, at the District's discretion, without cost to the District. Refusal of the contractor to correct defective work shall be just cause for exclusion from performing future work. Such exclusion shall not limit the District's right to bring legal action to correct deficiencies and/or to withhold exoneration of warranty bonds.
- G. District Inspection, Field Acceptance, and Warranty Period: The District has the primary responsibility for inspection of all excavation, materials, pipelaying (including appurtenant structures), trench backfill within the pipe zone, and testing. The City has the primary responsibility for trench backfill above the pipe zone and for roadway construction/restoration. Work shall be available for inspection at all times. The contractor shall provide notice to the District at least two work days prior to the start or resumption of any work. Initial notification should allow for scheduling a preconstruction meeting between interested parties. Failure to provide proper notification may delay the start of work. In addition, the District may refuse to accept any work for which inspection has not been arranged.

Inspection hours are 7:30 a.m. through 3:00 p.m., Monday through Friday, unless otherwise approved in writing by the District Engineer. All requests for after-hours, holiday, or weekend inspection are subject to the availability of inspection and shall be submitted in advance by the developer such that the District Engineer can approve and issue written authorization. All such work is subject to overtime charges as provided in the City Schedule of Service Charges.

Field acceptance is made by the inspector for the purpose of allowing the work to proceed. It shall not be considered acceptance of the work. The one-year warranty period for all project work shall begin as of Board acceptance. As mentioned in Section 7.1F (Defective Work), any defective work discovered during this period shall be repaired or replaced; and a new one-year period will begin for that corrected work. Unauthorized material shall not be subject to warranty period limits, and shall be replaced whenever discovered.

- H. Public Relations: The contractor shall conduct affairs in a manner which will minimize disturbance of residents in the vicinity of the work. The job site shall be maintained in a condition which will bring no discredit to the District or its personnel. Pedestrian and vehicular travel shall be maintained unless detours or closures are specifically authorized by

the City; and all affected private improvements shall be restored to original condition or better, unless other arrangements are made with the property owner(s).

## **7.2 PERMITS**

The developer or the developer's contractor shall obtain the following permits as applicable:

Encroachment: Within City of Simi Valley, an encroachment permit is required for all recycled water installation. The permit is secured from the Public Works Department. Within the County areas, or Caltrans jurisdiction, a similar permit is required. Particular attention is called to Section 7.15 (BACKFILL AND COMPACTION) and the appropriate Plate RW6.

## **7.3 SHIPMENT AND DELIVERY**

All pipe shall be braced and studded to prevent damage during shipment. Any damaged pipe or fittings delivered and unloaded at trench side shall be removed by the contractor from the work site. Handling of CMCL pipe, including off-loading and placement in the trench, shall be done using nylon (or other approved) rigging straps so as not to damage the pipe coatings. Rigging straps shall be properly rated for the weight category of the lift. Chains shall not be allowed to come into contact with the pipe.

## **7.4 CLEARING AND GRUBBING**

- A. General: Clearing and grubbing, which consists of removal of objectionable material from the work area, shall be done with caution such that existing underground improvements, adjacent property, and trees and shrubbery that are not to be removed are protected from damage. Clearing and grubbing for a development project requires an encroachment permit or a grading permit.

Within water easements or rights-of-way, trees, shrubs, fences, and all other improvements that have to be removed to permit construction, and which are intended for replacement, shall be replaced in kind or size (excluding native trees under 2-inch diameter or native brush) or with approved substitutes, unless permission to exclude such replacement is obtained from the owner/agency or granted by the District.

- B. Removal and Disposal of Material: The contractor shall be responsible for leaving the site in a neat and finished appearance, free from debris or inflammable material. Disposal of removed material shall be in legally approved location(s).
- C. Protected Trees: Work under or within the dripline of a protected tree may be subject to special requirements. The developer and/or contractor shall contact the City Planning Department if trimming, removing, or construction around protected trees is required. Protected trees include all native oaks, any tree designated historic, and mature trees (with 72 inches of cross-sectional trunk area).

## **7.5 UTILITIES, EXISTING FACILITIES, AND CONCRETE REMOVAL**

- A. Abandonment: Refer to Section 8 (ABANDONMENT) regarding abandonment of existing water lines and/or structures.

- B. Utilities and Existing Facilities: Existing utilities and/or facilities shall be protected from damage during excavation and backfilling of trenches; and, if damaged, shall be repaired by and/or at the contractor's expense. This requirement shall not preclude the contractor from pursuing compensation for any existing utility or facility not shown on the drawings or the location of which is not shown to the contractor in sufficient time to avoid damage.

Whether expressly indicated on the drawings or not, contractors shall call the Underground Service Alert and allow time for surface marking prior to any excavation.

The District will mark the location of existing services upon request and with satisfactory notification in advance.

In case it is necessary to remove any such utilities, facilities, or any portions thereof, the contractor shall notify the District and the owner. The contractor shall not interfere with the utility and/or facility until notice to relocate or remove has been given to the owner and appropriate action has been taken or acknowledged by the owner.

The fact that any underground utility and/or facility is not shown on plans or marked in the field shall not relieve the contractor of responsibility to exercise a standard of care to ascertain prior to commencing work the existence of any underground utilities or facilities which may be subject to damage.

Concrete and Masonry Removal: Removals of existing concrete pavement, curbs, gutters, sidewalks, foundations, and other structures as noted on the plans or where otherwise necessary shall be disposed of by the contractor and shall be performed without damage to any portion of the existing work that is to remain in place. If damage occurs, the contractor shall repair any such damage at his own expense, to the satisfaction of the District. Repair/replacement of public sidewalks, curbs, gutters, storm drains, and/or roadway pavement shall be to the satisfaction of the City Public Works Department. Where existing reinforcement is to be incorporated in new work, such reinforcement shall be protected from damage and shall be thoroughly cleaned of all adhering material before being embedded in new concrete.

## **7.6 EXCAVATION AND TRENCHING**

- A. General: Trench excavation shall consist of all excavation involved in the installation of the recycled water lines. During excavation, material suitable for backfilling shall be piled in an orderly manner a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins. The material piles shall also not obstruct existing sidewalks or driveways unless approved by the City. All excess excavated material or material unsuitable for backfill shall be removed per Section 7.4B (Removal and Disposal of Materials). Provisions shall be made as necessary to prevent surface water from flowing into trenches or other excavations, and any water from any source accumulating therein shall be removed by pumping or by other approved methods and disposed of as permitted by Regional Board regulations. Sheeting and shoring shall be provided as required by OSHA for the protection of the work and for the safety of personnel.

Unless otherwise indicated, excavation shall be by open cut except that short sections of a trench may be tunneled if, in the opinion of the District, the pipe or duct can be safely and properly installed and backfill compaction can be properly achieved in such tunnel sections.

- B. Excavation: Excavation for recycled waterlines shall be made only after pipe and other necessary materials are delivered to the work site. After delivery, trench excavation shall proceed, the pipe shall be installed, and the trench backfilled without undue delay.

Where rock excavation is required, the rock shall be excavated to a minimum overdepth of 6 inches below the trench depth indicated on the drawings, or as specified. Overdepth in the rock excavation and unauthorized overdepths shall be backfilled with the same material as the bedding zone. Whenever wet or otherwise unstable soil incapable of properly supporting and restraining the pipe is encountered in the bottom of the trench, such soil shall be removed to the depth required and the trench backfilled to the top of the pipe zone with an appropriate material of course sand or crushed rock to provide stable support.

- C. Shoring: All shoring for open excavations shall conform to the State of California, Department of Industrial Relations, Division of Industrial Safety “Construction Safety Orders.”

The contractor shall be responsible for adequately shored and braced excavations so that the earth will not slide, move, or settle, and so that existing improvements will be protected from damage.

No shoring once installed shall be removed until the trench has been approved for backfill operations. Removal of shoring shall only be accomplished during backfill operations and in such a manner as to prevent any movement of the ground or damage to the pipe or other structures.

The contractor shall obtain and pay all permits for any excavations over five (5) feet in depth into which a person is required to descend or any excavation less than five (5) feet in depth in soils where hazardous ground movement may be expected and into which a person is required to descend.

- D. Trench Width and Grade: The width of the trench within the pipe zone shall be such that the clear space between the barrel of the pipe and trench wall shall not exceed the amount detailed in the standard plates. In general, the following shall be adhered to:

**Table 7-1**

Nominal Pipe Diameter	Trench Width	
	Minimum	Maximum
6"-12"	O.D.+12"	O.D.+18"
14"-18"	O.D.+18"	O.D.+24"

- E. Pipe Subgrade: The trench bottom shall have a flat or semi-circular cross section. The bottom of the trench shall be graded and prepared to provide a firm and uniform bearing throughout the entire length of each joint except for required “bell holes” at joints. A coupling hole shall be excavated as necessary with sufficient length, width and depth to permit assembly and provide a minimum clearance of 3 inches below the coupling for a length of 6 inches beyond the coupling.

## 7.7 PIPE BEDDING AND LAYING

- A. General: This portion of the work includes the furnishing of all materials and their proper assembly so as to result in a first class waterline installation true to line and grade and free from leaks, cracks, and obstructions.

Where choices are allowed, the contractor shall select such materials and construction methods as will result in a completed project in full accordance with these Standards. In that regard, refer to Section 3 (MATERIALS) and the Plates for additional details.

The approved recycled water pipeline design is based upon a proper combination of pipe strength and pipe support. No acceptance will be given unless the work of trenching, bedding, laying, backfilling, and compaction is conscientiously done in accordance with the procedures outlined in these Standards.

Except as otherwise approved or included in the permit, the maximum length of open trench at any one time shall nominally be 600 feet, but shall not exceed the distance necessary to accommodate the amount of pipe installed in a single day.

Grades should be transferred from ground surface to the bottom of the trench by experienced workmen, using not less than three consecutive grade points in common, so that variations from a straight grade may be readily detected. Each length of pipe shall be laid on firm, approved bedding material as specified and shall have full bearing for its entire length between bell holes excavated in said bedding material to allow for unobstructed assembly of all joints. Adjustments of pipe to line and grade shall be made by scraping away or filling in and tamping approved material under body of the pipe. No wedging or blocking with wood or soil to support the pipe will be permitted. Under no circumstances will a contractor be allowed to dump backfill materials on top of a pipe which is not continuously supported in its final grade position.

Each pipe shall be laid true to line and grade and in such manner as to form a close concentric joint with the adjoining pipe, following the manufacturer's instructions for the specific jointing method being used. Pipe shall not be laid when the engineer or inspector determines that the condition of the trench or weather is unstable. As the work progresses, the interior of the waterline shall be cleared of all dirt and superfluous materials of every description. If the maximum width of the trench at the top of the pipe zone is exceeded, the contractor shall install such concrete cradling, pipe encasement or other bedding as may be required to support the added load of the backfill. Trenches shall be kept free from water until sufficient backfill has been applied to keep the pipe in place. At times when work is not in progress, open ends of pipe and fittings shall be securely closed to the satisfaction of the inspector so that no trench water, earth, or other substance will enter the pipe or fittings. Pipe or fittings damaged during assembly shall be removed and replaced.

- B. Pipe Laid on Bedding vs. Earth Mounds: The key elements to the pipe bedding are that the pipe ultimately be continuously supported and that the full 4 inches of bedding material (imported sand or better) be placed under the pipe. Where pipe is to be laid where considerable amounts of rock or cobblestone or groundwater are present, the continuous bedding method shall be used. Earth mounds may be used, if specifically approved by the inspector, in areas exhibiting ideal pipe laying conditions where there is clear demonstration that the 4" bedding material can be placed after the pipe is laid in the trench.

For the continuous bedding method, the trench bottom shall be overexcavated a minimum of 4 inches and brought back to grade with imported bedding material. See Section 7.6B (Excavation and Trenching) for excavation in rock. Prior to lowering pipe into the trench, coupling holes shall be excavated in the bedding with sufficient length, width and depth to permit assembly and provide a minimum of 2 inches below the coupling.

For the earth mound method, the mounds shall be compacted firmly and of a size adequate to suspend the pipe 4 inches above the trench bottom while maintaining the pipe true to grade. Each length of pipe shall be laid on two mounds with the center of each placed at approximately one-fifth the distance from each end. Coupling holes shall provide a minimum clearance of 2 inches. After assembly, the bedding zone shall be properly backfilled with imported bedding material. The bedding material shall then be compacted utilizing appropriate methods to provide a firm and uniform bedding throughout the entire length of pipe.

- C. Pipe Laying for Ductile Iron Pipe: Where approved for use, ductile iron pipe shall be laid in accordance with manufacturer instructions and in general compliance with the applicable procedures as listed for ductile iron pipe. Where specified, the District may request a specification for such installation practices. Specific attention shall be given to the placement of the polyethylene encasement wrap and any tapping of the pipeline for services and/or other main connections.
- D. HDPE: Where approved for use, HDPE shall be laid in accordance with manufacturer instructions and in general compliance with the applicable procedures as listed for HDPE. Where specified, the District may request a specification for such installation practices.

## **7.8 THRUST BLOCKS, SUPPORTING OF VALVES, ETC.**

- A. Supporting of Valves: Valves and fittings shall be supported by the trench bottom, not the pipe. The concrete should be under and around the fitting and not the joint.
- B. Thrust Blocks: These shall be placed as shown on the plans or as required by Plates RW36 through 38. The concrete shall meet the requirements of Section 3.14 (Concrete Material). Care shall be taken to insure that the concrete is poured against undisturbed ground and the fitting to be anchored.

## **7.9 HOT TAPPING**

Hot tapping shall only be done in the presence of the District representative. Section 3.8F discusses the tapping sleeve and valve requirements. The tapping mechanism shall be of the self purging type so that cutting chips are removed from the tapping machine and do not enter the pipeline.

## **7.10 SERVICE CONNECTIONS AND SERVICE LINES**

Service connections at the main shall not be placed directly opposite one another. There shall be a minimum of 1 foot of longitudinal separation between them. On PVC pipe, the taps shall be staggered vertically to prevent a split in the pipe.

With service saddles, the surface of the pipe shall be cleaned as necessary to remove all loose material before placing the saddle on the pipe.

In all metal to metal threaded connections, either teflon tape or sealing compound approved for use in potable water shall be used.

Refer to Plates RW13 and 14 for services to 2 inches, to Plates RW15 through 17 for larger meters.

### **7.11 INSTALLATION OF VALVES AND FITTINGS**

Valves and fittings shall be installed at the locations shown on the plans, per the following check list:

- The weight of the valves or fittings is to be taken by firm ground or blocking and not the pipe.
- All materials are covered in Section 3 (MAINLINE FITTINGS), (MAINLINE VALVES), and (MATERIALS-PAINTING).
- Valves and all bolted connections shall receive a plastic film wrap (see Section 3 – MATERIALS-PAINTING) installed as follows: The valves shall be wrapped by passing the flat sheet of film under the valve bottom and bringing the ends up around the body to the stem and securing it in place with 2 inch strips of the plastic adhesive tape. The polyethylene shall be secured around the valve stem in such a manner as to leave the stem free to operate. The film shall be brought completely around the flanges and secured to the pipe with a plastic adhesive tape on either side of the valve, flange or fitting.
- All bolted connections shall be performed in an even manner by a series of tightening steps so that no portion of the bolted connection is overstressed.

### **7.12 INSTALLATION OF AIR RELEASE AND BLOWOFF ASSEMBLIES**

Combination air release and blowoff assemblies shall be installed as shown on Plate No's. RW26 through 30. The developer/contractor shall locate the combination air release cans and blowoff vaults in a suitable location with respect to the adjacent properties. This shall include locating them closer to property lines rather than in the middle of a property where there could be future objections from the property owner. The service line to the assembly shall have a positive grade to prevent accumulations of air.

Refer to Section 3 for copper tubing connections. The service line shall be one continuous length without fittings between the corp stop to the air release valve riser. The corp shall be stacked at the main with 8-inch PVC and valve box if 2 inches or larger.

Dielectric connections with PVC tape wrap shall be provided at all connections between steel, brass, or bronze.

### **7.13 INSTALLATION OF FIRE HYDRANT ASSEMBLIES**

Recycled water fire hydrants are prohibited unless both the District and DOHS provide approval.

### **7.14 INSTALLATION OF METER BOXES, PRESSURE REGULATORS**

A. General: Specific installation details are shown on the following plates:

Plate No.	Type
RW13	¾" and 1" meter
RW14	2" turbo meter
RW15	3" and larger compound meter

In all cases, the District will select the meter type and install the meter after proper arrangements have been made. (see Section 5 – FEES, CHARGES AND REQUIREMENTS FOR AUTHORIZATION OF CONSTRUCTION)

- B. Meter Boxes: These shall be set with the longitudinal axis perpendicular with the street and located as shown in Plate No. RW22 with respect to the curb. In instances where meter boxes cannot be avoided within the traveled right-of-way, special written approval is required and the cover must be a steel traffic lid. All lids shall have provisions for touch and read meters.

With the exception of irrigation meters, spacers (or jumpers) will be placed within the meter box until the District installs the meter. The contractor may utilize spacers provided by the District on an “as available” basis. Care must be taken to avoid placing a strain on the spacer through misalignment of the house or service line.

Spacers (or jumpers) can be placed with irrigation meter boxes, however, the jumpers shall be locked off until payment of fees. Once fee payment has been confirmed, District crews will set the irrigation meters. Irrigation meters shall be set prior to the construction of any irrigation plumbing.

- C. Jurisdiction: In general, pipes on the customer side of a meter box are under the jurisdiction of the City of Simi Valley, Building and Safety Division, if the property is within the City. If it is within the County, the Ventura County Building and Safety Department has jurisdiction. However, due to State requirements for the installation and monitoring of recycled water use, the District will permit, inspect, and monitor onsite recycled water facilities.
- D. Pressure Regulators: The recycled water system is not anticipated to have high operating pressures. However, this does not relieve the developer/contractor of responsibility to verify pressure compatibility with the onsite system. If necessary, the types of regulators and their installation are as required for potable water by the respective Building and Safety agency.

## **7.15 BACKFILL AND COMPACTION**

- A. General: There are distinct zones to be considered in the backfilling procedure as follows (refer to Plate No. RW3 and 6):
- Pipe Zone (Bedding) – This area is from the trench bottom to 12 inches above the pipe. This zone is to be backfilled under the strict jurisdiction of the District.
  - Above Pipe Zone – Backfill and compaction in existing streets and in the area above the pipe zone shall be in full accordance with the City or County encroachment permit issued for the specific work. The filling of trenches shall be subject to approval by the City or County Public Works inspector who shall have full authority to order compaction tests to demonstrate the actual backfill density.

Section 3.12 (PIPE TRENCH MATERIAL) of these Standards contains the material designations for both the pipe zone and above pipe zone regions.

- B. Backfilling Pipe Zone: Sand as specified in Section 3.12 (PIPE TRENCH MATERIAL) must be used and shall be placed in the pipe zone with particular attention to getting material to the underside of the pipe and fittings to provide firm support along the full length of the pipe. Care shall be exercised in backfilling to prevent damage to the pipe or coating, as

applicable. Backfill in the pipe zone may be either compacted by hand tamping methods or jetted into place without hand working. In no case shall sufficient water be applied to float the pipe. See further discussion of jetting below in Section E. Acceptability of compaction in the pipe zone will be determined primarily by visual inspection and probing by the District's inspector to determine that no voids exist in the backfill. The backfill within the pipe zone shall meet the requirements of 90 percent relative compaction.

- C. Backfilling Above Pipe Zone: The sequence of backfilling and compaction above the pipe zone in public rights-of-way, i.e., streets, shall be as directed by the District or County Public Works inspector; but in the absence of such instructions, the following procedure shall govern: Testing for pipe and joint leakage shall be done after consolidation of the backfill to the top of the aggregate base and after service lines have been installed to the property lines.

Backfill, compaction, and resurfacing shall be scheduled so that existing public streets are opened to normal traffic at the end of each day's work, unless otherwise authorized, and so that the backfill operations closely follow the pipe laying, avoiding open trenches overnight.

The trenches or excavations shall not be backfilled without prior inspection by the District's inspector. Such inspection does not relieve the contractor of compliance with the testing of the waterline. The contractor shall assume the cost of removal and replacement of backfill and base necessary for correction of defective conditions revealed by testing.

The backfill zone between the top of the pipe zone and the bottom of the roadway structural section or ground surface may be filled with approved native material. It shall be placed in lifts and compacted to 90 percent relative density. AC surfacing and aggregate base shall be placed as provided in the permit.

If the work is not subject to roadway requirements, the work shall be finished to match original conditions as further described in Section 12 (WATER SYSTEM AND WORK AREA CLEAN-UP).

In traffic areas within public rights-of-way where pavement is to be replaced, the City allows a two-sack cement sand slurry mixture to be used for trench backfill. This requirement will generally apply to trenches which are 2 feet or less in width. For trenches wider than 2 feet, slurry may be approved by the Public Works Department. It must be emphasized that the specific requirements above the pipe zone are within the jurisdiction of the Public Works Department, and developers/contractors shall have a responsibility to investigate and comply with all applicable requirements.

Plate No. RW6 presents the District's trench repair requirements within paved rights-of-way.

- D. Backfill by Tampering Method: Backfill material shall be placed in uniform layers of not more than 12 inches. The moisture content of the backfill material shall be near or at the optimum required for compaction, and each layer shall be tamped until compacted to the required minimum relative compaction. Heavy duty compacting equipment having an overall weight in excess of 125 pounds shall not be used until backfill has been completed to a depth of 2 feet over the top of the pipe.

If a hydro-hammer is used for compaction, at least 4 feet of backfill must be placed over the top of the pipe prior to its use, to insure that the pipe is not damaged.

- E. Jetting: Jetting with water to saturate the shading within the pipe zone is acceptable. Jet holes shall be a maximum of 10 feet apart and sufficient water should be applied to consolidate the bedding materials. Also, care must be taken not to push the jetting pipe below the spring line of the pipe, causing disturbance to the pipe grade; and the material should be jetted from the bottom upwards.
- F. Compaction Tests: These tests shall be taken as determined and at locations selected by the inspector.

## **7.16 RESURFACING AND RESTORATION**

Work in streets which are not yet paved shall be left in a suitable condition for finish grading, placement of base material, and paving by others.

If the work is within existing City or County streets, any required surfacing shall be in accordance with the City or County encroachment permit.

If the work has disturbed or damaged existing private streets, driveways, or other improved surfaces, the damaged portions shall be removed and restored to the limits designated by the inspector.

Substructures removed or damaged on public or private property shall be restored or replaced unless such structures are designated on plans "to be abandoned". Such structures include, but are not limited to trees, bushes, planting, groundcover, mail boxes, fences, and sprinkler systems.

Any temporary paving, barricades, or special provisions required by public agencies shall be furnished by the contractor as required.

## **7.17 BORING AND JACKING OPERATIONS**

- A. General: Placement of pipe by boring or jacking methods shall be indicated on the plans or permit application. As a general guideline, the following shall pertain:
  - 1. Except for the use of air or water, the methods and equipment used in boring and jacking operations shall be optional to the contractor.
  - 2. The placement of pipe shall be to the lines and grades shown on the plans.
  - 3. Voids remaining outside the pipe (or carrier pipe if applicable) shall be backfilled with slurry.
  - 4. Where a casing pipe is used, the recycled water pipe shall be supported with approved skids, shims, or wedges to the lines and grades shown on the plans.
  - 5. The annular space within the casing shall be backfilled with washed concrete sand blown or rammed into place until the entire cavity is filled. Concrete bulkheads shall be placed at each end of the cased section to retain the backfill material.
- B. Bores: The boring machine shall cut a true circular bore to the required line and grade. The boring shall be no more than 2 inches larger in diameter than the maximum outside diameter of the casing or water pipe to be installed.

- C. Jacked Steel Casings: In addition to applicable portions above, the following shall pertain:
1. Where casings are used, the size and wall thickness of the casing shall be at the contractor's option except that the minimum casing thickness shall be not less than 3/8 inch.
  2. Field joints of steel casings shall be welded with a continuous circumferential weld.

## **7.18 CONCRETE AND MORTAR WORK**

### A. Concrete

1. **Material.** Concrete used for encasements, filling, blocking, piers, and other typical water construction applications shall be transit-mixed concrete from a supervised batch plant which issues certified delivery tickets with each load, showing the mix proportions, mixing time, truck departure time and water added. Such certified tickets should be handed to the inspector at the time of delivery. Ready-mixed concrete shall be batched and handled in accordance with ASTM C94. Job mixed concrete shall be limited to that needed for patching and minor non-structural uses. In these cases, the materials and workmanship shall be the same as if transit-mixed concrete had been used. The 28-day compressive strength of concrete shall be chosen according to its intended use as outlined in Section 3.14 (CONCRETE MATERIAL) of these standards.
2. **Placement.** Concrete shall be placed in clean forms before its initial set begins, using the minimum amount of mixing water required for good workability. Concrete shall be worked into forms by rodding or vibrating to secure a dense homogeneous mass free from voids and rock pockets. All concrete shall be vibrated unless the inspector approves solely rodding to avoid having the concrete run out of the forms or trench.
3. **Finish.** Concrete surfaces where required shall be steel troweled to a smooth hard surface free from ridges, holes and surface roughness. Exposed walls shall be left with a surface finish comparable to that obtained with new plywood forms. Slabs and walkways shall be finished with a wood float unless otherwise specified. Corners and edges shall be neatly beveled. Surface defects shall be repaired to match the surrounding concrete.

- B. Mortar: Mortar for general work (exclusive of ML & C steel pipe) shall consist of one part Type II Portland cement and two parts of sand, by volume, thoroughly mixed in a dry state before adding sufficient water to give the mortar a proper troweling consistency.

## **7.19 CONSTRUCTION WATER**

The developer/contractor shall not take unmetered recycled water or unmetered potable water from the District's water systems. The developer/contractor can only utilize recycled water for construction if the procedures in RW41 are followed and use is approved by the District. Refer to Section 5 (FEES, CHARGES AND REQUIREMENTS FOR AUTHORIZATION AND CONSTRUCTION) for charges for construction water.

## **7.20 PAINTING**

Section 3.16 (MATERIALS-PAINTING) discusses painting materials. These materials shall be opened and mixed at the job site. Workmanship shall be to the best standards of the painting industry. All work should be done by skilled and experienced painters. Surfaces to be painted shall first be thoroughly cleaned to remove dirt, loose scale, rust, oil, grease, and/or other foreign matter immediately prior to painting. Cleaning shall be done with abrasives, scrapers, wire brushes, and/or other approved means. Each coat shall be applied in such a manner as to assure an even, smooth, uniform adhering coat free from dirt, runs, brush marks, and laps, and shall be applied as recommended by the manufacturer. Painting will not be permitted when freshly painted surfaces may become damaged by rain, fog, or condensation or when inclement weather can be anticipated. Fresh paint damaged by the elements shall be replaced by the contractor at his expense. Drop cloths shall be used to protect floors, equipment, piping, and other exposed surfaces from spattering and spillage. Paint shall be allowed to dry thoroughly between application of successive coats. The manufacturer's recommended time between coats should be used as a guide as to when the next coat of paint may be applied.

The contractor shall notify the District after surface preparation and after the application of each successive coat of paint. Spray painting will not be permitted unless specifically authorized by the District.

## **7.21 SAFETY**

Wherever the contractor observes or otherwise becomes aware of any unsafe activity, condition, practice, or operation, the contractor shall immediately discontinue said unsafe activity, condition, practice, or operation, including any and all unsafe acts of subcontractors. If the inspector notifies the contractor of same, it shall be the contractor's responsibility to comply. In such instances, the advice shall not be construed as implying any District or City liability.

Essential to proper safety is adherence to all Public Works Department traffic control requirements.

For District contracts, the contractor shall submit a copy of their annual CAL OSHA permit and the letter notifying CAL OSHA of the work.

## **8.0 ABANDONMENT**

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### **8.1 GENERAL**

Any existing waterlines or structures which are to be abandoned shall be indicated on the drawings by the developer's engineer.

Abandonment procedures shall be approved by the District prior to commencement.

### **8.2 WATERLINES**

Waterlines to be abandoned in place shall be entirely filled with pumped concrete. The pump mix shall be a mixture sufficiently workable for the purposes intended and shall have a minimum mix strength of 2,000 psi. The engineer shall show on the drawings the approximate number of cubic yards of concrete required for any particular reach.

### **8.3 STRUCTURES**

Structures associated with lines to be abandoned shall be removed by the contractor/developer and given to the District if salvageable. All structures to be discarded shall be so identified on the project plans and approved for disposal by the District's representative prior to disposal. The developer shall make arrangements for the proper disposal of all discarded materials and/or equipment, including any materials identified as hazardous waste. All costs associated with the disposal of discarded materials and/or equipment, including any materials identified as hazardous waste, shall be solely at the developer's expense.

### **8.4 SERVICE LINE**

Service lines shall be abandoned and plugged at the main under the direction of the District Inspector. This includes complete removal of existing corporation stops or other valves at the main and insertion of a properly sized brass or stainless steel plug depending on material of the main or saddle. No dissimilar metal plugs shall be allowed.

## **9.0 RESERVOIRS**

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### **9.1 GENERAL**

Recycled water storage consists of a single component - maximum-day demand. All other parameters are those of the potable water standards.

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## **10.0 CROSS CONNECTION AND BACKFLOW PREVENTION**

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### **10.1 GENERAL**

According to the AWWA definition, “cross-connection means any connection or structural arrangement between a public or a consumer’s potable water system and any non-potable source or system through which backflow can occur. 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 cross-connections”.

Cross-connections may be regarded as direct or indirect. A direct connection is an arrangement whereby a safe water system is physically joined to a system containing unsafe water, wastewater or other waste. An indirect connection is an arrangement whereby unsafe water in a system may be blown, pulled by vacuum, or otherwise diverted into a safe water system.

To understand cross-connection and backflow prevention, several other terms need definition. “Backflow” is generally defined as the flow of any foreign liquids, gasses, or other substances into the distribution pipelines of a potable supply of water from any other source or sources other than the intended one. For backflow to occur, two conditions must be present: (1) a link must exist between the potable and the non-potable system; (2) the resultant flow produced by the differential pressure must be toward the potable system. If both systems are at pressures greater than atmospheric (positive pressure), backflow due to “back-pressure” occurs. A pump, elevated tank, or boiler can create a back-pressure that is greater than the pressure in the potable system.

If the potable system is at a pressure less than atmospheric (negative pressure), the atmospheric pressure on the foreign liquid will force it toward the partial vacuum and “back-siphonage” occurs. A more explicit term for backflow when subatmospheric pressure exists is back-siphonage. Back-siphonage is the backing up, or siphoning, of a foreign liquid into a potable water system.

While protection of the potable water system is the primary focus of cross connection prevention, protection of the recycled water system from cross connection with sanitary sewer systems, industrial fluid, or other foreign sources is a concern.

### **10.2 JURISDICTION, AUTHORITY, REFERENCES**

The District’s requirements for backflow prevention are those of the Ventura County Environmental Health Division.

The “Cross-Connection Control Officer” for the District is the County of Ventura Environmental Health Division. They are responsible for ensuring that the devices are properly installed, maintained and tested. The various protective devices are to be installed, maintained and tested by and at the expense of the property owner.

A source of general information is a booklet titled “Cross-connections and Backflow Prevention” as published by AWWA.

### 10.3 TYPES OF BACKFLOW PREVENTION

As described below, there are several different types of protection devices. The “Reduced Pressure Principle Device” and “Double Check Valve” are used to prevent backflow and the former also prevents back-siphonage. The “Air Gap” and “Pressure or Atmospheric Vacuum Breakers” are used for prevention of back-siphonage. Descriptions of each device is as follows:

- A. Reduced Pressure Principle Device: Commonly referred to as an RP or RPP, this device consists of two independently acting check valves, together with an automatically operating pressure differential relief valve located between the two check valves. The first check valve reduces the supply pressure at a predetermined amount so that during normal flow, and at cessation of normal flow, the pressure between the two check valves shall be lower than the supply pressure. If either check valve leaks, the relief valve will discharge to atmosphere. This will maintain the pressure in the zone between the two check valves lower than the supply pressure. The unit also has two shutoff valves (one upstream and one downstream of the checks) and properly located test cocks for field testing. (See Plate RW31.)
- B. Double Check Valve: The double check valve assembly is composed of two single, independently acting check valves. The unit also has two tightly closing shutoff valves located at each end of the device and four test cocks for the testing of the check valves.
- C. Air Gap: An air gap is a physical separation between the free flowing discharge end of a pipeline and an open or non-pressure receiving vessel. To have an acceptable air gap, the end of the discharge pipe has to be at least twice the diameter of the pipe above the topmost rim of the receiving vessel, but in no case can this distance be less than one inch.

This is the simplest, most effective, and least expensive type of protection. However, the chance for inadvertent cross-connection and the cost of additional pumping to pressurize the system often makes this an undesirable or expensive protection system. (See Plate RW41.)

- D. Pressure Vacuum Breaker: The PVB is a device that contains a single loaded check valve and a loaded air opening valve to admit air whenever the pressure within the body of the device approaches atmospheric. The body of the device has two tight closing shutoff valves and it is fitted with test cocks. (See Plates RW26 through 28.)
- E. Atmospheric Vacuum Breaker: An atmospheric vacuum breaker has a moving element inside which during flow prevents water from spilling from the device and during cessation of flow drops down to provide a vent opening. This device should not remain under pressure for long durations and it cannot have any shutoff valve downstream from it.

### 10.4 REQUIREMENTS

Refer to the Ventura County Environmental Health Division for acceptable devices to be installed. In addition, the following is provided:

- A. Reduced Pressure Principle Device (RP): Use where cross-connections are known or probably will exist which cannot be eliminated and where the degree of severity is judged by the Cross-Connection Control Officer to warrant more than a double check valve. (See Plate RW31.)

Specific Examples:

1. Recycled water service to industrial or commercial facilities where chemicals are used within the premises, which could potentially be harmful to the District system.
  2. Irrigation systems such as median or park strips along streets, or landscape areas within projects.
- B. Double Check Valve: Use where the recycled water system serves property which also has a potable water service. Also, use where a cross-connection possibly exists where the substances would be objectionable, but not necessarily harmful to the District system.

Specific Examples:

1. Recycled water service connections for irrigation which is also furnished water from wells.
  2. Recycled water service to industrial or commercial facilities where cross connection might impart an objectionable taste, odor, or color, but would not be hazardous.
- C. Air Gap: Use where there is a connection to any premise using a dangerous or toxic substance in toxic concentrations. The air gap shall be located as close as practicable to the service cock and all piping between the service cock and receiving tank shall be entirely visible. (See Plate RW41.)

Specific Example:

1. An agricultural installation where liquid fertilizer is injected.
- D. Pressure Vacuum Breaker (PVB): This unit can only be used where there can be no back-pressure - only where there can be back-siphonage. The unit can have shutoff valves downstream of the device. The PVP must be installed at least 12" above the highest outlet or tank. (See Plates RW26 through 28.)

Specific Example:

1. Lawn irrigation system where outlets are situated well below the device and where there may be a shutoff valve downstream (or past) the device such as a hose bib.
- E. Atmospheric Vacuum Breaker: As with the pressure type, there should be no possibility of back-pressure. This device cannot have any shutoff valves downstream of the device. It must be installed at least 6" above the highest outlet or tank.

Specific Example:

1. Typical irrigation zone.

## **10.5       INSTALLATION**

Service protection is a backflow device installed on the customer side of the meter. These devices are specifically intended to protect the District water system regardless of other protective devices on the premises.

Internal protection devices may be desired where recycled water is used within a facility. These are intended to protect onsite facilities, and fall under the jurisdiction of the Building and Safety Division.

## **10.6       APPROVED DEVICES**

Refer to the latest “List of Approved Backflow Prevention Assemblies”, as issued by Ventura County Environmental Health Division.

## **10.7       TESTING AND MAINTENANCE**

All backflow prevention devices shall be tested annually by a certified tester, with repairs or maintenance as needed. A form must be completed by the tester and returned to the District. Owners of devices that are on record with the District will be notified yearly of this responsibility.

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## 11.0 TESTING AND INSPECTION

### 11.1 MONITORING AND INSPECTION

The District, the City, the Ventura County Environmental Health Division, and/or the Los Angeles Regional Water Quality Control Board, or authorized representatives of any of these agencies shall have authority to monitor and inspect the entire recycled water system including both onsite and offsite facilities. The District or City shall conduct monitoring programs, as deemed necessary, to ensure that the customer's recycled water facilities are being operated in accordance with these Rules and Regulations, including the provision that cross-connections between potable water facilities and the recycled water facilities do not exist. In carrying out these functions, the District, the City, the Ventura County Environmental Health Division, and/or the Regional Water Quality Control Board, or authorized representatives of any of these agencies shall have the right to enter any customer's premises during reasonable hours upon presentation of proper credentials. Reasonable hours shall include hours when irrigation is being performed to ascertain whether the user is complying with the District's Rules and Regulations for Recycled Water. The customer shall provide full cooperation to facilitate these surveys, and shall indemnify and hold the District and City harmless for any damage, loss, or injury alleged to have been caused by District or City personnel while inspecting onsite facilities, except where sole negligence is duly established.

Each time there is a change of either owner or customer on any commercial or industrial premises, the owner or customer shall notify the District immediately, so that the District can reassess the level of protection required. Also, any alteration to existing onsite facilities that may affect required protection levels must be reported immediately to the District.

In situations where potable water lines are on the same property and located in the same area as recycled water lines, an annual cross-connection control site inspection will be required. The annual cross-connection inspection will be performed by the District, the City, the Ventura County Environmental Health Division, or an authorized and certified cross-connection specialist. At the discretion of the District, cross-connection inspections may occur more frequently, especially on potable irrigation systems which have been converted to a recycled water irrigation system. A copy of the inspection report will be forwarded to the non-inspecting agency.

### 11.2 CONSTRUCTION INSPECTION

The inspection of the work shall not relieve the contractor or owner of any obligation to complete the work as prescribed by the plans and applicable specifications. Defective work shall be made good, and unsuitable materials may be rejected notwithstanding the fact that such defective work and unsuitable materials have been previously overlooked by the inspector. The installation and inspection of work with unsuitable materials shall not be construed as acceptance of such materials, and modification to these specifications shall only be made by the District in writing.

#### 11.2.1 District Facilities

##### 11.2.1.1 Construction Schedule

The District may require that the contractor submit a schedule outlining the proposed construction operation. The contractor shall conform to the Rules and Regulations of the District regarding prior notification for inspection and deviations from the approved schedule.

#### *11.2.1.2 Notification and Approvals*

All work shall be subject to inspection by the District, as required by the District and/or these Rules and Regulations. The contractor shall give due notice to the District inspector in advance of backfilling, and installations shall be left open and uncovered until inspected. Unless the District expressly states otherwise, 48 hours notice shall be given, whether for materials or construction work. The contractor shall also notify Building and Safety, Ventura County Environmental Health, and all other regulating agencies of pending work for onsite irrigation systems involving conversions, and arrange for any required inspections by these agencies.

#### *11.2.1.3 Inspection Intervals*

The contractor shall not proceed with any subsequent phase of work until the previous phase has been inspected by the District Inspector. The following items shall be included in the inspection process:

1. Plans (approved and signed, including other regulatory agencies as required)
2. Materials
3. Trenching
4. Mainlines (including sleeving where applicable)
5. Service laterals
6. Identification tape
7. Meter and box setting
8. Backflow protection (not a District facility; certification required)

#### *11.2.1.4 Final Inspection*

Following the completion of all construction work and the submittal of record drawings and certification documents, the contractor shall request final inspection of the work. This request shall include the scheduling of the operational testing.

### **11.2.2 Construction Water Facilities**

#### *11.2.2.1 Application and Construction Schedule*

The operator shall apply for a recycled water use permit for construction water and shall give the District a construction schedule prior to initiation of construction work.

#### *11.2.2.2 Notification and Approvals*

Unless the District expressly states otherwise, 48 hours notice shall be given by the operator in advance of any and all inspection requirements, whether for materials, installation, or initial use of recycled water.

### *11.2.2.3 Inspection Prior to Use*

The operator shall request inspection of the installation. Prior to use of recycled water, District approval shall be obtained. Signage, labels, and air gap on the truck tank shall be installed. The Use Permit must be on site.

## **11.3 REVIEW AND TESTING**

### **11.3.1 District Facilities**

#### *11.3.1.1 Materials*

The contractor shall furnish the District with such information as it may desire regarding the character and quality of materials used. When requested by District, the contractor shall submit a certification that the product meets the requirements of these specifications.

All pipe and accessories shall be carefully inspected by the District and contractor for damage in transit. Any damaged pipe or fittings delivered and unloaded at trench-site shall be rejected and removed by the contractor from the site of the work.

#### *11.3.1.2 Installed Piping Systems*

New piping shall be subjected to a 4-hour hydrostatic pressure test at 120 percent of maximum rated operating pressure of the pipe or 150 psi, whichever is greater. The testing shall be conducted by the contractor in the presence of a District representative. The District may require the tests by a State-certified testing company. The water necessary to maintain this pressure shall be measured through a meter or other means satisfactory to the inspector. The leakage shall be considered as the amount of water entering the pipe during the test, less the measured leakage through valves and bulkheads. Any noticeable leaks shall be stopped and any defective pipe shall be replaced with new sections.

The test shall be made prior to connecting the new piping with existing systems or a service connection. Valves shall be open during the test period.

All concrete thrust blocks shall be allowed to cure to develop design strength prior to testing. All labor, materials, tools, and equipment for the testing shall be furnished by the contractor.

## **12.0 WATER SYSTEM AND WORK AREA CLEAN-UP**

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### **12.1 FINAL PROJECT CLEAN-UP**

The project shall be left in a final condition which brings no discredit to the District. All valves shall be accessible with valve stacks clean. All structures shall be properly painted, where required, and free from dirt, concrete or other spattered materials. The work site shall be cleaned of all construction debris and excess materials. All pre-existing public and private improvements, structures, and/or facilities damaged during construction shall be restored to the pre-existing condition of said improvements, including but not limited to trees, shrubs, curbs, gutters, sidewalks, fences, grass, etc., unless other approvals have been given. Filled excavations shall be neatly finished in a manner to facilitate natural drainage and eliminate hazards to persons or property. Also, all requirements of the City and/or County Public Works Department, as appropriate, shall have been met.

All clean-up and restoration work shall be performed by the contractor, applicant, or developer at their cost. All work shall be subject to the approval of the District representative.

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## **13.0 REQUIREMENTS FOR FINAL ACCEPTANCE**

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### **13.1 GENERAL**

“Acceptance” of a project is a City Council/District Board action. With a development project, such action is taken only as overall acceptance of all public improvements required of a project.

#### **13.1.1 Partial System Clearance**

Partial system clearance may be given for connection to a recycled water system within a development project where the entire recycled water system is not complete or where full formal project acceptance is not requested. Such clearance does not imply that the District has accepted the facilities or waived any right to insist on repairs or corrections of punch list items subsequently identified in a final inspection of the entire recycled water system.

### **13.2 RECORD DRAWING ORIGINALS**

At the time of a request for partial system clearance or for formal acceptance, the original plans shall be updated as record drawings and, along with two sets of prints, shall be submitted to District Engineering. The record drawings shall reflect the actual improvements made and give the accurate location of all new or relocated facilities. The record drawing certificate, as defined in Section 4.0, paragraph F, shall be signed and shall appear on the cover sheet of the recycled water plans.

Certification of the work and the responsibility for accurate record drawings must involve active participation by the developer’s engineer during the project. All changes, whether done through the formal change order process or as a field adjustment shall be reflected on the record drawings.

### **13.3 ACCEPTANCE AND EXHONERATION OF SURETY**

When all project requirements (field and administrative) have been met, staff will prepare a resolution recommending City Council/Board of Directors acceptance of the improvements and exoneration of the performance bonds, thereby initiating the warranty period.

Whereas, the normal warranty period is one year and the bond retention is 10% of the performance bond amount; both of these may be increased, if in the opinion of the District the normal period and amount are not sufficient.

### **13.4 STATUS DURING WARRANTY PERIOD**

The developer/contractor is responsible during the warranty period for the proper performance and maintenance of the improvements. Should District crews have to perform any work on the public portion of the recycled water system improvements, the costs may be invoiced to the developer/contractor.

### 14.1 SPECIFIC PROHIBITIONS

#### 14.1.1 Runoff Conditions

Conditions that directly or indirectly cause runoff of recycled water outside of the approved use area, whether by design, construction practice, or system operation, are prohibited.

#### 14.1.2 Ponding Conditions

Conditions that directly or indirectly cause ponding of recycled water within the approved use area are prohibited, unless expressly permitted. Temporary ponding caused by draining of the system is allowed with prior District approval.

#### 14.1.3 Direct Overspray Conditions

Any discharge of water directly onto areas other than that within the approved use area is prohibited.

#### 14.1.4 Windblown Overspray Conditions

Conditions that directly or indirectly permit windblown spray to pass outside of the approved use area, are prohibited.

#### 14.1.5 Unapproved Uses

Use of recycled water for any purpose other than those explicitly approved in the currently effective Use Permit issued by the District and without the prior knowledge and approval of the District is prohibited.

#### 14.1.6 Disposal in Unapproved Areas

Disposal of recycled water for any purpose, including approved uses, in areas other than those explicitly approved in the currently effective Use Permit issued by the District and without the prior knowledge and approval of the District, is strictly prohibited. Discharge of water from flushing or draining of the recycled system shall be done either at the approved use site and in a manner that does not create ponding or runoff conditions, or to a sanitary sewer manhole, with the approval of the agency responsible for operation of the sanitary sewer. In no case shall the discharge of recycled water to a sanitary sewer cause the sewer to overflow or otherwise create a public health hazard or nuisance.

#### 14.1.7 Cross-Connections

Cross-connection, as defined by the California Code of Regulations Title 17, resulting from the use of recycled water or from the physical presence of a recycled water service, whether by design, construction practice, or system operation, is strictly prohibited.

#### **14.1.8 Unprotected Drinking Fountains**

Any and all drinking fountains located within the approved use area designated by the Use Permit shall be protected by siting and/or structure from contact with recycled water, whether windblown overspray or by direct application through irrigation or other approved use. Lack of such protection, whether by design, construction practice, or system operation, is strictly prohibited.

#### **14.1.9 Unprotected Public Facilities**

Facilities that may be used by the general public, including but not limited to eating areas, eating surfaces, pools, spas, hardscape, and playground equipment, and located within the approved use area designated by the Use Permit, shall be protected by siting and/or a structure from contact with recycled water, whether by windblown overspray or by direct application through irrigation or other approved use. Lack of such protection is prohibited unless expressly permitted by the District, VCEHD, and the City.

#### **14.1.10 Hose Bibbs**

Permanent installation of hose bibbs on any system that operates or is designed to operate with recycled water, is subject to specific prior approval by the District on a case-by-case basis.

#### **14.1.11 Fire Hydrants**

Use or installation of fire hydrants on any system that operates or is designed to operate with recycled water, regardless of the fire hydrant construction or identification, is subject to specific prior approval by the District on a case-by-case basis.

#### **14.1.12 Hours of Operation**

Irrigation with recycled water is prohibited other than between the hours of 9:00 p.m. and 6:00 a.m., unless expressly permitted or otherwise directed by the District.

#### **14.1.13 Hose and Hose Appurtenances**

Under no circumstances shall hoses or hose appurtenances that have used recycled water be connected to a potable water system or be used in any way for potable water purposes.

# ***APPENDICES***

**APPENDIX 1**

**VENTURA COUNTY WATER WORKS DISTRICT NO. 8  
CHECKLIST/ACTION REQUEST FORM FOR OBTAINING RECYCLED WATER SERVICE**

Owner/User: \_\_\_\_\_ Use Site # \_\_\_\_\_ Account # \_\_\_\_\_  
Project Name: \_\_\_\_\_ Tract No. \_\_\_\_\_ Lot No. \_\_\_\_\_ Date: \_\_\_\_\_  
Location/Cross Streets \_\_\_\_\_ New Construction \_\_\_\_\_ Conversion \_\_\_\_\_  
Specific Action Requested: \_\_\_\_\_

Date Completed

- \_\_\_\_\_ 1. Applicant submits a preliminary package and plan to the District.
- \_\_\_\_\_ 2. District reviews for approval the preliminary package and plan.
- \_\_\_\_\_ 3. Preliminary approval granted, owner/user proceeds with project, plan, and Appendix 2, submittals.
- \_\_\_\_\_ 4. District reviews plans, Appendix 2.
- \_\_\_\_\_ 5. The applicant submits to the District:
  - Completed irrigation plans for construction or conversion
  - Work schedule for construction or conversion
  - Required fees
- \_\_\_\_\_ 6. District approves and signs plans, Appendix 2 – Application.
- \_\_\_\_\_ 7. District requests State Department of Health Services approval.
- \_\_\_\_\_ 8. State Department of Health Services, approval granted.
- \_\_\_\_\_ 9. Applicant/owner has operator (installation contractor/maintenance contractor) complete use permit (Appendix 2A) and certification form (Appendix 3). Submits form to District.
- \_\_\_\_\_ 10. Onsite pre-construction meeting date (applicant begins construction/retrofit of onsite facilities).
- \_\_\_\_\_ 11. Meter is installed. Potable water backflow prevention devices installed and tested (if applicable prior to recycled water service activation).
- \_\_\_\_\_ 12. Applicant submits redline construction set of record drawings to the District for review.
- \_\_\_\_\_ 13. Applicant has a final set of record drawings prepared and submits all required documents to the District.
- \_\_\_\_\_ 14. Applicant requests final inspection by the District.
- \_\_\_\_\_ 15. District performs final inspection, operational testing, and cross-connection testing.
- \_\_\_\_\_ 16. District grants final approval for recycled water service.
- \_\_\_\_\_ 17. District completes Appendix 2, 2A and 3.

**HOW TO USE THIS FORM:**

This form is to be used by the applicant, District, and DOHS to request specific action or items needed to complete the process for obtaining recycled water service. Complete each step in the sequence shown. This checklist keeps all entities informed of the application process and the steps remaining to provide recycled water service.

APPENDIX 2

VENTURA COUNTY WATER WORKS DISTRICT NO. 8  
APPLICATION FOR RECYCLED WATER SERVICE

(Please Type or Print)  
(\*Completed by District)

Location: \_\_\_\_\_ \*Node # \_\_\_\_\_ \*Use Site # \_\_\_\_\_  
Project/site name: \_\_\_\_\_ \*Account 1# \_\_\_\_\_  
Project/site address: \_\_\_\_\_ \*Account 2# \_\_\_\_\_  
\_\_\_\_\_ \*Account 3# \_\_\_\_\_  
\*Hydrologic subarea: \_\_\_\_\_ \*Meter 1# \_\_\_\_\_  
\_\_\_\_\_ \*Meter 2# \_\_\_\_\_  
\_\_\_\_\_ \*Meter 3# \_\_\_\_\_  
Owner/Customer: \_\_\_\_\_ Contact: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_ Title: \_\_\_\_\_  
\_\_\_\_\_ Phone: \_\_\_\_\_  
\_\_\_\_\_ FAX: \_\_\_\_\_  
\*Improvement District: \_\_\_\_\_ Tract No.: \_\_\_\_\_  
Legal land description: \_\_\_\_\_  
Nearest arterials: \_\_\_\_\_

1. Type of use: \_\_\_\_\_ Landscape irrigation \_\_\_\_\_ Agricultural use \_\_\_\_\_ Recreational use \_\_\_\_\_ Other  
(check each use) \_\_\_\_\_ Commercial use \_\_\_\_\_ Groundwater recharge \_\_\_\_\_ Impoundments  
\_\_\_\_\_ Construction use \_\_\_\_\_ Industrial use \_\_\_\_\_ Wildlife Habitat

2. Brief description of use(s): \_\_\_\_\_

3. Total irrigated area in acres: \_\_\_\_\_ Type of plant material: \_\_\_\_\_

4. Estimated application rate: \_\_\_\_\_ Total quantity: \_\_\_\_\_ acre-feet/year  
Max. At POC: \_\_\_\_\_ gpm (total)  
Min. pressure: \_\_\_\_\_ psi

5. # of Service Connections: \_\_\_\_\_ # of meters requested: \_\_\_\_\_ Size of meters (in.): \_\_\_\_\_

6. This will be a: new system \_\_\_\_\_ converted system \_\_\_\_\_ retrofitted system \_\_\_\_\_

7. If a new system, how are pipes to be identified: Color-coded & stenciled \_\_\_\_\_ Tape I.D. wrap \_\_\_\_\_ Other \_\_\_\_\_

9. \* Are there special construction requirements? yes \_\_\_\_\_ no \_\_\_\_\_. If yes, explain: \_\_\_\_\_

9. Date desired to initiate construction/conversion or retrofit: \_\_\_\_\_

10. Date desired to initiate service: \_\_\_\_\_

11. Duration of service (permanent, temporary, interim, construction use): \_\_\_\_\_

12. \* Additional information: (Include special conditions affecting Service) \_\_\_\_\_

Please include the following items:

- Drawing of the project area on one, 8 1/2 x 11 sheet of paper. Include/show:
  - Location and size of service connections
  - Location of all wells
  - Potable and recycled water main line locations
  - Location of all streams and water bodies
  - Specific recycled water use areas
  - Location of all septic tank systems
  - Specific potable water use areas
- Location map

I, the applicant have read and understand the District Rules and Regulations for Recycled Water Use and agree to restrict recycled water use for the purpose described in this application. I agree to use recycled water in accordance with these Regulations and all other applicable documents. I understand that recycled water may not be compatible with certain types of vegetation because of its composition. I agree that the District will not be liable for damages that may occur to vegetation or for damages which may occur due to use of recycled water. I hereby acknowledge and consent to District supply at its option of potable water in lieu of recycled water for the purpose herein mentioned in accordance with the Regulations of the District and as may be required by Chapter 894 of the Statutes of 1978, the Water Code of the State of California, and Section 2 of Article X of the California Constitution.

Applicant's Name: \_\_\_\_\_ Title: \_\_\_\_\_  
Applicant's Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Owner's Name: \_\_\_\_\_  
Owner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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**\*DISTRICT USE ONLY\***

Comments: \_\_\_\_\_

\*Service Connection(s) size approved? yes \_\_\_ no \_\_\_

\*Service location approved? yes \_\_\_ no \_\_\_

\*Use(s) approved? yes \_\_\_ no \_\_\_ Comments: \_\_\_\_\_

\*Can District provide requested recycled water service with existing facilities? yes \_\_\_ no \_\_\_

If not, what are the constraints? \_\_\_\_\_

\*Is a recycled water point of connection/service required? yes \_\_\_ no \_\_\_, existing P.O.C.

Comments: \_\_\_\_\_

\*Will this system be initially connected to the potable water system? yes \_\_\_ no \_\_\_

\*Is backflow protection required? yes \_\_\_ no \_\_\_ Describe level and method required: \_\_\_\_\_

\*Billing Rate: \_\_\_\_\_

Reviewed By: \_\_\_\_\_ Date: \_\_\_\_\_

Title: \_\_\_\_\_

**APPENDIX 2A**

**VENTURA COUNTY WATER WORKS DISTRICT NO. 8  
RECYCLED WATER USE PERMIT  
(Please Type or Print)**

(\*Completed by District)

\*Use Site No. \_\_\_\_\_ \*Node # \_\_\_\_\_ \*Account 1# \_\_\_\_\_  
Project/site name: \_\_\_\_\_ \*Account 2# \_\_\_\_\_  
Project/site address: \_\_\_\_\_ \*Account 3# \_\_\_\_\_  
\_\_\_\_\_ \*Meter 1# \_\_\_\_\_  
\*Hydrologic subarea: \_\_\_\_\_ \*Meter 2# \_\_\_\_\_  
\_\_\_\_\_ \*Meter 3# \_\_\_\_\_

\*Improvement District: \_\_\_\_\_  
Legal land description: Deed Ref. \_\_\_\_\_ Tract No. \_\_\_\_\_ Lot No. \_\_\_\_\_

Nearest arterials: \_\_\_\_\_  
Owner/Customer: \_\_\_\_\_ Contact: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_ Title: \_\_\_\_\_  
\_\_\_\_\_ Phone: \_\_\_\_\_  
\_\_\_\_\_ FAX: \_\_\_\_\_

Property Management Company/Responsible Party: \_\_\_\_\_ Contact: \_\_\_\_\_  
Mailing address: \_\_\_\_\_ Title: \_\_\_\_\_  
\_\_\_\_\_ Phone: \_\_\_\_\_  
\_\_\_\_\_ FAX: \_\_\_\_\_

Maintenance Contractor: \_\_\_\_\_ Contact: \_\_\_\_\_  
Mailing address: \_\_\_\_\_ Title: \_\_\_\_\_  
\_\_\_\_\_ Phone: \_\_\_\_\_  
\_\_\_\_\_ FAX: \_\_\_\_\_

Onsite Supervisor: \_\_\_\_\_ Title: \_\_\_\_\_  
Mailing address: \_\_\_\_\_ Phone: \_\_\_\_\_  
\_\_\_\_\_ FAX: \_\_\_\_\_  
\_\_\_\_\_ Pager: \_\_\_\_\_

Emergency # \_\_\_\_\_

1. Type of use: \_\_\_\_\_ Landscape irrigation \_\_\_\_\_ Agricultural use \_\_\_\_\_ Recreational use \_\_\_\_\_ Other  
(check each use) \_\_\_\_\_ Commercial use \_\_\_\_\_ Groundwater recharge \_\_\_\_\_ Impoundments  
\_\_\_\_\_ Construction use \_\_\_\_\_ Industrial use \_\_\_\_\_ Wildlife Habitat

2. Brief description of use(s): \_\_\_\_\_  
\_\_\_\_\_

3. Total irrigated area in acres: \_\_\_\_\_ Type of plant material: \_\_\_\_\_

4. # of Service Connections: \_\_\_\_\_ # of meters: \_\_\_\_\_ Size of meters (in.): \_\_\_\_\_

5. This is a: new system \_\_\_\_\_ converted system \_\_\_\_\_ retrofitted system \_\_\_\_\_

6. Duration of service (permanent, temporary, interim, construction use): \_\_\_\_\_

7. Service Start up made on \_\_\_\_\_

8. Potable water uses on-site: Buildings \_\_\_\_\_ Restrooms \_\_\_\_\_ Drinking Fountains \_\_\_\_\_

Hose Bibbs \_\_\_\_\_ Fire Protection \_\_\_\_\_ Irrigation \_\_\_\_\_ Quick Coupling Valves \_\_\_\_\_

9. State approved backflow prevention assemblies: Required yes \_\_\_\_\_ no \_\_\_\_\_

Additional information: (Include special conditions affecting service) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I, the owner/customer have read and understand the District Rules and Regulations for Recycled Water Use and agree to restrict recycled water use for the purpose described in this permit. I agree to use recycled water in accordance with these Regulations and all other applicable documents. I understand that recycled water may not be compatible with certain types of vegetation because of its composition. I agree that the District will not be liable for damages that may occur to vegetation or for damages which may occur due to use of recycled water. I hereby acknowledge and consent to District supply at its option of potable water in lieu of recycled water for the purpose herein mentioned in accordance with the Regulations of the District and as may be required by Chapter 894 of the Statutes of 1978, the Water Code of the State of California, and Section 2 of Article X of the California Constitution.

Owner/Customer Name (Please Type or Print): \_\_\_\_\_

Owner/Customer Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Title: \_\_\_\_\_

Onsite Supervisor \_\_\_\_\_ Title \_\_\_\_\_

Business Address \_\_\_\_\_

Business Telephone \_\_\_\_\_ Off-hours Telephone \_\_\_\_\_

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**\*DISTRICT USE ONLY\***

The recycled water system proposed herein is in accordance with all applicable requirements of the District Rules and Regulations for Recycled Water Use, and this use permit is hereby approved (subject to the issuance of an encroachment permit and/or building permit for installation of the system, and subject to final inspection and approval of the installation).

Signature \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Title \_\_\_\_\_

**APPENDIX 3**

VENTURA COUNTY WATER WORKS DISTRICT NO. 8  
CERTIFICATION FORM FOR RECYCLED WATER SERVICE  
(Please Type or Print)

	#1		#2		#3
USE SITE#	_____	USE SITE#	_____	USE SITE#	_____
ACCOUNT#	_____	ACCOUNT#	_____	ACCOUNT#	_____
METER#	_____	METER#	_____	METER#	_____
Type of use:	_____ Landscape Irrigation	_____ Agricultural use	_____ Recreational use	_____ Other	
(check each use)	_____ Commercial use	_____ Groundwater recharge	_____ Impoundments		
	_____ Construction use	_____ Industrial use	_____ Wildlife habitat		

Operation Certification

Operator of Onsite Recycled Water System (*Company Name*) \_\_\_\_\_  
Relationship to Property Owner \_\_\_\_\_  
Onsite Supervisor \_\_\_\_\_ Relationship to Operator \_\_\_\_\_  
Business Address \_\_\_\_\_  
Business Telephone \_\_\_\_\_ Fax: \_\_\_\_\_ Off-hours Telephone \_\_\_\_\_ Pager \_\_\_\_\_

I have reviewed the District Rules and Regulations for Recycled Water Use and certify that the operation of this recycled water system will be in accordance with all applicable requirements contained therein, including training and supervision of all personnel who will be involved with the use of recycled water.

Onsite Supervisor's Signature \_\_\_\_\_ Date \_\_\_\_\_

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**\*DISTRICT USE ONLY\***

Design and Construction Certification

Final inspection made on \_\_\_\_\_ Service start up made on \_\_\_\_\_

I certify that the design and construction of the recycled water system is in accordance with all applicable requirements of the District Rules and Regulations for Recycled Water Use.

Signature \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Title \_\_\_\_\_

**APPENDIX 4**

VENTURA COUNTY WATER WORKS DISTRICT NO. 8  
 RECYCLED WATER  
 ONSITE TESTING AND MAINTENANCE REPORT

Owner:		Phone #:	
Address:		Fax #:	
Date of Test:		Time of Test	From: To/A:
Association:		Phone #:	
Address:		Fax #:	
Account #:	Meter #:	Identification Letter:	
Maintenance Contractor:		Phone #:	
Onsite Supervisor:		Fax #:	
Address:			
Site Location:			
Two Major Cross Streets:			
1. Controller Operational:		12. Moisture Sensors Operational:	
2. Hours of Operation:		13. RW Identification Tags Attached:	
3. Strainer Operational:		14. All Valve Box Lids Branded:	
4. Master Valve Operational:		15. All Valve Box Lids Bolted Down:	
5. Flow Sensor Operational:		16. RW Identification Sign On Site:	
6. Booster Pump Operational:		17. Backflow Operational:	
7. Pressure Regulator Operational:		18. Drinking Fountains Protected:	
8. PSI Static/Dynamic:		19. Potable Identification Tags Attached:	
9. Fertilizer Injector Operational:		20. Any Cross Connections:	
10. Quick Couplers Operational:		21. Approximate Temperature:	
11. QC Identification Tags Attached:		22. Approximate Wind Speed:	
Repairs or Adjustments Performed:			
Print Name of Person Performing Test:			
Signature of Person Performing Test:			



**APPENDIX 5**

**VENTURA COUNTY WATER WORKS DISTRICT NO. 8  
FINAL RELEASE CHECKLIST**

Account #: \_\_\_\_\_ Meter #: \_\_\_\_\_ Node #: \_\_\_\_\_

Use Site #: \_\_\_\_\_ Tract #: \_\_\_\_\_ Lot: \_\_\_\_\_

Location: \_\_\_\_\_

Owner: \_\_\_\_\_

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

Contractor: \_\_\_\_\_

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

Engineer: \_\_\_\_\_

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

Application Form Date Received: \_\_\_\_\_

Certification Form Date Received: \_\_\_\_\_

Final Coverage Test Completion Date: \_\_\_\_\_

Cross Connection Testing, Performed and Passed, Date: \_\_\_\_\_

Site Inspection Completion Date: \_\_\_\_\_

Certification/Calibration Reports Received Date: \_\_\_\_\_

Meter Releases Issued to Customer Service, Date: \_\_\_\_\_

Backflow Test Reports Issued to Customer Service, Date: \_\_\_\_\_

Record Drawings, Date Reviewed and Accepted \_\_\_\_\_

(3) 11" x 16" Cibachrome Control Charts, Date Received: \_\_\_\_\_

Final Release Letter, Date Issued: \_\_\_\_\_

Service Start-Up, Date: \_\_\_\_\_

## APPENDIX 6

### VENTURA COUNTY WATER WORKS DISTRICT NO. 8 PROCEDURES FOR CONVERSION OF EXISTING ONSITE POTABLE WATER IRRIGATION SYSTEMS TO RECYCLED WATER

The following are conversion procedure requirements that must be adhered to by the owner of record. The District will provide coordination and inspection assistance in the conversion of irrigation systems.

1. Submit to the District a completed application for recycled water service (Appendix 2).
2. Submit to the District one set of irrigation plans, or a record drawing of the site, irrigation system, and all potable water systems onsite.
3. Obtain a preliminary site inspection by the District to establish site identification requirements and other issues regarding the conversion of the use site to recycled water.
4. Provide preliminary coverage tests to assure compliance with District regulations regarding direct spray, windblown spray, overspray, ponding, and runoff.
5. Provide preliminary cross-connection tests to assure that no cross connections exist between the irrigation systems and any potable water sources. (See Appendix 7, Cross Connection Testing Procedures.)
6. Remove existing quick-coupler valves per District regulations or change to brass ACME thread recycled water style quick-coupler valves. The locking cover shall be purple rubber or vinyl with the following information stamped or molded into the cover:
  - a. "Recycled Water"
  - b. "Do Not Drink"
  - c. The international "Do Not Drink" symbol.
7. Remove all existing hose bibbs whose water source is supplied by the irrigation system to be converted to recycled water. (Hose bibbs are prohibited on recycled water systems).
8. Mark all plastic valve box lids per District regulations to identify them as recycled water and type of appurtenance enclosed. Other valve boxes or enclosures shall be identified as directed by the District. Bolt down all valve box covers with stainless steel bolts.
9. Attach purple recycled water identification tags to all exposed recycled water facilities.
10. Identify all above ground pressure and non-pressure recycled water piping as recycled water by attaching purple recycled water identification labels to the piping at five-foot intervals along a fifteen-foot perimeter of the use site and where recycled water and potable water used for irrigation systems adjoin each other onsite.
11. Identify all Rainbird 1800 sprinkler heads with Rainbird 1800 purple recycled water snap caps. Identify Toro heads in kind along a fifteen-foot perimeter of the use site and where recycled and potable water used for irrigation systems adjoin each other onsite. Other heads shall be identified as determined by District.

12. Identify all sprinkler, bubbler, or drip system risers with purple recycled water identification labels along a fifteen-foot perimeter of the use site and where recycled and potable water used for irrigation systems adjoin each other onsite.
13. Install check valves below any sprinkler head or bubbler head where run-off occurs after the control valve has been shut down. Note: The owner has the option to replace affected sprinkler heads with recycled water style heads which have built in check valves and purple recycled water identification caps.
14. Verify that all onsite pressurized recycled water mainlines maintain minimum horizontal and vertical separations from all pressurized potable water piping, and sanitary sewer systems and storm drains, as specified in Section 2.11, Separations.

Suspect piping shall be exposed for verification of separation requirements. All exposed piping shall have appropriate identification tapes attached to them.

15. Verify that all potable water service points of connection have appropriate backflow prevention assemblies as determined by the District. All backflow assemblies must be tested before recycled water is used on site. (Submit the completed test reports to the recycled water inspector.)
16. Identify all above ground potable water used for irrigation piping and appurtenances by attaching lime-green identification labels stating "Potable Water Used for Irrigation" at five-foot intervals, and at each appurtenance, along a fifteen-foot perimeter where recycled water and potable water used for irrigation systems adjoin each other.
17. Protect drinking fountains from recycled water by placing drinking fountains away from recycled water areas or protecting the drinking fountains from contact with recycled water to the satisfaction of the District and State and County Environmental Health.
18. Attach brass hose bibb vacuum breaker devices to all onsite exterior water hose bibbs that are permitted to remain. Potable water identification tags shall also be attached to the hose bibbs per District regulations.
19. Disconnect the irrigation system from the potable water meter and remove the backflow prevention assembly from the irrigation system prior to connecting the system to recycled water. (This work must be coordinated with the District's recycled water inspector). Connection between potable water systems, or potable water used for irrigation systems, and recycled water systems are prohibited.
20. Existing potable water used for irrigation meters will be moved and tied into the new recycled water points of connection (POC) by the District. The owner of record is responsible for purchasing and installing new recycled water meters and meter boxes or meter vaults at use sites where the existing potable water meters, meter boxes, or meter vaults will need to remain in place for onsite use.
21. Make the connection to the recycled water main per District standards, purchase recycled water meter, and install all new onsite piping using Class 315, purple PVC recycled water piping. For piping with diameters of four inches or greater, or above ground installations, use piping as approved by Ventura County Waterworks District on a case-by-case basis.

22. Install a resilient-seat ball valve and a line size 80 mesh wye strainer or basket strainer immediately after the recycled water meter.
23. Attach recycled water identification labels to the controller door face and the controller enclosure face. The irrigation controller shall operate the recycled water system only. (A single controller cannot operate a potable water irrigation system and a recycled water irrigation system; systems must remain separate.)
24. Place a minimum of 2 recycled water identification signs (1/16" aluminum, 11" x 17") on site in locations designated by the District. Additional signage may be necessary due to site considerations.
25. Submit to the District record drawings and record drawing information for all irrigation systems receiving recycled water.
26. Prior to activating service, obtain final inspection and review of final coverage tests from the District to assure compliance with District regulations. The final inspection shall include cross connection tests to assure that no cross connections exist between the recycled water irrigation system and any potable water sources.
27. Operate and maintain the irrigation system in the same condition as it was when the District issued its final release. Comply with District Rules and Regulations regarding the use of recycled water.
28. Onsite recycled water systems, potable water systems, and potable water used for irrigation systems at each use site under the user's control shall be under the management of the onsite supervisor designated by the user or the operator and approved by the District. Onsite supervisors shall be responsible for the installation, operation, and maintenance of the onsite systems, enforcement of District Rules and Regulations, prevention of cross connections and potential hazards, and maintenance of the recycled water system and other onsite system facilities as depicted in the record drawings. In the event of contamination of the potable water supply, or any violation of the District's Rules and Regulations for Recycled Water Use, the onsite supervisor shall be responsible for immediate notification to the District. The onsite supervisor shall check all onsite irrigation system appurtenances to ensure proper operation and perform a coverage test of the systems at least monthly. A copy of the report showing the results of the checks shall be available to the District. For use sites with potable water onsite, test reports shall be sent to the District on a monthly basis. The onsite supervisor or his representative shall be available during normal working hours at an address listed with the District for the purpose of hosting an inspection or for discussing operational considerations. The onsite supervisor or his representative shall be available via telephone at a number listed with the District for emergency after-hours contact. Where necessary, keys and/or lock combinations shall be provided to the District for access to the site.
29. Notify the District when any revision, upgrade, alteration, or repair is anticipated or performed to the irrigation system, onsite potable water system, or their related components. The District must approve all plans concerning changes to onsite recycled water systems.
30. Hours of operation for recycled water irrigation systems are 9:00 p.m. to 6:00 a.m., seven days a week.
31. The District is required to monitor all recycled water use sites for compliance with District regulations. If a violation is observed or suspected, a recycled water monitoring notice will be

issued to the owner of record and/or the onsite supervisor. In such event, the District must be notified of the steps taken to correct the violation within 48 hours of receipt of the notice. Noncompliance may result in termination of service and a re-connection fee in order to reestablish service. Onsite conditions that endanger the public's health require immediate termination of service until corrections have been made to the satisfaction of the District and appropriate regulatory agencies.

32. A user homeowners or property owners association should notify its members to advise them of the fact that recycled water is being used for irrigation in the area and to ask the members for their assistance in notifying the association of any mainline breaks, broken heads, ponding, runoff, or spray (direct or windblown) onto areas not intended to receive recycled water.

## APPENDIX 7

### VENTURA COUNTY WATER WORKS DISTRICT NO. 8 CROSS-CONNECTION TESTING PROCEDURES

## 1.0 Cross-connection Testing Procedures

Prior to start of recycled water service, cross-connection testing is required. Case I applies to cases where recycled water is the only supply to site. Case II applies to recycled water and potable water service to site. The following are the steps required to perform the cross-connection test:

### 1.1 Case I – No Other Water Sources On Site

- Verify Record:
  - Owner - Name and Address
  - Site - Address
  - Meter - Number, sizes, meter reads, locations
  - Backflow - Serial numbers, sizes, types, locationsList of all personnel in attendance of test
- Verify full water pressure at all remote control valves, manual valves, quick-coupling valves, and other system valves.
- Deactivate System – Turn off and lock service, turn off irrigation automatic controller, open master valve manually (if any).
- Drain System – Reduce pressure to an acceptable level (approved by regulatory agency).
- Verify the water pressure does not exceed acceptable level at remote control valves, manual valves, quick-coupling valves, and other system valves. Check low points for water pressure once again.
- Start 24-hour cross-connection test. Record date and time. Notify personnel concerned system is to remain off for testing.
- Return to site a minimum of 24 hours after start of cross-connection test. Record date and time.
- Verify the following conditions:
  - a. Service is off and locked
  - b. Master valve is open
  - c. There is low (“acceptable level”) water pressure at remote control valves, manual valves, quick-coupling valves, and other system valves.
- Complete report stating whether irrigation system passed or failed the cross-connection test.

If system passed – District unlocks and turns on angle stop, the user pressurizes the irrigation system, turns on controller, and places master valve back in the normal operating position.

If system fails – Service shall remain off and locked. Notify the District of cross-connection. Locate source of cross-connection. Correct cross-connection. Retest all systems. Complete cross-connection report form. Other requirements may be necessary on a case-by-case basis.

- File cross-connection test form with the District.

## **1.2 Case II – Recycled Water/Potable Water Systems**

- Verify Record:
  - Owner - Name and Address
  - Site - Address
  - Meter - Number, sizes, meter reads, locations
  - Backflow - Serial numbers, sizes, types, locations
  - List of all personnel in attendance of test
- Test all systems in the following order:
  1. Recycled water systems used for irrigation
  2. Other recycled water systems
  3. Potable water systems used for irrigation
  4. Potable water fire protection systems
  5. Potable (domestic) water systems

### *1.2.1 Recycled Water Used for Irrigation Cross-Connection Test*

- A. Verify full water pressure for all recycled water irrigation remote control valves, manual valves, quick-coupling valves, and other system valves. Manually open master valve, if any.
- B. Verify full water pressure at all recycled water system outlets.
- C. Verify full water pressure at all potable water irrigation remote control valves, manual valves, quick-coupling valves, hose bibbs, and other system valves. Manually open master valve, if any.
- D. Verify full water pressure at potable water fire protection systems, as necessary.
- E. Verify full water pressure at all potable water system outlets: buildings, restrooms, drinking fountains, sinks, hose bibbs, and other facilities.
- F. Deactivate recycled water irrigation system.
  - 1) Turn off and lock service
  - 2) Verify master valve is manually open, if any
- G. Drain recycled water irrigation system. Verify that water pressure does not exceed acceptable level at low points of system.
- H. Verify that water pressure does not exceed acceptable level at all recycled water irrigation remote control valves, manual valves, quick-coupling valves, and other system valves. Check low points for water pressure once again.

- I. Verify full water pressure on the following systems:
  - 1) Recycled water systems not a part of irrigation system
  - 2) Potable water systems used for irrigation
  - 3) Potable water fire protection systems, as necessary
  - 4) Potable water outlets
- J. Start recycled water irrigation system cross-connection test. Record date and time.
- K. Return to site within the time established by the regulatory agency after start of cross-connection test. Record date and time.
- L. Verify recycled water irrigation system:
  - 1) Angle stop is off and locked
  - 2) Master valve is manually open
  - 3) There is low (“acceptable level”) water pressure at all, remote control valves, manual valves, quick-coupling valves, and other system valves.
- M. Verify full water pressure at:
  - 1) Recycled water systems not a part of irrigation system
  - 2) Potable water systems used for irrigation
  - 3) Potable water fire protection systems, as necessary
  - 4) Potable water outlets
- N. Complete section of report stating whether the recycled water irrigation system has passed or failed the cross-connection test.

If system passed – District unlocks and turns on service. User pressurizes the recycled water irrigation system turns on controller, and places recycled water master valve back in normal operating position, returns the potable water irrigation master valve back to normal operating position.

If system fails – Angle stop shall remain off and locked. Turn off and lock the potable water angle stops. Discontinue use of all systems until further notice. Notify the District of cross-connection, locate source of cross-connection, correct cross-connection, retest all systems, complete cross-connection report form. Other requirements may be necessary on a case-by-case basis.

*1.2.2 Recycled Water System (Not Used for Irrigation) Cross-Connection Test*

- A. Verify full water pressure at all recycled water system outlets.
- B. Verify full water pressure at all recycled water remote control valves, manual valves, quick-coupling valves, and other system valves. Manually open master valve, if any.
- C. Verify full water pressure at all potable water irrigation facilities – remote control valves, manual valves, quick-coupling valves, hose bibbs, and other system valves. Manually open master valve, if any.

- D. Verify full water pressure at all potable water fire protection systems, as necessary.
- E. Verify full water pressure at all potable water system outlets: buildings, restrooms, drinking fountains, sinks, hose bibbs, and other facilities.
- F. Deactivate recycled water system (not used for irrigation).
  - a. Turn off and lock service
  - b. Verify master valve is manually open, if any
- G. Drain recycled water system (not used for irrigation) to a water pressure of an acceptable low level (approved by regulatory agency).
- H. Verify the water pressure does not exceed “acceptable level” at all recycled water system outlets.
- I. Verify full water pressure on the following systems:
  - a. Recycled water irrigation systems
  - b. Potable water systems used for irrigation
  - c. Potable water systems used for fire protection
  - d. Potable water outlets
- J. Start recycled water system (not used for irrigation) cross-connection test. Record date and time.
- K. Return to site within the time established by the regulatory agency after start of cross-connection test. Record date and time.
- L. Verify recycled water system (not used for irrigation) water pressure does not exceed “acceptable level” at all recycled water system outlets.
- M. Verify full water pressure at:
  - a. Recycled water irrigation systems
  - b. Potable water systems used for irrigation
  - c. Potable water systems used for fire protection
  - d. Potable water outlets
- N. Complete section of report stating whether the recycled water system (not used for irrigation) has passed or failed the cross-connection test.

If system passed – District unlocks and turns on service. User pressurizes the recycled water system (not used for irrigation), and returns both recycled water irrigation system and potable water irrigation master valves back to normal operating position.

If system fails – Angle stop shall remain off and locked. Turn off and lock all recycled water and potable water services. Discontinue use of all systems until further notice. Notify the District of cross-connection. Locate source of cross-connection, correct cross-connection, retest all systems, complete cross-connection report forms. Other requirements may be necessary on a case-by-case basis.

1.2.3 Potable Water Used for Irrigation Cross-Connection Test

- A. Verify full water pressure at all potable water irrigation remote control valves, manual valves, quick-coupling valves, and other system valves. Manually open master valve, if any.
- B. Verify full water pressure at all recycled water irrigation remote control valves, manual valves, quick-coupling valves, and other system valves. Manually open master valve, if any.
- C. Verify full water pressure at all recycled water system outlets.
- D. Verify full water pressure at all potable water systems used for fire protection, as necessary.
- E. Verify full water pressure at all potable water system outlets: building, restrooms, drinking fountains, sinks, hose bibbs, and other facilities.
- F. Deactivate potable water irrigation system.
  - a. Turn off backflow at isolation valves
  - b. Verify master valve is manually open, if any
- G. Drain potable water irrigation system. Verify the water pressure is at an acceptable low level (approved by regulatory agency) at low point of system.
- H. Verify the water pressure does not exceed “acceptable level” at all potable water irrigation remote control valves, manual valves, quick-coupling valves, and other system valves. Check low points for water pressure once again.
- I. Verify full water pressure on the following systems:
  - a. Recycled water irrigation systems
  - b. Other recycled water systems
  - c. Potable water systems used for fire protection
  - d. Potable water outlets
- J. Start potable water irrigation system cross-connection test. Record date and time.
- K. Return to site within the time established by the regulatory agency after start of cross-connection test. Record date and time.
- L. Verify potable water irrigation system:
  - a. Backflow isolation valves are off
  - b. Master valve is manually open, if any
  - c. The water pressure does not exceed “acceptable level” at remote control valves, manual valves, quick-coupling valves, or other system valves.

- M. Verify full water pressure at:
  - a. Recycled water irrigation systems
  - b. Other recycled water systems
  - c. Potable water systems used for fire protection
  - d. Potable water outlets

- N. Complete section of report stating whether the potable water irrigation has passed or failed the cross-connection test.

If system passed – The user opens the backflow isolation valves, pressurizes the potable water irrigation system and places the master valve back in the normal operating position, returns the recycled water irrigation master valve back to normal operating position.

If system fails – Angle stop shall remain off and locked. Turn off and lock all potable water and recycled water angle stops. Discontinue use of all systems until further notice. Notify the District of cross-connection, locate source of cross-connection, correct cross-connection, retest all systems, complete cross-connection report forms. Other requirements may be necessary on a case-by-case basis.

*1.2.4 Potable Water Fire Protection Systems Cross-Connection Test, as Necessary*

- A. Notify fire department system is off-line
- B. Verify full water pressure at all potable water fire protection system outlets, as necessary.
- C. Verify full water pressure at all recycled water irrigation remote control valves, manual valves, quick-coupling valves, and other system valves. Manually open master valve, if any.
- D. Verify full water pressure at all recycled water system outlets.
- E. Verify full water pressure at all potable water irrigation remote control valves, manual valves, quick-coupling valves, hose bibbs, and other system valves. Manually open master valve, if any.
- F. Verify full water pressure at all potable water system outlets: building, restrooms, drinking fountains, sinks, hose bibbs, and other facilities.
- G. Deactivate potable water fire protection system. Turn off backflow at isolation valves.
- H. Drain potable water fire protection system. Confirm the water pressure does not exceed “acceptable level” (approved by regulatory agency) at low point of system.
- I. Verify the water pressure does not exceed “acceptable level” at all potable water fire protection system outlets.
- J. Verify full water pressure on the following systems:
  - a. Recycled water irrigation systems
  - b. Other recycled water systems

- c. Potable water irrigation systems
  - d. Potable water outlets
- K. Start potable water fire protection system cross-connection test. Record date and time.
- L. Return to site within the time established by the regulatory agency after start of cross-connection test. Record date and time.
- M. Verify potable water fire protection system water pressure does not exceed “acceptable level” at all outlets, as necessary.
- N. Verify full water pressure at:
- a. Recycled water irrigation systems
  - b. Other recycled water systems
  - c. Potable water irrigation systems
  - d. Potable water outlets
- O. Complete section of report stating whether the potable water fire protection has passed or failed the cross-connection test.

If system passed – The user opens the backflow isolation valves, pressurizes system, notifies fire department that the system is back on-line. Returns both recycled water irrigation and potable water irrigation master valves back to normal operating position.

If system fails – Service remains off and isolated. Turn off and lock all recycled water and potable water services. Discontinue use of all systems until further notice. Notify the District of cross-connection, locate source of cross-connection, correct cross-connection, retest all systems, complete cross-connection report forms. Other requirements may be necessary on a case-by-case basis.

*1.2.5 Potable Water Cross-Connection Test*

- A. Verify full water pressure at all potable water outlets: buildings, restrooms, drinking fountains, sinks, hose bibbs, and other facilities.
- B. Verify full water pressure at all recycled water irrigation remote control valves, manual valves, quick-coupling valves, and other system valves. Manually open master valve, if any.
- C. Verify full water pressure at all recycled water system outlets.
- D. Verify full water pressure at all potable water irrigation remote control valves, manual valves, quick-coupling valves, and other system valves. Manually open master valve, if any.
- E. Verify full water pressure at all potable water fire protection system outlets, as necessary.
- F. Deactivate potable water fire protection system. (See 1.2.4)

- G. Drain potable water system. Verify the water pressure is at an acceptable low level (approved by regulatory agency) at low point of system.
- H. Verify the water pressure does not exceed “acceptable level” at all potable water outlets.
- I. Verify full water pressure on the following systems:
  - a. Recycled water irrigation systems
  - b. Other recycled water systems
  - c. Potable water irrigation systems
  - d. Potable water fire protection systems, as necessary
- J. Start potable water cross-connection test. Record date and time.
- K. Return to site within the time established by the regulatory agency after start of cross-connection test. Record date and time.
- L. Verify potable water system water pressure does not exceed “acceptable level” at any outlets.
- M. Verify full water pressure at:
  - a. Recycled water irrigation systems
  - b. Other recycled water systems
  - c. Potable water irrigation systems
  - d. Potable water fire protection systems, as necessary
- N. Complete section of report stating whether the potable water system has passed or failed the cross-connection test.

If system passed – The user opens the backflow isolation valves, pressurizes system, returns both recycled water irrigation and potable water irrigation master valves back to normal operating position.

If system fails – Service remains off and isolated. Turn off and lock all recycled water and potable water services. Discontinue use of all systems until further notice. Notify the District of cross-connection, locate source of cross-connection, correct cross-connection, retest all systems, complete cross-connection report forms. Other requirements may be necessary on a case-by-case basis.

(NOTE: All testing shall be done in conjunction with District and/or County Environmental Health inspection.)

## APPENDIX 8

### VENTURA COUNTY WATER WORKS DISTRICT NO. 8 FINAL INSPECTION

#### **Final Inspection**

Before final acceptance, the District, accompanied by the contractor's superintendent or foreman, will make a final inspection of all work to check the following items:

1. That all phases of the work are completed and installed in accordance with plans and specifications.
2. Controller – installation, operation, and hours of operation
3. Moisture sensor/automatic rain shutoff – calibration and operation
4. System identification tags, signs and labels
5. Valve box – identification, cover bolted down with stainless steel bolts and washers
6. Booster pump operation
7. Fertilizer injector operation
8. Pressure regulator setting
9. Backflow prevention assemblies – installation and test report
10. Flow sensor – calibration and report
11. Wye or basket strainer
12. Quick coupling valve – locations and installation
13. Gate valve/ball valve – locations and installation
14. Remote control valve – installation if required, pressure setting
15. Wiring – expansion coils; identification color; installation at controller
16. Piping – required identification
17. Pipe anchors – secure, proper spacing
18. Sprinkler heads – required identification
19. Sprinkler risers – required identification
20. External check valves – as necessary to prevent drainage after valve is closed
21. Coverage tests
22. Cross-connection tests

# ***STANDARD PLATES***

PLATE RW1	STANDARD TITLE BLOCK
PLATE RW2	STANDARD SYMBOLS
PLATE RW3	TRENCH TERMINOLOGY AND STANDARD DIMENSIONS
PLATE RW4	RECYCLED WATER PIPE IDENTIFICATION
PLATE RW5	SEPARATION REQUIREMENTS FOR RECYCLED WATER LINES
PLATE RW6	PAVEMENT AND TRENCH DETAIL
PLATE RW7	ONSITE TRENCHING
PLATE RW8	NOT USED
PLATE RW9	PIPELINE ENCASEMENT
PLATE RW10	STEEL CASING PIPE
PLATE RW11	NOT USED
PLATE RW12	CONCRETE SADDLE
PLATE RW13	¾" & 1" WATER METER SERVICE INSTALLATION
PLATE RW14	2" TURBO WATER METER SERVICE INSTALLATION
PLATE RW15	3" METER AND LARGER INSTALLATION
PLATE RW16	3- AND 4-INCH RECYCLED WATER SERVICE
PLATE RW17	6-, 8-, AND 10-INCH RECYCLED WATER SERVICE
PLATE RW18	NOT USED
PLATE RW19	VALVE ASSEMBLY DETAILS
PLATE RW20	VALVE STEM EXTENSION
PLATE RW21	NOT USED
PLATE RW22	LOCATION OF METERS
PLATE RW23	NOT USED
PLATE RW24	NOT USED
PLATE RW25	NOT USED
PLATE RW26	1-INCH COMBINATION AIR RELEASE AND VACUUM VALVE INSTALLATION
PLATE RW27	2-INCH COMBINATION AIR RELEASE AND VACUUM VALVE INSTALLATION
PLATE RW28	NOT USED
PLATE RW29	2" BLOW-OFF ASSEMBLY
PLATE RW30	4" BLOW-OFF ASSEMBLY
PLATE RW31	REDUCED PRESSURE PRINCIPLE ASSEMBLY
PLATE RW32	NOT USED
PLATE RW33	IRRIGATION BALL VALVE
PLATE RW34	QUICK COUPLING VALVE
PLATE RW35	CONTROL VALVE
PLATE RW36	THRUST BLOCKS
PLATE RW37	ANCHOR BLOCKS
PLATE RW38	THRUST AND ANCHOR BLOCK SIZES
PLATE RW39	DISSIMILAR PIPE CONNECTIONS
PLATE RW40	WATER SAMPLE STATION
PLATE RW41	AIR GAP
PLATE RW42	APPURTENANCE LAYOUT
PLATE RW43	FLOW SENSOR
PLATE RW44	STRAINERS
PLATE RW45	FLOODSTOP LIMITER
PLATE RW46	IDENTIFICATION ON RISER
PLATE RW47	IDENTIFICATION TAGS AND LABELS
PLATE RW48	RECYCLED WATER CAUTION SIGN
PLATE RW49	GENERAL NOTES RECYCLED WATER







--- 8"RW ---	EXISTING RECYCLED WATER
<u>8" RW</u>	PROPOSED RECYCLED WATER
--- 8" W ---	EXISTING WATER
---  ---	VALVE (IN EXISTING LINE - TYPICAL)
	FIRE HYDRANT
	PRESSURE REGULATING VALVE
---  ---	REDUCER
--- G ---	GAS LINE
--- T ---	TELEPHONE LINE
---  WM ---	WATER METER
--- E ---	ELECTRIC LINE
---  A/V ---	AIR AND VACUUM VALVE
---  B.O. ---	BLOW-OFF
---  ---	END CAP
---  ---	PLUG
	THRUST BLOCK
--- S ---	SEWER

**City of Simi Valley**



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

**STANDARD SYMBOLS**

PLATE

**RW2**

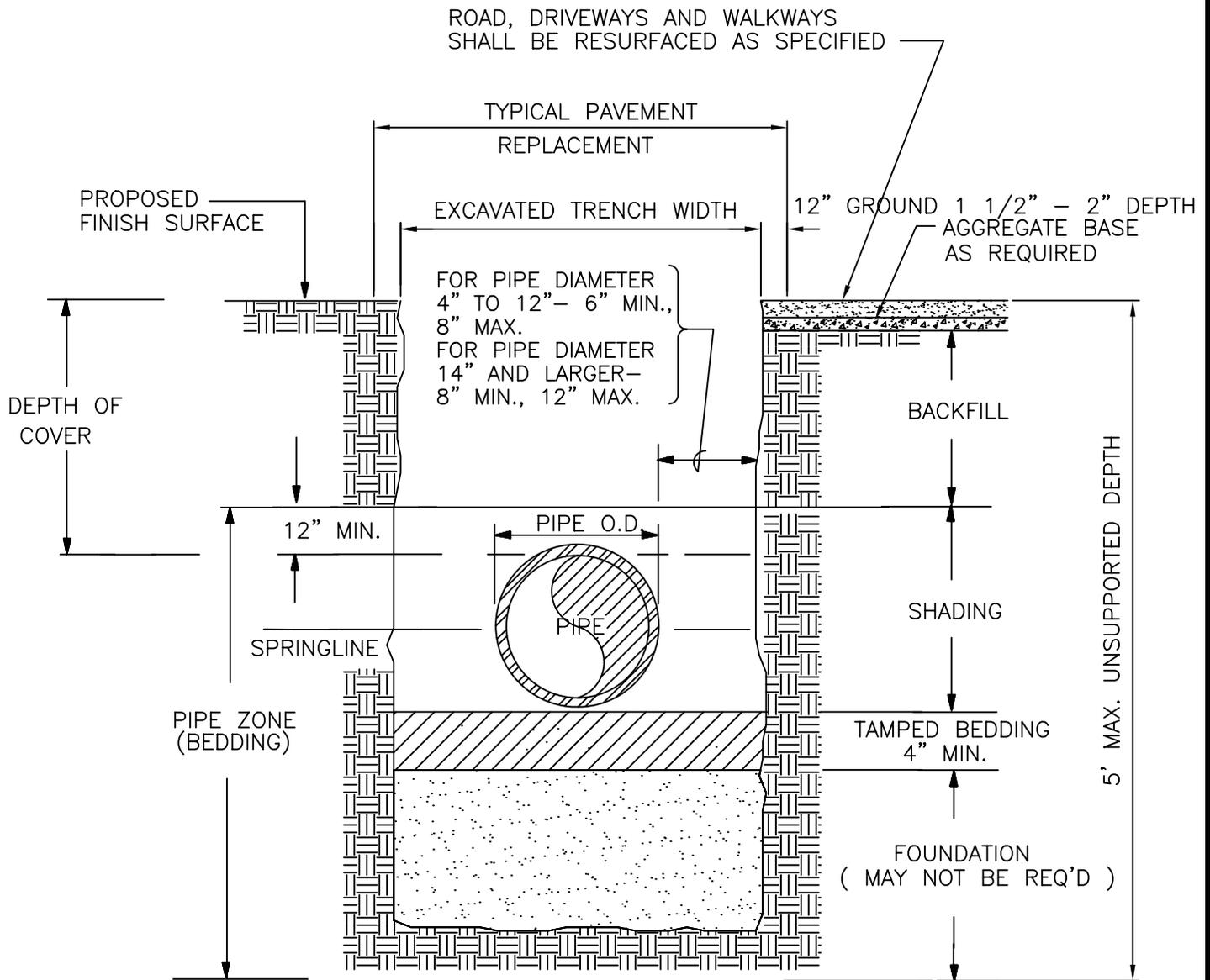
RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

FEB 2004



NOTES:

1. STANDARD DEPTH OF COVER IS 42 INCHES MINIMUM TO TOP OF PIPE.
2. EXCAVATED TRENCHES SHALL BE OF MINIMUM WIDTH FOR PROPER PIPE LAYING.

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

TRENCH TERMINOLOGY  
AND STANDARD DIMENSIONS

RECOMMENDED:

DISTRICT ENGINEER

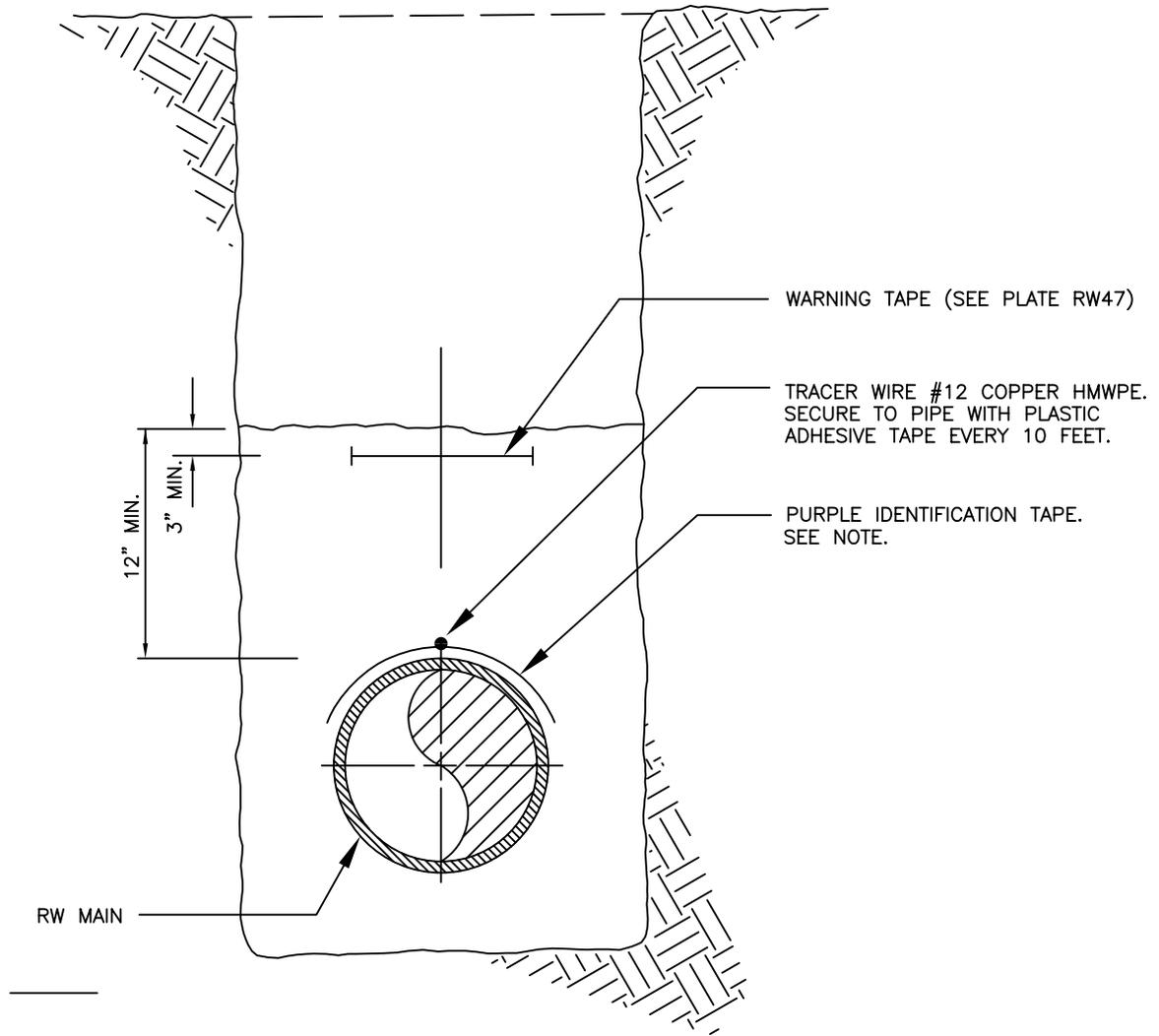
APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

RW3

FEB 2004



NOTE:

ALL PIPING, INCLUDING SERVICE LINES, SHALL BE PURPLE PVC OR SHALL BE INSTALLED WITH 6-INCH WIDE PURPLE IDENTIFICATION TAPE SECURED TO PIPE EVERY 5 FEET. FITTINGS SHALL BE INSTALLED WITH A PURPLE POLYETHYLENE VINYL WRAP. (SEE SECTION 3.16 C)

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

RECYCLED WATER  
PIPE IDENTIFICATION

RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

RW4

FEB 2004

# DEPARTMENT OF HEALTH SERVICES, STATE OF CALIFORNIA CRITERIA FOR THE SEPARATION OF RECYCLED WATER MAINS AND POTABLE WATER MAINS OR SANITARY SEWERS

CONSTRUCTION CRITERIA FOR RECYCLED WATER MAINS, POTABLE WATER MAINS OR SANITARY SEWERS, WHERE THE "BASIC SEPARATION STANDARDS" AS DISCUSSED IN DESIGN CRITERIA, SECTION 2.II, CANNOT BE ATTAINED, ARE SHOWN ON PLATE RW5.

TWO CASES ARE COVERED BY THIS PLATE:

CASE 1- NEW RECYCLED WATER MAIN INSTALLATION WITH EXISTING POTABLE WATER MAIN, OR NEW SANITARY SEWER INSTALLED WITH EXISTING RECYCLED WATER MAIN.

CASE 2- NEW WATER MAIN INSTALLATION WITH EXISTING RECYCLED WATER MAIN.

WHEN BOTH FACILITIES (OR ALL THREE) ARE TO BE INSTALLED, BOTH CASES SHALL APPLY.

## SPECIAL CONSTRUCTION REQUIREMENTS

- |                  |  |
|------------------|--|
| ZONE A<br>CASE 1 | NO RECYCLED WATER MAIN SHALL BE CONSTRUCTED PARALLEL TO AN EXISTING POTABLE WATER MAIN, AND NO SANITARY SEWER MAIN SHALL BE CONSTRUCTED PARALLEL TO AN EXISTING RECYCLED WATER MAIN, WITHOUT APPROVAL FROM THE RESPONSIBLE HEALTH AGENCY.  |
| ZONE A<br>CASE 2 | NO POTABLE WATER MAIN SHALL BE CONSTRUCTED PARALLEL TO AN EXISTING RECYCLED WATER MAIN WITHOUT APPROVAL FROM THE RESPONSIBLE HEALTH AGENCY.  |
| ZONE B           | <p>THE MAIN SHALL BE CONSTRUCTED OF:</p> <ol style="list-style-type: none"> <li>1. DUCTILE IRON PIPE WITH HOT BITUMINOUS COATING.</li> <li>2. DIPPED AND WRAPPED ONE-FOURTH-INCH-THICK WELDED STEEL PIPE.</li> <li>3. CLASS 200 PRESSURE RATED PLASTIC WATER PIPE [DRI4 PER AWWA C900] OR EQUIVALENT.</li> <li>4. REINFORCED CONCRETE PRESSURE PIPE, STEEL CYLINDER TYPE, PER AWWA C300-74, OR C301-79, OR C303-70.</li> </ol> |

<b>City of Simi Valley</b>  DEPARTMENT OF PUBLIC WORKS	VENTURA COUNTY WATERWORKS DISTRICT NO. 8	PLATE
	<b>SEPARATION REQUIREMENTS FOR RECYCLED WATER LINES</b>	<b>RW5</b> I OF 4
DISTRICT ENGINEERING	RECOMMENDED:	APPROVED:
	DISTRICT ENGINEER	DIRECTOR OF PUBLIC WORKS
		FEB 2004

ZONE C

THE MAIN SHALL HAVE A FULL PIPE LENGTH CENTERED ON THE CROSSING AND SHALL BE CONSTRUCTED OF:

1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING.
2. DIPPED AND WRAPPED ONE-FOURTH-INCH-THICK WELDED STEEL PIPE.
3. CLASS 200 PRESSURE RATED PLASTIC WATER PIPE [DRI4 PER AWWA C900] OR EQUIVALENT.
4. REINFORCED CONCRETE PRESSURE PIPE, STEEL CYLINDER PIPE, PER AWWA C300-74, OR C301-79, OR C303-70.

ZONE D

THE MAIN SHALL BE CONSTRUCTED OF:

1. DUCTILE IRON PIPE HOT DIP BITUMINOUS COATING.
2. DIPPED AND WRAPPED ONE-FOURTH-INCH-THICK WELDED STEEL PIPE.
3. CLASS 200 PRESSURE RATED PLASTIC WATER PIPE [DRI4 AWWA C900] OR EQUIVALENT.
4. REINFORCED CONCRETE PRESSURE PIPE, STEEL CYLINDER TYPE, PER AWWA C300-74, OR C301-79, OR C303-70.

SEWER FORCE MAINS ARE PROHIBITED IN ZONES A THROUGH D.

**City of Simi Valley**



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

**SEPARATION REQUIREMENTS FOR  
RECYCLED WATER LINES**

RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

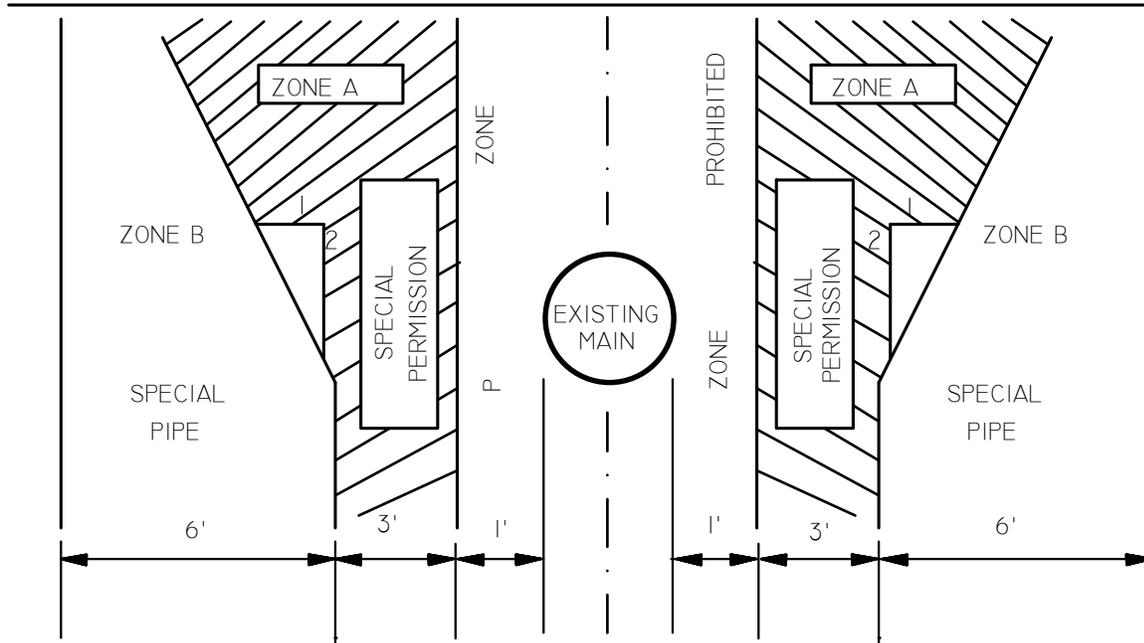
DIRECTOR OF PUBLIC WORKS

PLATE

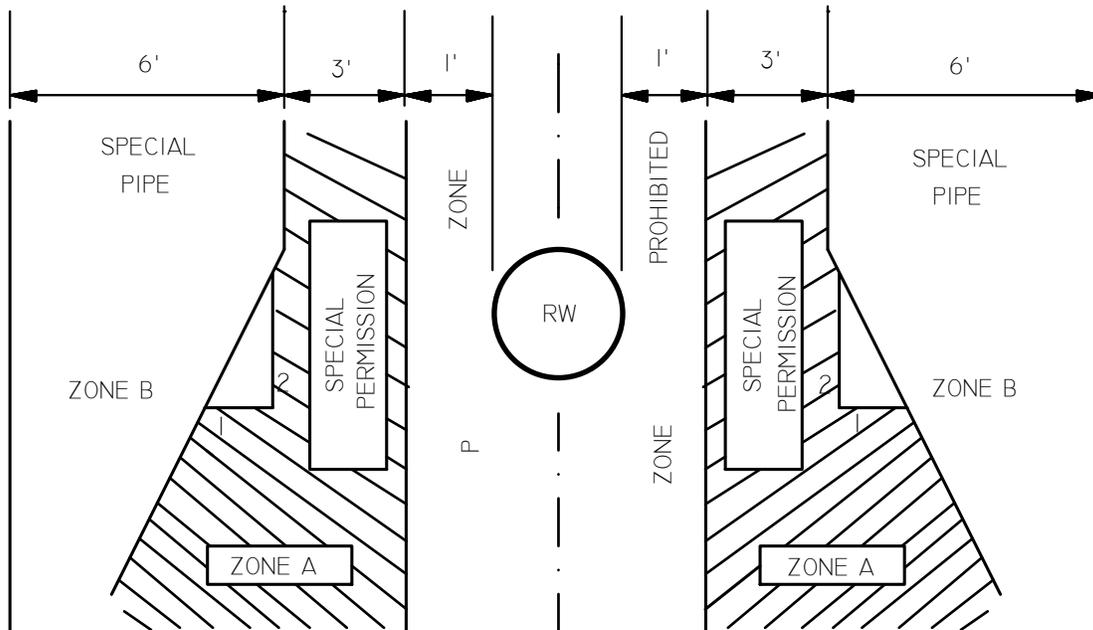
**RW5**

2 OF 4

FEB 2004

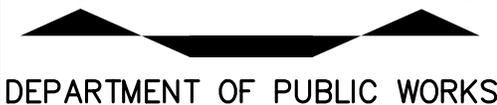


**CASE 1 EXISTING WATER MAIN AND NEW RECYCLED WATER MAIN OR EXISTING RECYCLED WATER MAIN AND NEW SANITARY SEWER**



**CASE 2 EXISTING RECYCLED WATER MAIN AND NEW WATER MAIN**

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

**SEPARATION REQUIREMENTS FOR RECYCLED WATER LINES**

RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

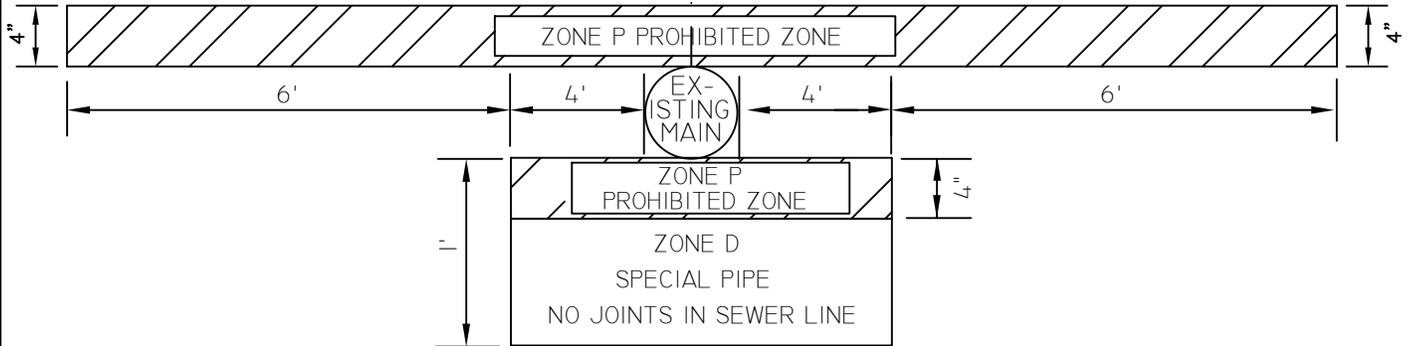
PLATE

RW5

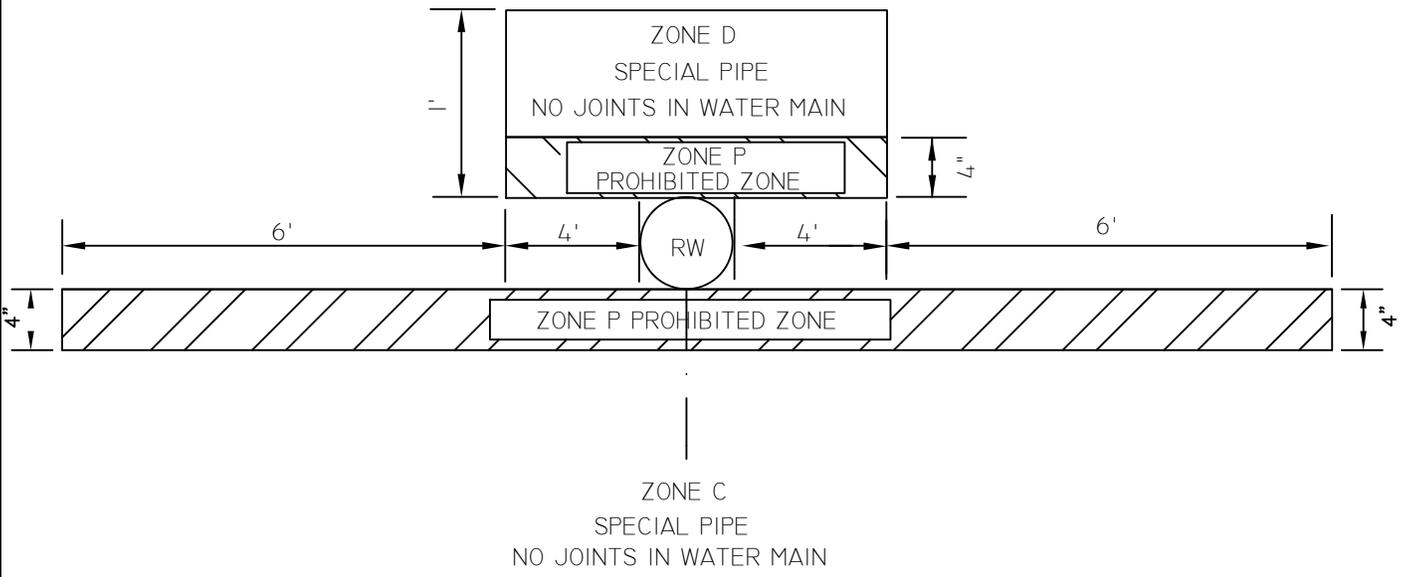
3 OF 4

FEB 2004

# CONSTRUCTION AT CROSSINGS

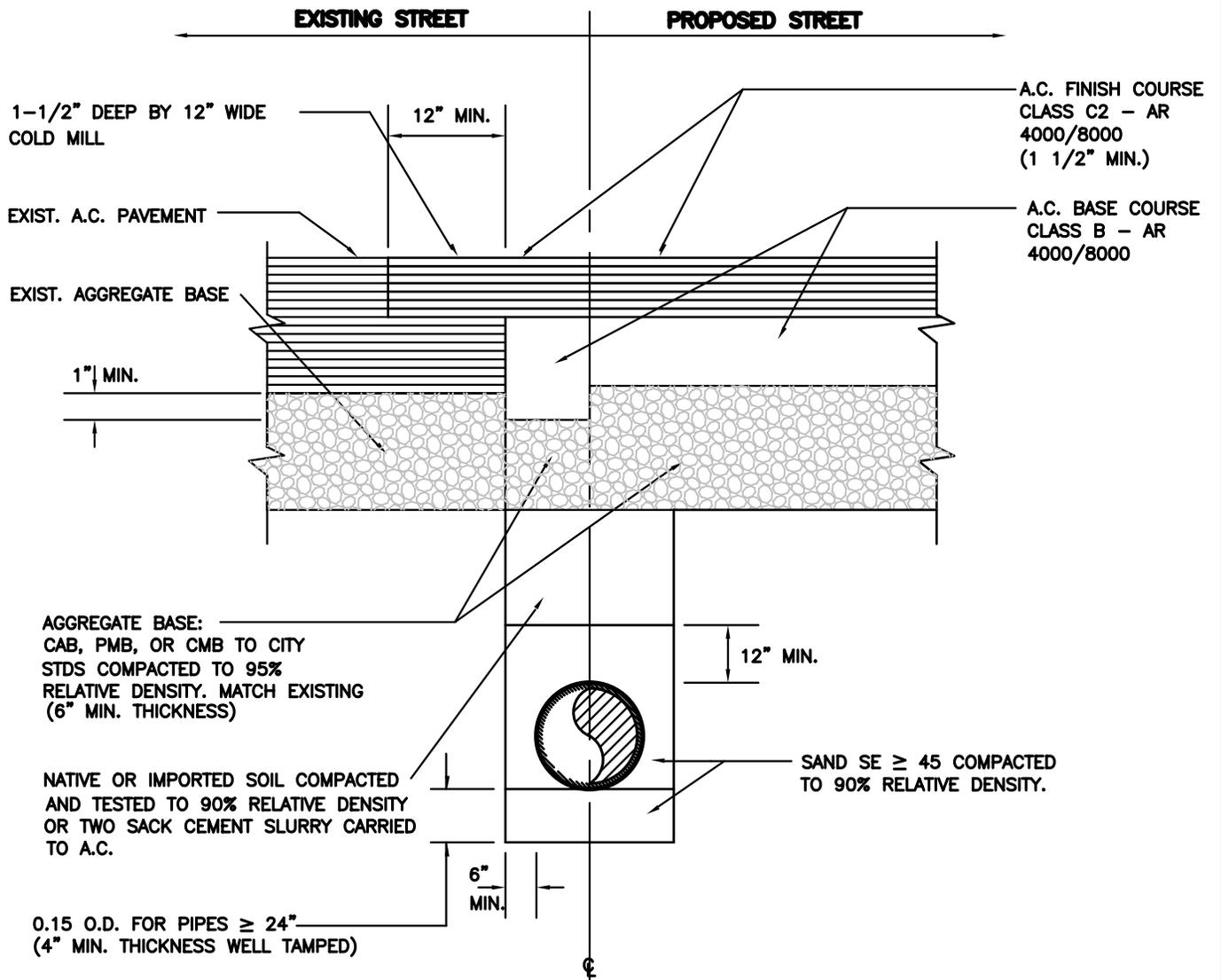


CASE 1 EXISTING WATER MAIN AND NEW RECYCLED WATER MAIN  
OR EXISTING RECYCLED WATER MAIN AND NEW SANITARY SEWER



CASE 2 EXISTING RECYCLED WATER MAIN AND NEW WATER MAIN

<b>City of Simi Valley</b>  DEPARTMENT OF PUBLIC WORKS	VENTURA COUNTY WATERWORKS DISTRICT NO. 8	PLATE RW5 4 OF 4
	SEPARATION REQUIREMENTS FOR RECYCLED WATER LINES	
DISTRICT ENGINEERING	RECOMMENDED: _____ DISTRICT ENGINEER	APPROVED: _____ DIRECTOR OF PUBLIC WORKS
		FEB 2004



**NOTES:**

1. FOR NEW WORK, A.C. AND AGGREGATE BASE COURSE THICKNESSES SHALL BE PER CITY APPROVED PAVEMENT SECTION.
2. IN EXISTING PAVEMENT, A.C. REPLACEMENT SHALL BE 1" GREATER THAN EXISTING. AGGREGATE BASE SHALL MATCH EXISTING THICKNESS BUT NOT LESS THAN 6". INSTALL CONTINUOUS PAVEMENT FABRIC OVER TRENCH TO EDGES OF COLD MILL PRIOR TO FINISH COURSE.

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

PAVEMENT AND TRENCH DETAIL

PLATE

RW6

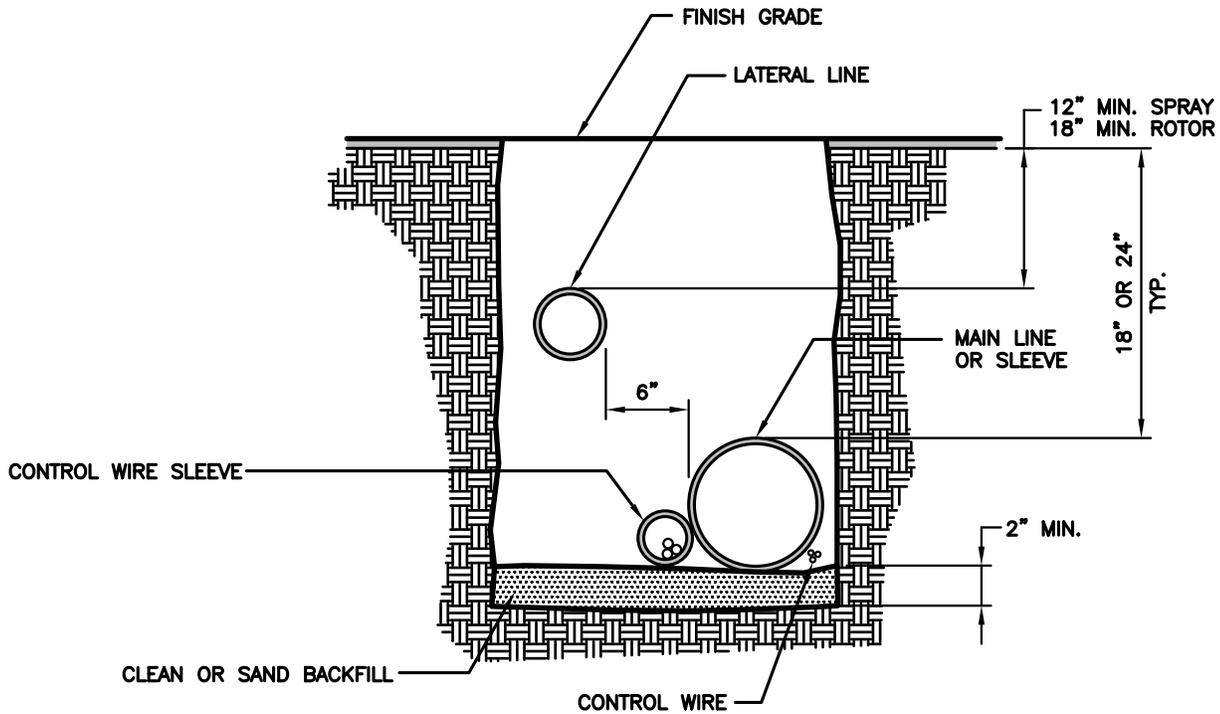
RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

FEB 2004



**NOTES:**

1. BUNDLE & TAPE CONTROL WIRES AT 5' INTERVALS.
2. TIE A LOOSE 24" LOOP IN WIRING EVERY 100 FEET AND AT CHANGES OF DIRECTION GREATER THAN 30°. UNITE ALL LOOPS AFTER ALL CONNECTIONS HAVE BEEN MADE.
3. INSTALL ALL CONTROL WIRE ON THE UNDERSIDE OF THE MAIN LINE PIPE. (SLEEVE UNDER PAVEMENT.)
4. SEE IRRIGATION SPECIFICATIONS FOR BACKFILL & COMPACTION REQUIREMENTS.
5. PIPE COVER FOR 2" DIA. AND LARGER SHALL BE 24".
6. PIPE COVER FOR 1 1/2" AND SMALLER SHALL BE 18".
7. PIPE COVER FOR NON-PRESSURE LATERAL LINES SHALL BE 12" FOR SPRAY HEADS.
8. PIPE COVER FOR NON LATERAL LINES SHALL BE 18" FOR ROTOR HEADS.
9. COMMON TRENCH WITH OTHER UTILITIES IS PROHIBITED.

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

ONSITE TRENCHING

RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

RW7

FEB 2004

**City of Simi Valley**



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

NOT USED

PLATE

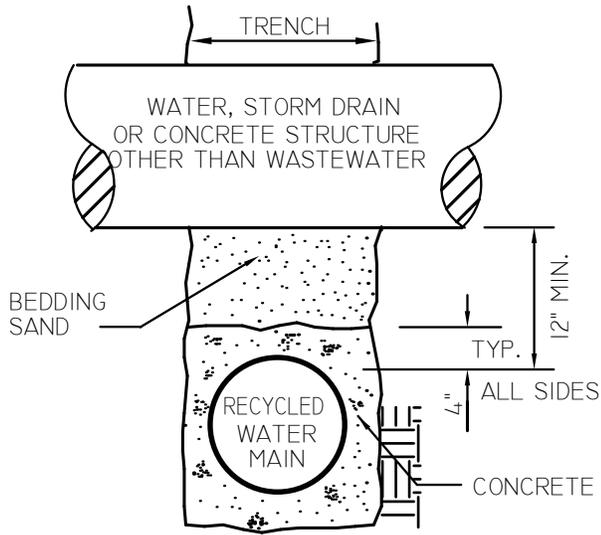
RW8

RECOMMENDED:

DISTRICT ENGINEER

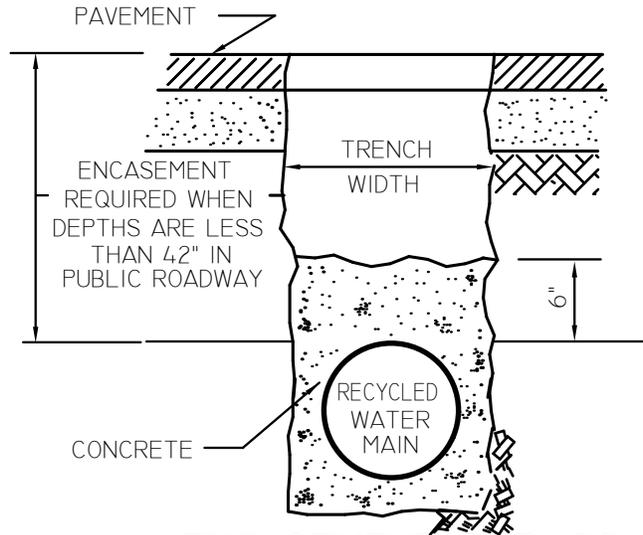
APPROVED:

DIRECTOR OF PUBLIC WORKS



### ENCASEMENT AT CROSSINGS

[SEE NOTE 4]



### ENCASEMENT FOR COVER LESS THAN MINIMUM

[SEE NOTE 5]

NOTE:

1. SEE PLATE 5 FOR RECYCLED WATER LINE CROSSING REQUIREMENTS.
2. ENCASEMENT SHALL NOT BE PROVIDED UNLESS SPECIFICALLY APPROVED BY THE DISTRICT. GENERALLY DIP SHOULD BE USED IN LIEU OF ENCASEMENT.
3. CONCRETE STRENGTH SHALL BE 3500 PSI. (MINIMUM)
4. ENCASEMENT SHALL EXTEND BEYOND THE EDGE OF THE CROSSING IN BOTH DIRECTIONS AN EQUAL DISTANCE FROM THE WATER MAIN TO THE CROSSING.
5. ENCASEMENT ALONG THE WATER MAIN SHALL EXTEND UNTIL DEPTH OF PIPELINE COVER REACHES 42"

**City of Simi Valley**



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

## PIPELINE ENCASEMENT

RECOMMENDED:

DISTRICT ENGINEER

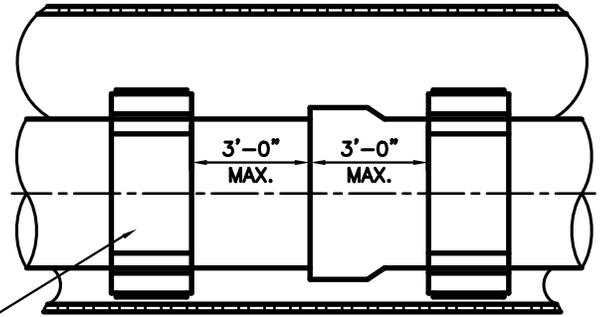
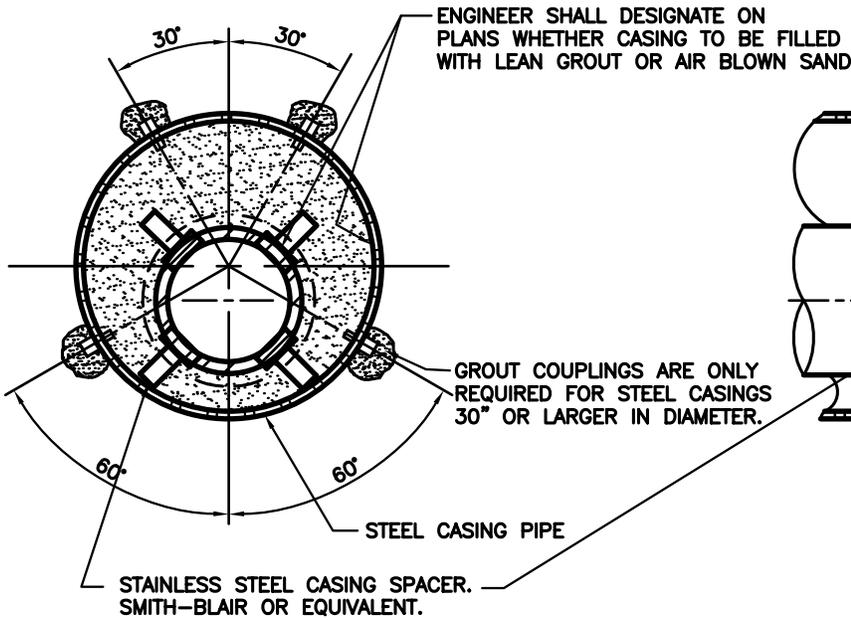
APPROVED:

DIRECTOR OF PUBLIC WORKS

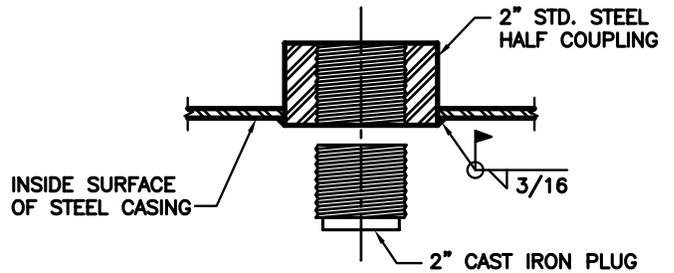
PLATE

**RW9**

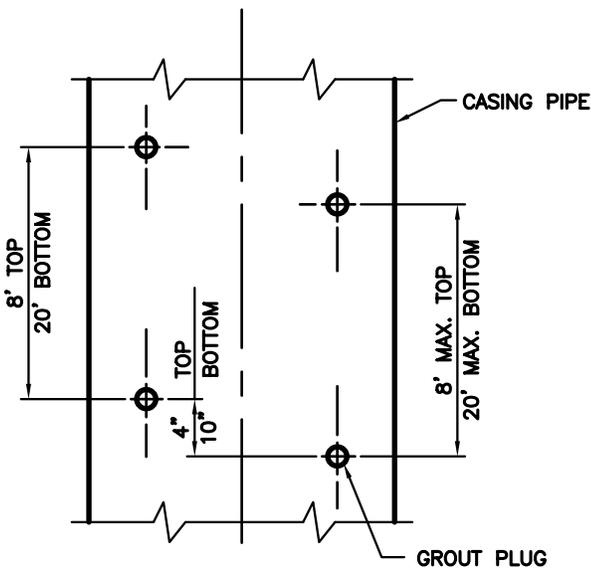
FEB 2004



PROVIDE ADDITIONAL SUPPORTS PER MANUFACTURER'S SPECIFICATIONS OR 10' MAXIMUM



**GROUT COUPLING**



CARRIER PIPE SIZE (I.D.)	STEEL CASING PIPE	
	MIN. SIZE (O.D.)	MIN. WALL THK.
4"	12 3/4"	3/8"
6"	16"	3/8"
8"	18"	3/8"
10"	20"	3/8"
12"	24"	3/8"
14"	26"	3/8"
16"	28"	3/8"

CASING FOR OTHER TYPE SIZES SUBJECT TO APPROVAL OF DISTRICT ENGINEER

**NOTES:**

1. ALL STEEL CASING PIPE JOINTS SHALL BE WELDED FULL CIRCUMFERENCE.
2. PERIPHERY OF CASING TO BE PRESSURE GROUTED AS NECESSARY.
3. RECYCLED WATER MAIN PIPE TO BE PRESSURE TESTED PER STANDARD SPECIFICATIONS PRIOR TO FILLING CASING PIPE WITH GROUT OR SAND.
4. CASING MAY BE INSTALLED BY THE BORE, JACK AND/OR TUNNEL METHOD.
5. EACH END OF CASING SHALL BE SEALED WITH RUBBER END SEALS.
6. WARNING TAPE SHALL BE PLACED ON PIPE PRIOR TO STRAPPING ON SKIDS.
7. CONTRACTOR SHALL FURNISH ALL NECESSARY THRUST RESTRAINT DEVICES.

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

STEEL CASING PIPE

RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

RW10

FEB 2004

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

NOT USED

PLATE

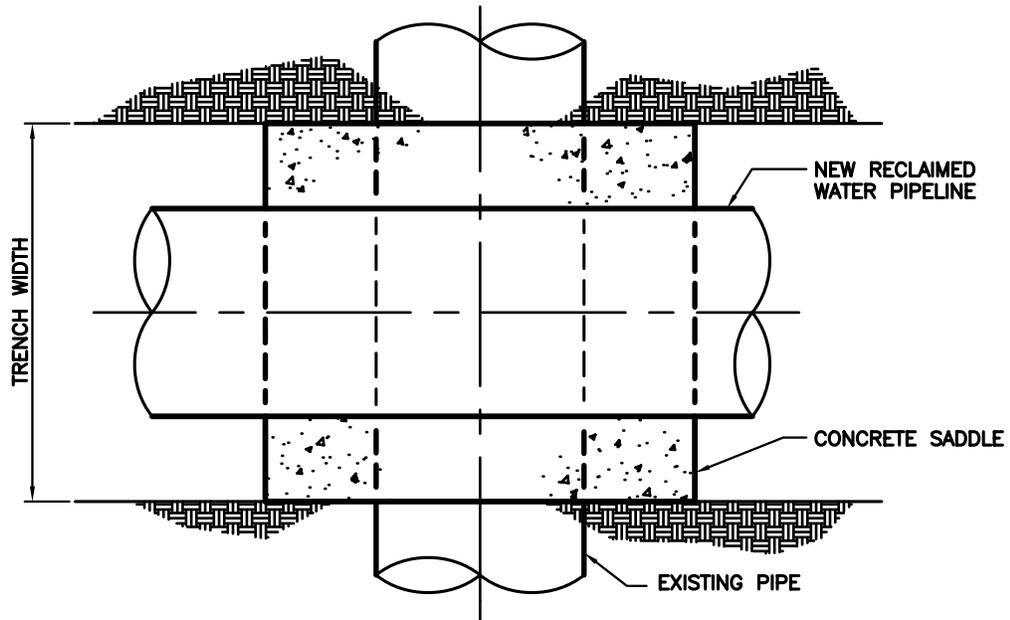
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RECOMMENDED:

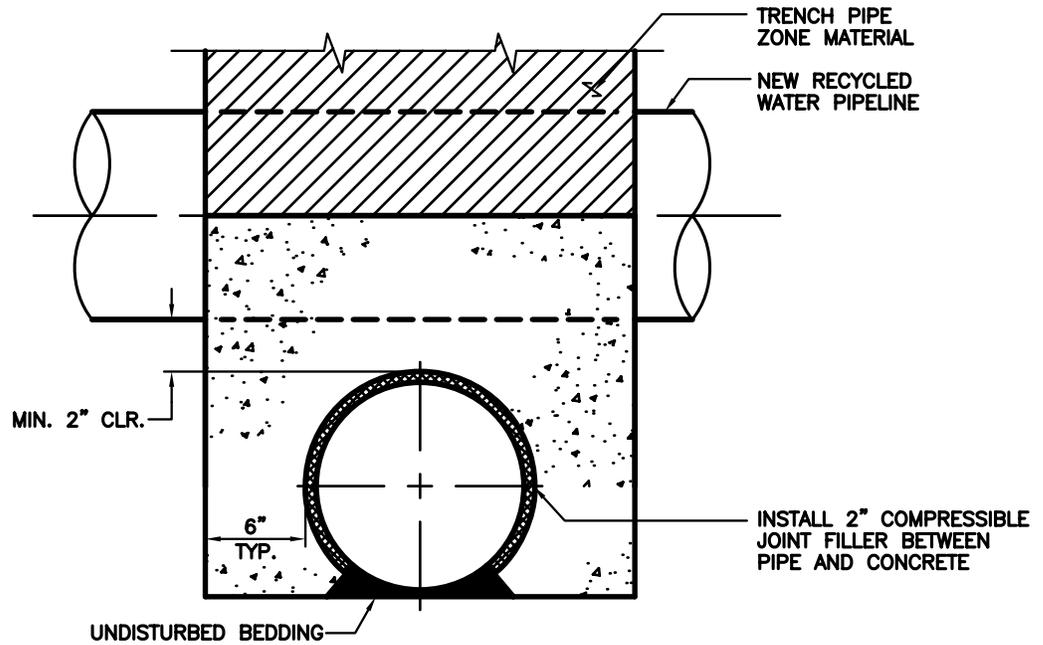
DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS



**PLAN**  
N.T.S.



**ELEVATION**  
N.T.S.

**NOTE:**  
REQUIRED WHERE CROSSING CLEARANCE IS 12" OR LESS.

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

**DISTRICT ENGINEERING**

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

**CONCRETE SADDLE**

RECOMMENDED:

DISTRICT ENGINEER

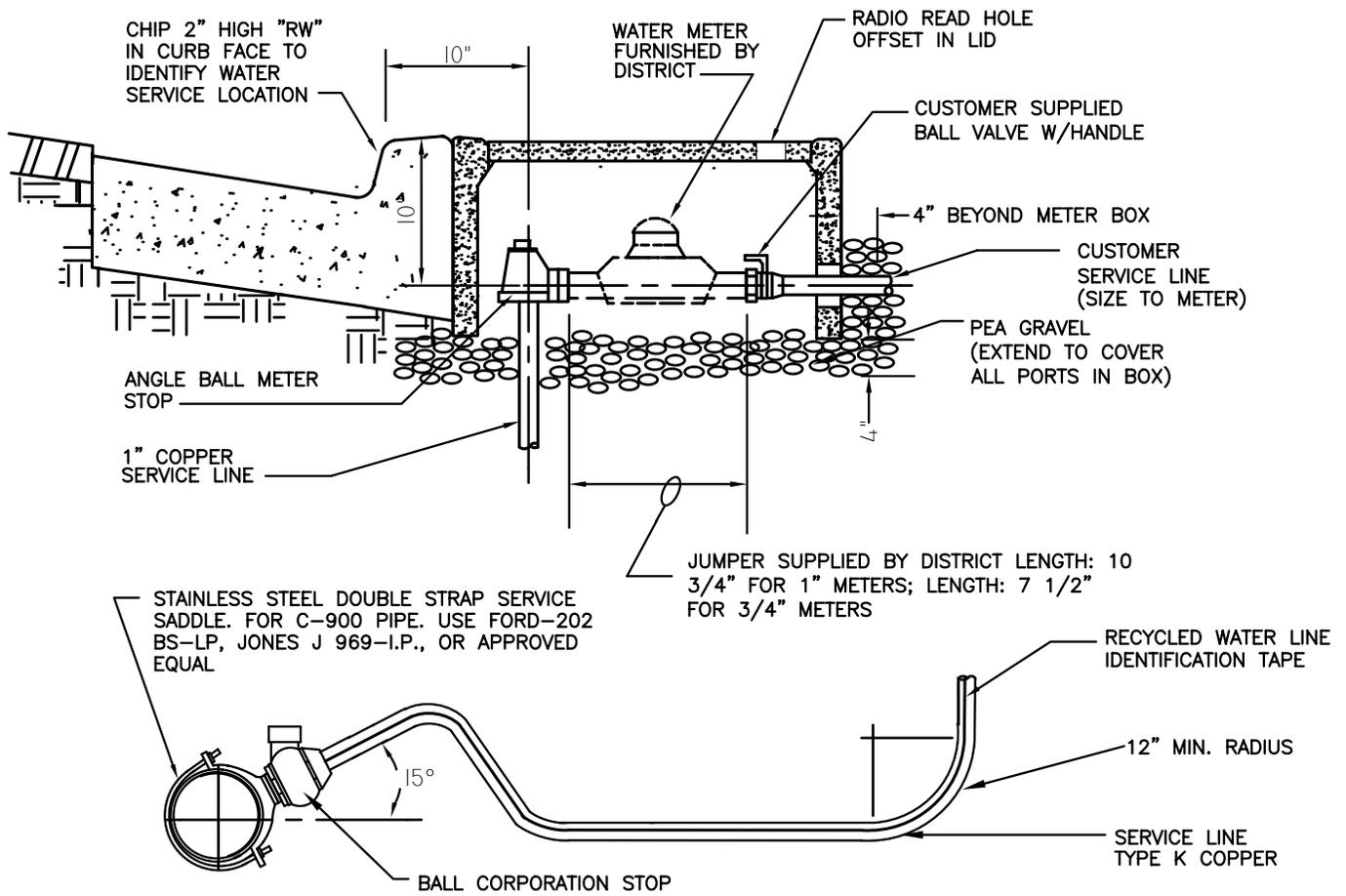
APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

**RW12**

FEB 2004



**NOTES:**

1. CONTRACTOR SHALL INSTALL A SPACER OR JUMPER PIPE SUPPLIED BY DISTRICT BETWEEN THE ANGLE METER STOP AND CUSTOMER HAND VALVE UNTIL THE WATER METER IS INSTALLED.
2. THE SERVICE LINE SHALL BE LAYED IN THE TRENCH IN A SIDE TO SIDE FASHION TO ALLOW ADDITIONAL LENGTH FOR SETTLEMENT AN/OR EXPANSION AND CONTRACTION.
3. SERVICE LINES TO RECEIVE BACKFILL OF IMPORTED SAND WITHIN PIPE ZONE. (SEE PLATE 3)
4. SERVICE LINE SHALL BE 1" COPPER FOR 3/4" & 1" SERVICES.
5. COVER SHALL BE PANTONE PURPLE #512 AND MARKED "RECYCLED WATER".
6. WARNING TAG SHALL BE PLACED ON THE RECYCLED WATER VALVE.
7. METER TO BE PURCHASED FROM DISTRICT.

RECOMMENDED MATERIALS	MANUFACTURER
BALL CORPORATION STOP 1" ANGLE BALL METER STOP 1"  CUSTOMER BALL HAND VALVE 1" METER BOX W/RADIO READ LID 12"x 20" READING HOLE OFFSET FROM CENTER OF LID DOUBLE STRAP SERVICE SADDLE TYPE K SOFT COPPER	JONES J-1935SG, FORD FB1100-4-Q, MUELLER B-25028 JONES J-1963WSG (1"x3/4"), FORD BA43-444WQ (1"x1"), FORD BA43-342WQ (1"x3/4"), MUELLER B-24258 JONES J-1908, FORD B13-444WHB34S, OR EQUAL BROOKS 37S OR EISEL ENTERPRISES NO. 437 OR EQUAL  JONES J-969-IP OR FORD 202BS IP OR EQUAL

**City of Simi Valley**  
  
 DEPARTMENT OF PUBLIC WORKS

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

**3/4" & 1" WATER METER  
 SERVICE INSTALLATION**

PLATE  
**RW13**

**DISTRICT ENGINEERING**

RECOMMENDED:

/s/

ASSIST. DIRECTOR OF PUBLIC WORKS

APPROVED:

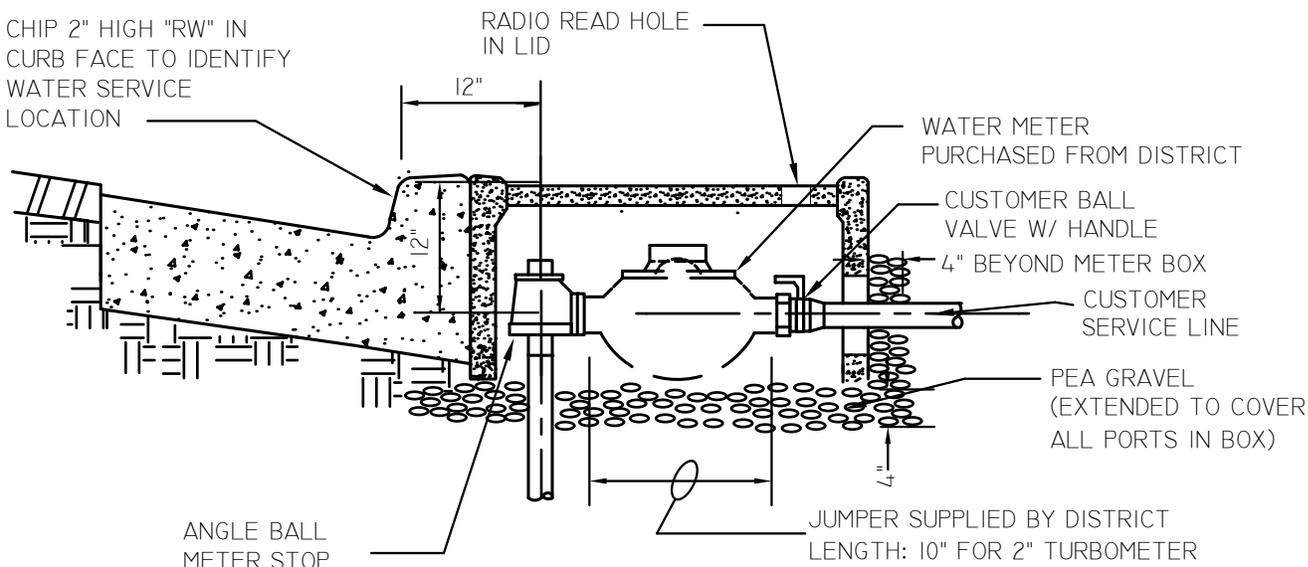
/s/

DIRECTOR OF PUBLIC WORKS

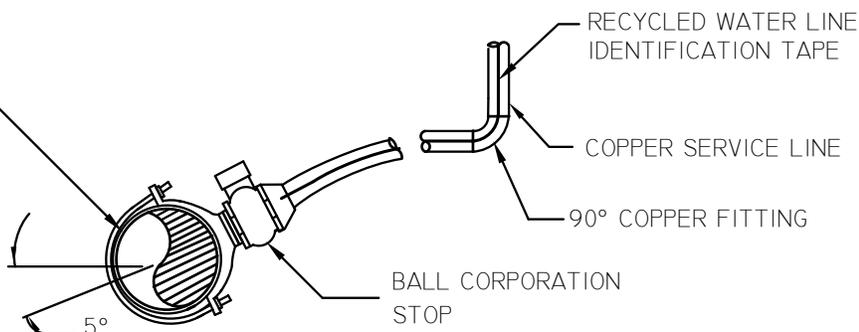
FEB 2012

CHIP 2" HIGH "RW" IN CURB FACE TO IDENTIFY WATER SERVICE LOCATION

RADIO READ HOLE IN LID



STAINLESS STEEL SADDLE DOUBLE STRAP, FOR. C-900 PIPE FORD 202-BS-I.P. JONES J969-I.P.



**NOTES:**

1. CONTRACTOR SHALL INSTALL A SPACER OR JUMPER PIPE SUPPLIED BY THE DISTRICT BETWEEN THE ANGLE METER STOP AND CUSTOMER HAND VALVE UNTILL THE WATER METER IS INSTALLED.
2. SERVICE LINES SHALL BE 2-INCH SIZE FOR 2" SIZE METER & 1-1/2" METERS INSTALLATIONS.
3. SERVICE LINE TO RECEIVE BACKFILL OF IMPORTED SAND WITHIN PIPE ZONE [ SEE PLATE 3 ].
4. COVER SHALL BE PANTONE PURPLE #512 AND MARKED " RECYCLED WATER".
5. WARNING TAG SHALL BE PLACED ON THE RECYCLED WATER VALVE.
6. METER TO BE PURCHASED FROM DISTRICT.

RECOMMENDED MATERIALS		MANUFACTURER
BALL CORPORATION STOP	2"	JONES I957SG, FORD FB1100-7-Q, MUELLER B-25028-00 (TEE-HEAD)
ANGLE BALL METER STOP	2"	JONES I975WSG, FORD BFA 43-777WQ (1 1/2" TO 2"), OR EQUAL
CUSTOMER BALL HAND VALVE	2"	JONES J-I913W, FORD BF13-676WHB67S, OR EQUAL
METER BOX	17" X 30"	BROOKS 66-S OR EISEL ENTERPRISES NO. 666, OR EQUAL
W/ RADIO READING HOLE OFFSET FROM CENTER OF LID		

**City of Simi Valley**



DEPARTMENT OF PUBLIC WORKS

**DISTRICT ENGINEERING**

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

**2" TURBO WATER METER SERVICE INSTALLATION**

PLATE

**RW14**

RECOMMENDED:

/s/

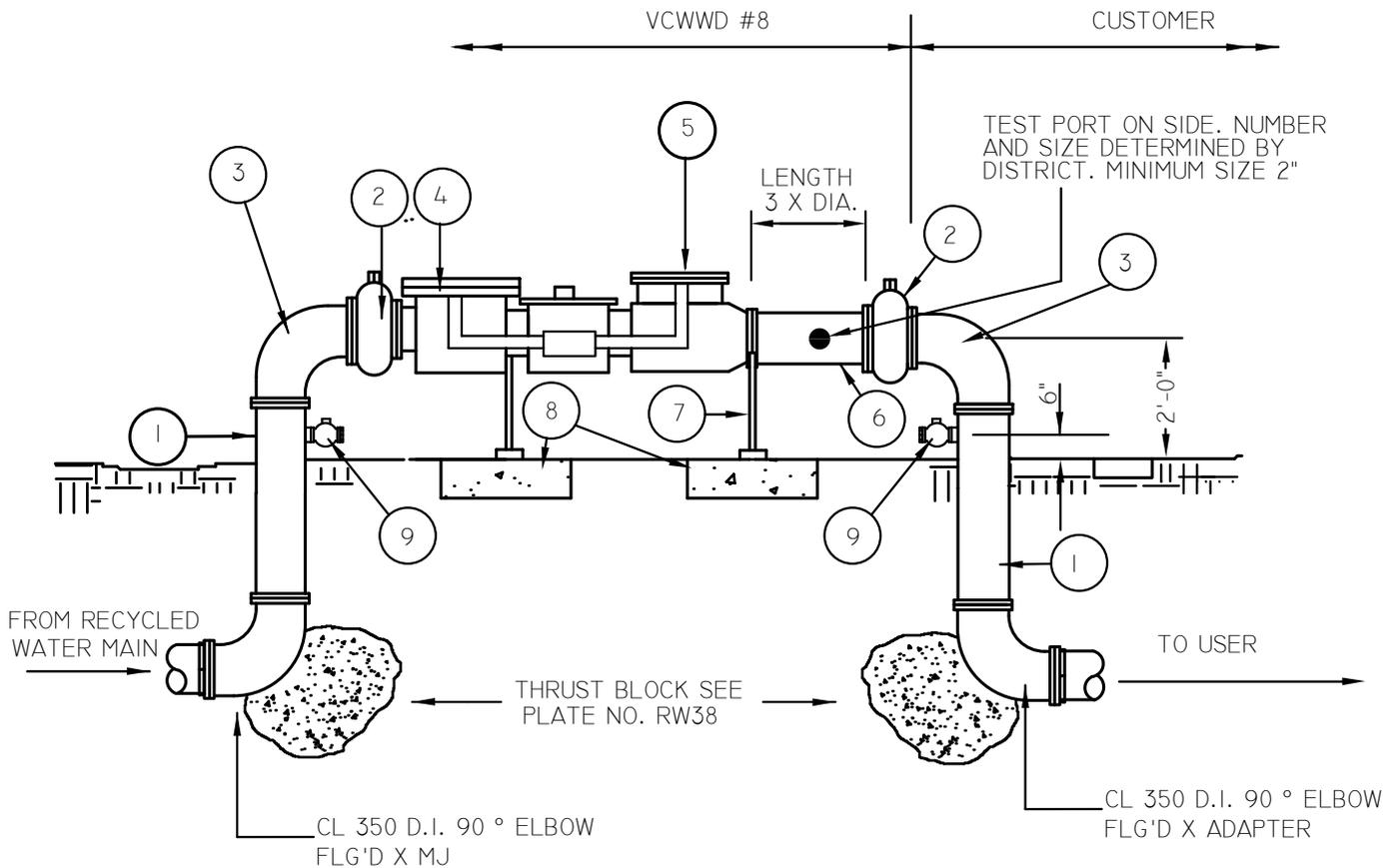
ASSIST. DIRECTOR OF PUBLIC WORKS

APPROVED:

/s/

DIRECTOR OF PUBLIC WORKS

FEB 2012



### ELEVATION

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. CLASS 350 D.I.P. SPOOL</li> <li>2. R.S.W.G.V. WITH INSULATING FLANGE KIT (BOTH SIDES OF VALVES)</li> <li>3. 90° D.I. CLASS 350 ELL. FLG'D X FLG'D</li> <li>4. STRAINER [BY DISTRICT]</li> <li>5. METER [BY DISTRICT]</li> <li>6. TEST SPOOL/ (MAY BE OMITTED IF METER PROVIDED WITH TEST PORT)</li> <li>7. PIPE SUPPORT, GALVANIZED(ANCHORED TO SLAB)</li> <li>8. 12"X12"X4" CONCRETE SUPPORT PAD,</li> <li>9. 2" PORT W/ 2" BALL VALVE (NO LEVER) AND PLUG.(SEE NOTE 2)</li> </ol> | <p>NOTES:</p> <ol style="list-style-type: none"> <li>1. THIS PLATE DEPICTS A GENERAL INSTALLATION. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT TO THE DISTRICT FOR APPROVAL A PLAN SHOWING THE ACTUAL INSTALLATION, INCLUDING A LIST OF MATERIALS, MANUFACTURERS NAMES AND PART OR MODEL NUMBERS.</li> <li>2. LARGER METER ASSEMBLIES MAY REQUIRE LARGER AND PERMANENT BY- PASSES.</li> </ol> |
|---|--|

**City of Simi Valley**



DEPARTMENT OF PUBLIC WORKS

**DISTRICT ENGINEERING**

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

**3" METER AND LARGER  
INSTALLATION**

PLATE

**RW15**

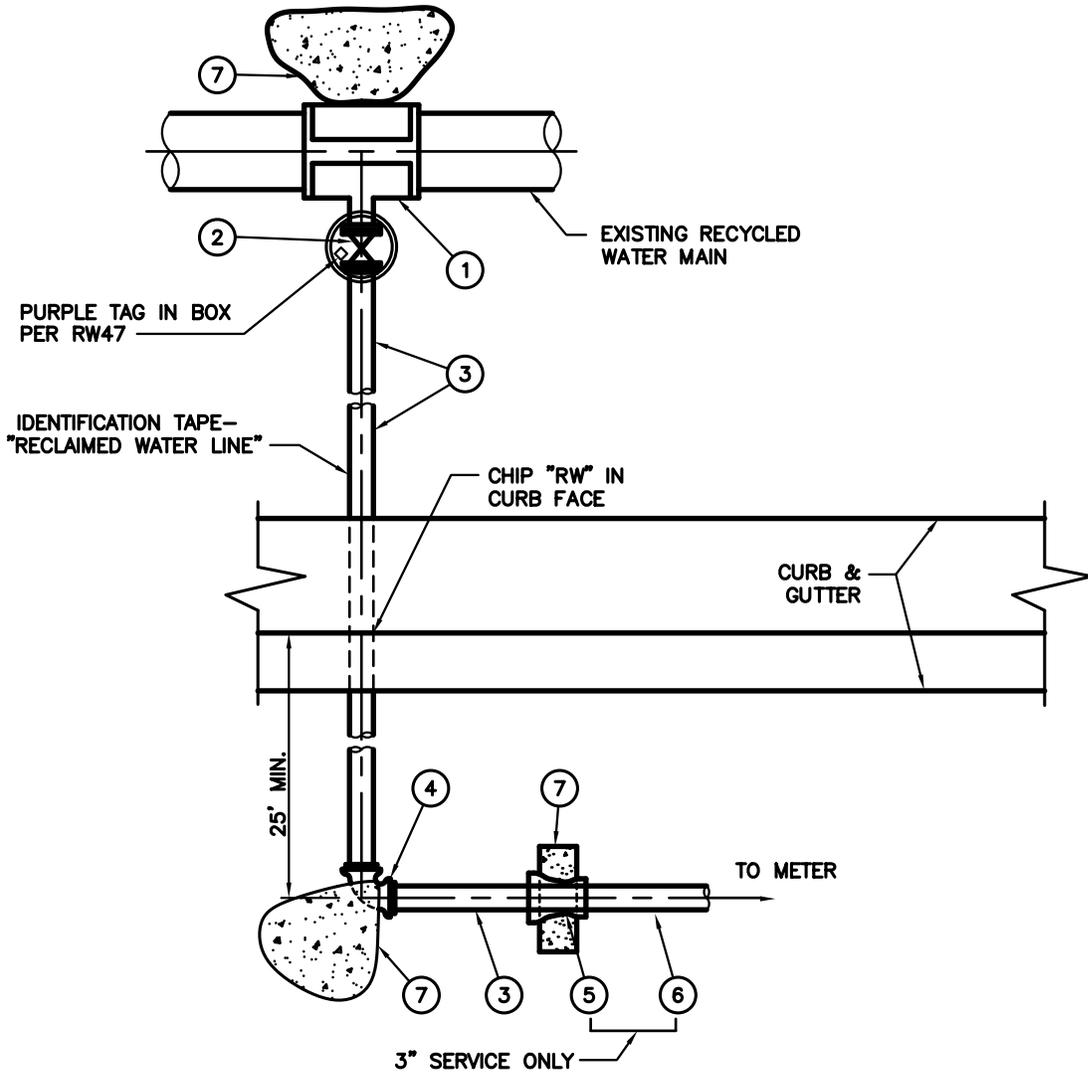
RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

FEB 2004



**PLAN**  
N.T.S.

City of Simi Valley  
  
 DEPARTMENT OF PUBLIC WORKS

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

**3- AND 4-INCH  
 RECYCLED WATER SERVICE**

PLATE  
**RW16**  
 1 OF 2

**DISTRICT ENGINEERING**

RECOMMENDED:

APPROVED:

DISTRICT ENGINEER

DIRECTOR OF PUBLIC WORKS

FEB 2004

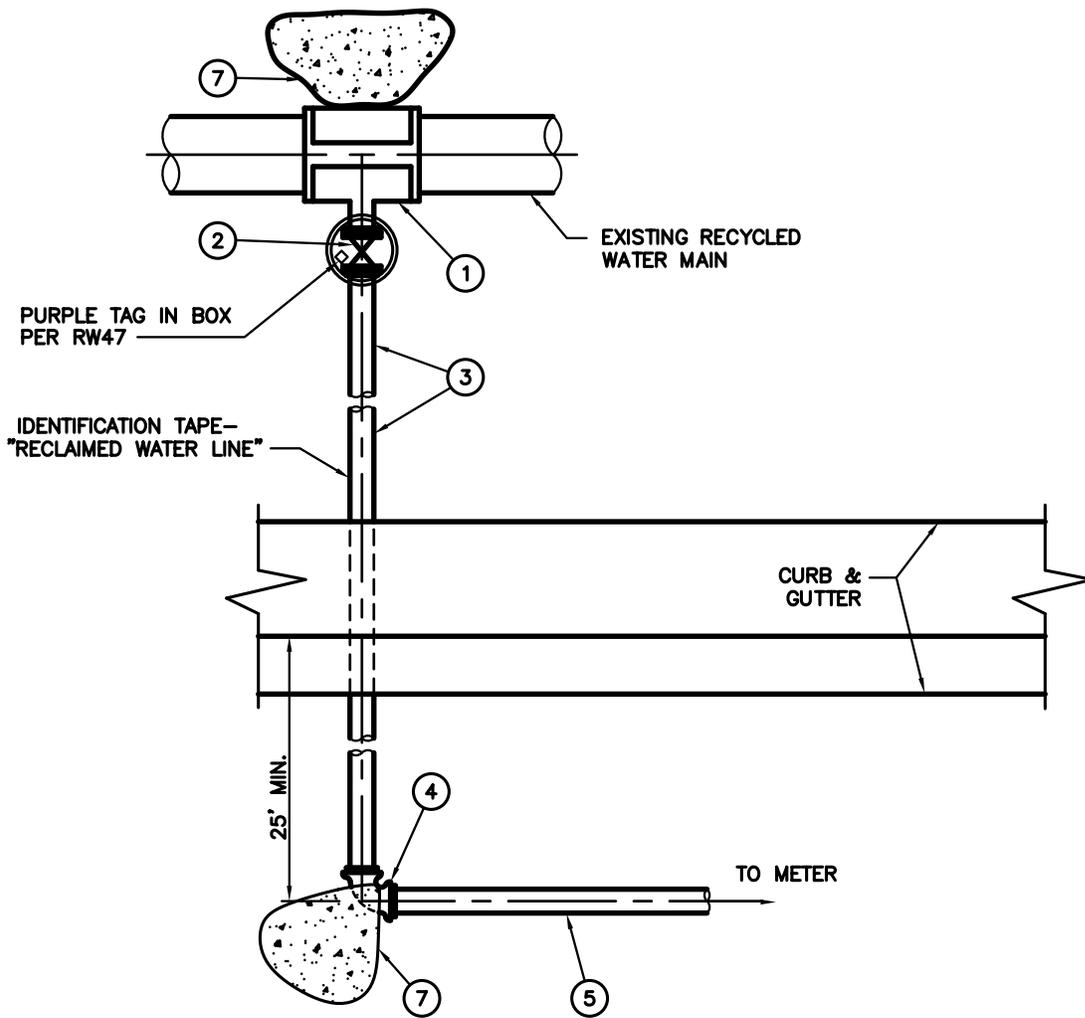
**NOTES:**

1. SET TOP OF METER BOX ADJACENT TO AND AT CURB ELEVATION, WHERE SIDEWALKS ARE NOT ADJACENT TO CURBS. PRECISE LOCATION TO BE ESTABLISHED AND APPROVED ON PLANS. VAULT COVER TO BE SET TO CONFORM TO PARKWAY GRADE.
2. MINIMUM SERVICE CONNECTION FOR A 3" METER SHALL BE 4" IN SIZE.
3. EASEMENTS MUST BE PROVIDED IF INSTALLATION IS ON PRIVATE PROPERTY.
4. PROVIDE NECESSARY FITTINGS AND THRUST BLOCKS TO CONSTRUCT SERVICE LINE TO CORRECT ELEVATION AT METER VAULT.
5. COVER SHALL BE MARKED "RECYCLED WATER METER."
6. TWO WARNING TAGS SHALL BE PLACED IN THE RECLAIMED WATER METER FACILITY.
7. MARK CURB FACE "RW" 2-INCH LETTERS.
8. EXTEND TRACER WIRE TO METER BOX.
9. LOCATE INSULATING KITS AT ALL LOCATIONS WHERE DISSIMILAR METALS JOINT.
10. METER AND BOX ASSEMBLY TO BE PURCHASED FROM DISTRICT AND INSTALLED BY USER.

<b>CONSTRUCTION ITEMS / MATERIALS LIST</b>	
ITEM NO.	SIZE AND DESCRIPTION
①	USE SADDLE WHERE PIPE LATERAL IS SMALLER THAN MAIN BY 2 OR MORE PIPE SIZES. WHERE LATERAL IS LARGER, CUT IN A TEE.
②	4-INCH TAPPING VALVE (F x M.J.) AND VALVE BOX.
③	4-INCH DUCTILE IRON PIPE*
④	4-INCH DUCTILE IRON 90° BEND (M.J.), OPTIONAL (FOR METER PARALLEL TO CURB)
⑤	4-INCH x 3-INCH DUCTILE IRON REDUCER (M.J.) (FOR 3" SERVICE ONLY).
⑥	METER SIZE DUCTILE IRON SPOOL*
⑦	THRUST BLOCKS PER STD. DRAWING RW38

\* OR OTHER APPROVED MATERIAL

<b>City of Simi Valley</b>  DEPARTMENT OF PUBLIC WORKS	VENTURA COUNTY WATERWORKS DISTRICT NO. 8	PLATE
	<b>3- AND 4-INCH RECYCLED WATER SERVICE</b>	
<b>DISTRICT ENGINEERING</b>	RECOMMENDED:	APPROVED:
	DISTRICT ENGINEER	DIRECTOR OF PUBLIC WORKS



PLAN  
N.T.S.

City of Simi Valley

DEPARTMENT OF PUBLIC WORKS

**DISTRICT ENGINEERING**

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

6-, 8-, AND 10-INCH  
RECYCLED WATER SERVICE

RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

**RW17**

1 OF 2

FEB 2004

**NOTES:**

1. SET TOP OF METER BOX ADJACENT TO AND AT CURB ELEVATION, WHERE SIDEWALKS ARE NOT ADJACENT TO CURBS. PRECISE LOCATION TO BE ESTABLISHED AND APPROVED ON PLANS. VAULT COVER TO BE SET TO CONFORM TO PARKWAY GRADE.
2. EASEMENTS MUST BE PROVIDED IF INSTALLATION IS ON PRIVATE PROPERTY.
3. PROVIDE NECESSARY FITTINGS AND THRUST BLOCKS TO CONSTRUCT SERVICE LINE TO CORRECT ELEVATION AT METER VAULT.
4. COVER SHALL BE MARKED "RECLAIMED WATER METER."
5. TWO WARNING TAGS SHALL BE PLACED IN THE RECYCLED WATER METER FACILITY.
6. MARK CURB FACE "RW" 2-INCH HIGH LETTERS.
7. EXTEND TRACER WIRE TO METER BOX.
8. LOCATE INSULATING KITS AT ALL LOCATIONS WHERE DISSIMILAR METALS JOINT.
9. METER AND BOX ASSEMBLY TO BE PURCHASED FROM DISTRICT AND INSTALLED BY USER.

CONSTRUCTION ITEMS / MATERIALS LIST	
ITEM NO.	SIZE AND DESCRIPTION
①	USE SADDLE WHERE PIPE LATERAL IS SMALLER THAN MAIN BY 2 OR MORE PIPE SIZES. WHERE LATERAL IS LARGER, CUT IN A TEE.
②	METER SIZE TAPPING VALVE (F x M.J.) AND VALVE BOX.
③	METER SIZE DUCTILE IRON PIPE*
④	METER SIZE DUCTILE IRON 90° BEND (M.J.), OPTIONAL (FOR METER PARALLEL TO CURB)
⑤	METER SIZE DUCTILE IRON SPOOL*
⑦	THRUST BLOCKS PER STD. DRAWING RW38.

\* OR OTHER APPROVED MATERIALS

City of Simi Valley  DEPARTMENT OF PUBLIC WORKS	VENTURA COUNTY WATERWORKS DISTRICT NO. 8		PLATE
	6-, 8-, AND 10-INCH RECYCLED WATER SERVICE		RW17 2 OF 2
DISTRICT ENGINEERING	RECOMMENDED:	APPROVED:	FEB 2004
	DISTRICT ENGINEER	DIRECTOR OF PUBLIC WORKS	

**City of Simi Valley**



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

NOT USED

PLATE

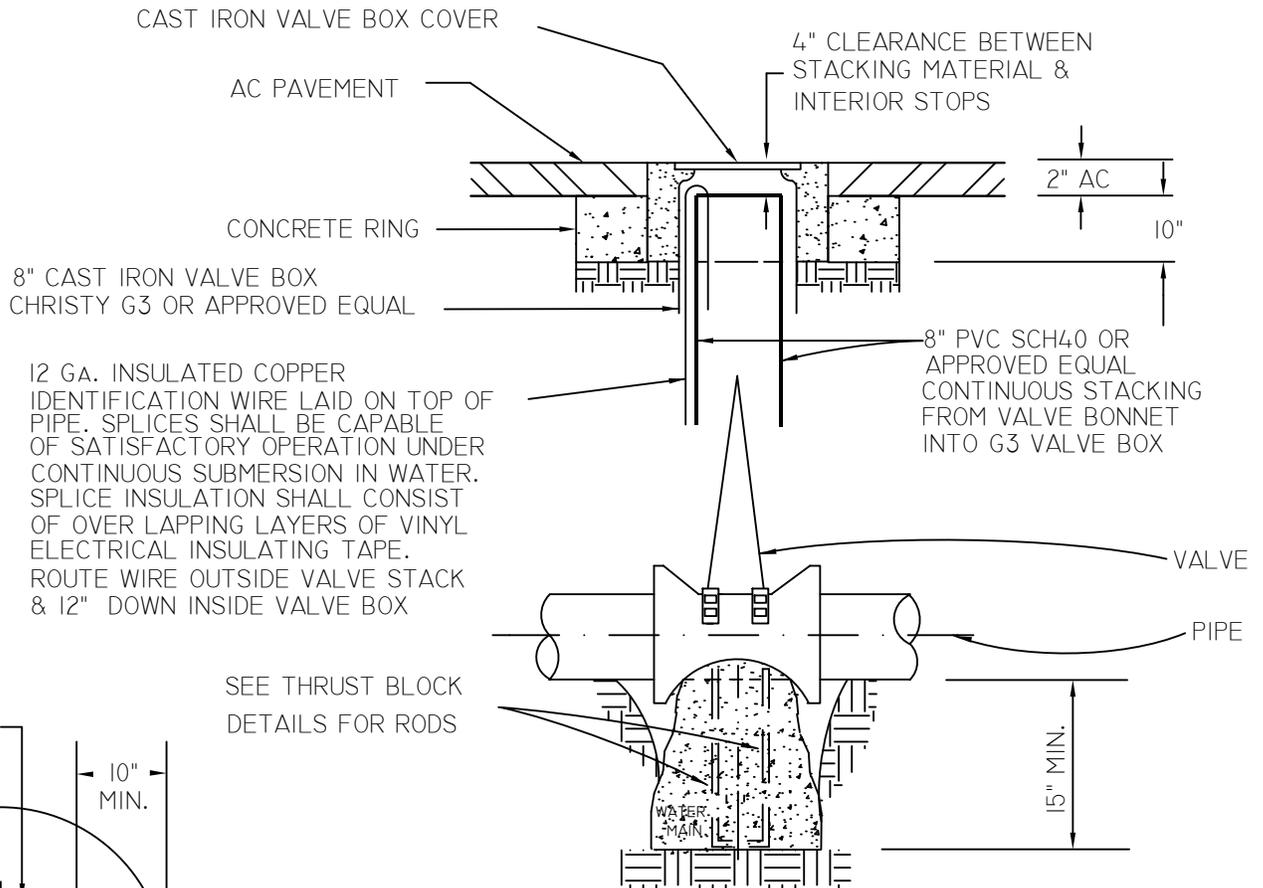
RW18

RECOMMENDED:

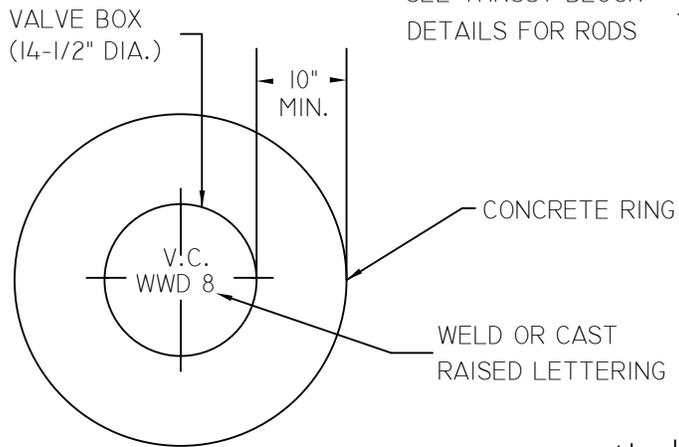
DISTRICT ENGINEER

APPROVED:

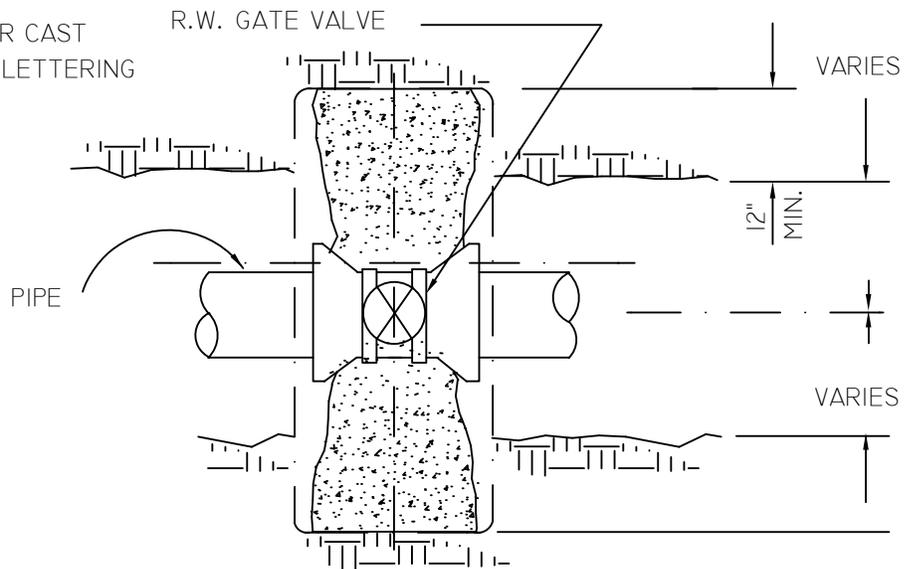
DIRECTOR OF PUBLIC WORKS



ELEVATION



TYPICAL IDENTIFICATION  
N.T.S.



PLAN

City of Simi Valley

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

PLATE

VALVE ASSEMBLY DETAILS

RW 19

DEPARTMENT OF PUBLIC WORKS

RECOMMENDED:

/s/

APPROVED:

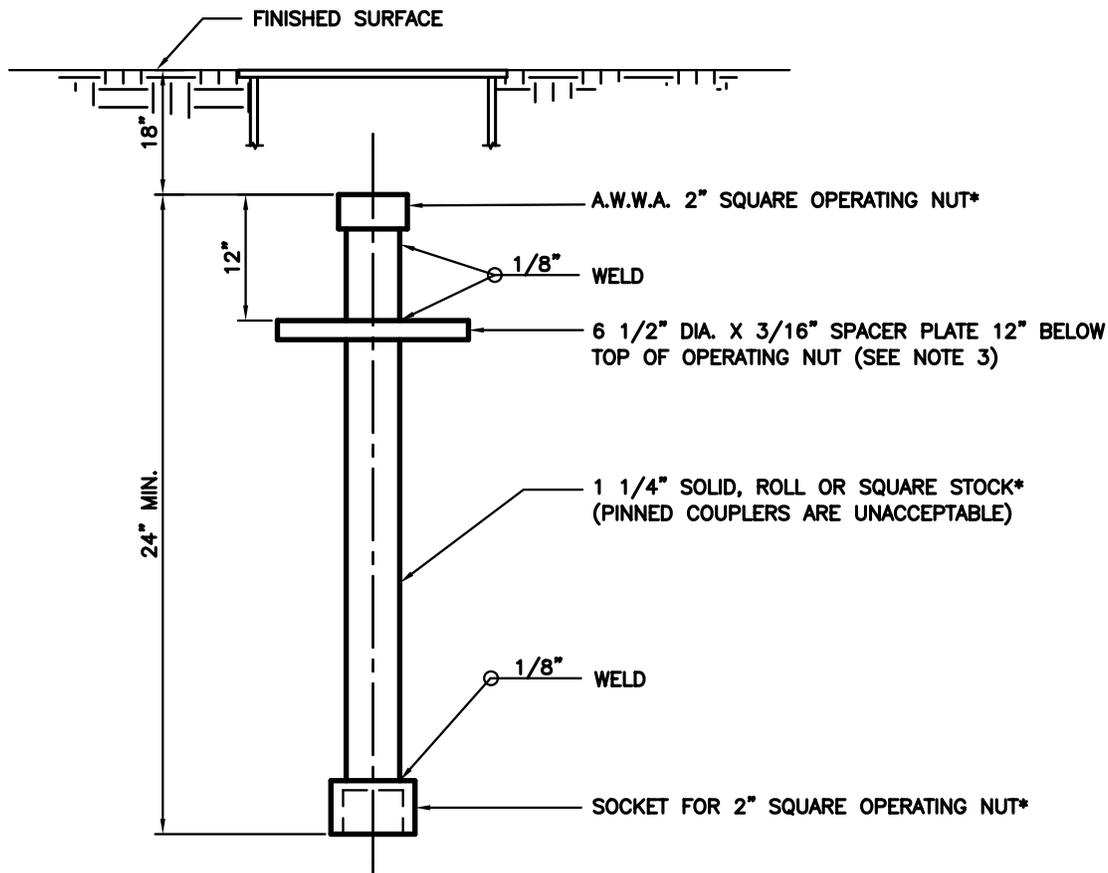
/s/

JAN 12

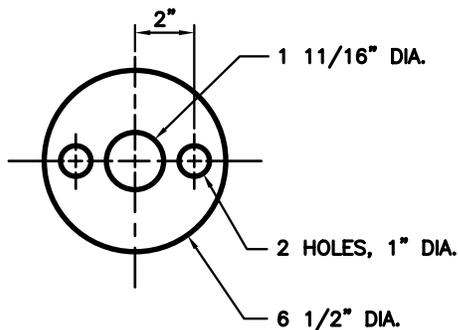
DISTRICT ENGINEERING

ASSISTANT DIRECTOR

DIRECTOR OF PUBLIC WORKS



\* OR MATCH TO VALVE OPERATOR



**SPACER PLATE  
PLAN**

**NOTES:**

1. PROVIDE VALVE STEM EXTENSION WHEN DEPTH TO OPERATING NUT EXCEEDS 48" (FABRICATE EXTENSION TO FIELD MEASUREMENT - SEE NOTE 2).
2. NO VALVE STEM EXTENSION SHALL BE LESS THAN 2 FEET IN LENGTH. TERMINATE EXTENSION 18" TO 24" FROM FINISHED GRADE.
3. PROVIDE ADDITIONAL SPACER PLATE WHEN DISTANCE TO BOTTOM SOCKET EXCEEDS 5 FEET.
4. PAINT PANTONE PURPLE.

City of Simi Valley

DEPARTMENT OF PUBLIC WORKS

**DISTRICT ENGINEERING**

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

**VALVE STEM EXTENSION**

RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

**RW20**

FEB 2004

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

NOT USED

PLATE

RW21

RECOMMENDED:

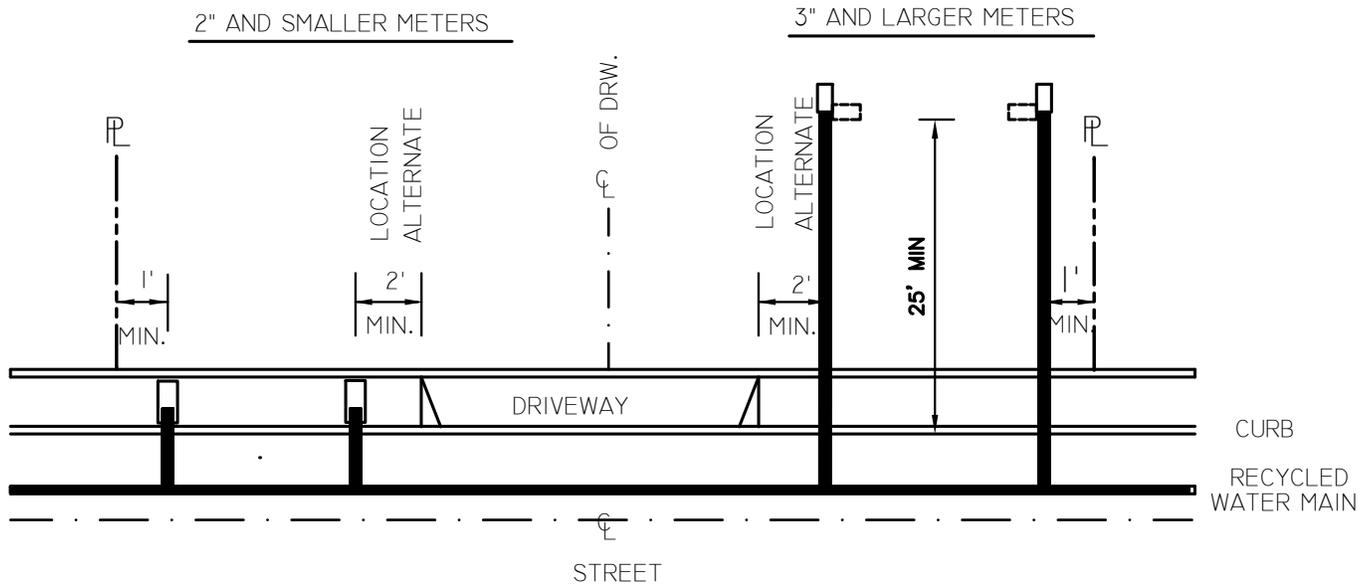
DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

RECYCLED WATER SERVICES ARE TO BE LOCATED NOT LESS THAN ONE FOOT FROM THE SIDE LINE OF THE PROPERTY. 2" AND SMALLER METERS SHALL BE LOCATED DIRECTLY BEHIND THE CURB. 3" AND LARGER METERS SHALL BE LOCATED NOT LESS THAN 25' FROM THE CURB AND SHALL BE SCREENED. LOCATION OF THE SERVICE LATERAL IS TO BE PERMANENTLY MARKED ON THE FACE OF THE CURB WITH A "RW". ALTERNATE LOCATIONS SHALL BE SUBJECT TO ACCEPTANCE BY THE INSPECTOR. UNDER NO CIRCUMSTANCE SHALL THE METER BE PLACED IN A DRIVEWAY. IN ALL CASES THERE SHALL BE A MINIMUM SEPARATION OF 10 FEET BETWEEN POTABLE WATER SERVICES, SEWER LATERALS, AND THE RECYCLED WATER SERVICE LINE AND THERE SHALL BE A MINIMUM SEPARATION OF 5 FEET BETWEEN THE CENTER OF THE STREET TREE AND THE NEAREST EDGE OF THE METER BOX.

## RECYCLED WATER METER LOCATION



**City of Simi Valley**



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

### LOCATION OF METERS

RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

**RW22**

FEB 2004

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

NOT USED

PLATE

RW23

RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

**City of Simi Valley**



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

NOT USED

PLATE

RW24

RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

**City of Simi Valley**



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

NOT USED

PLATE

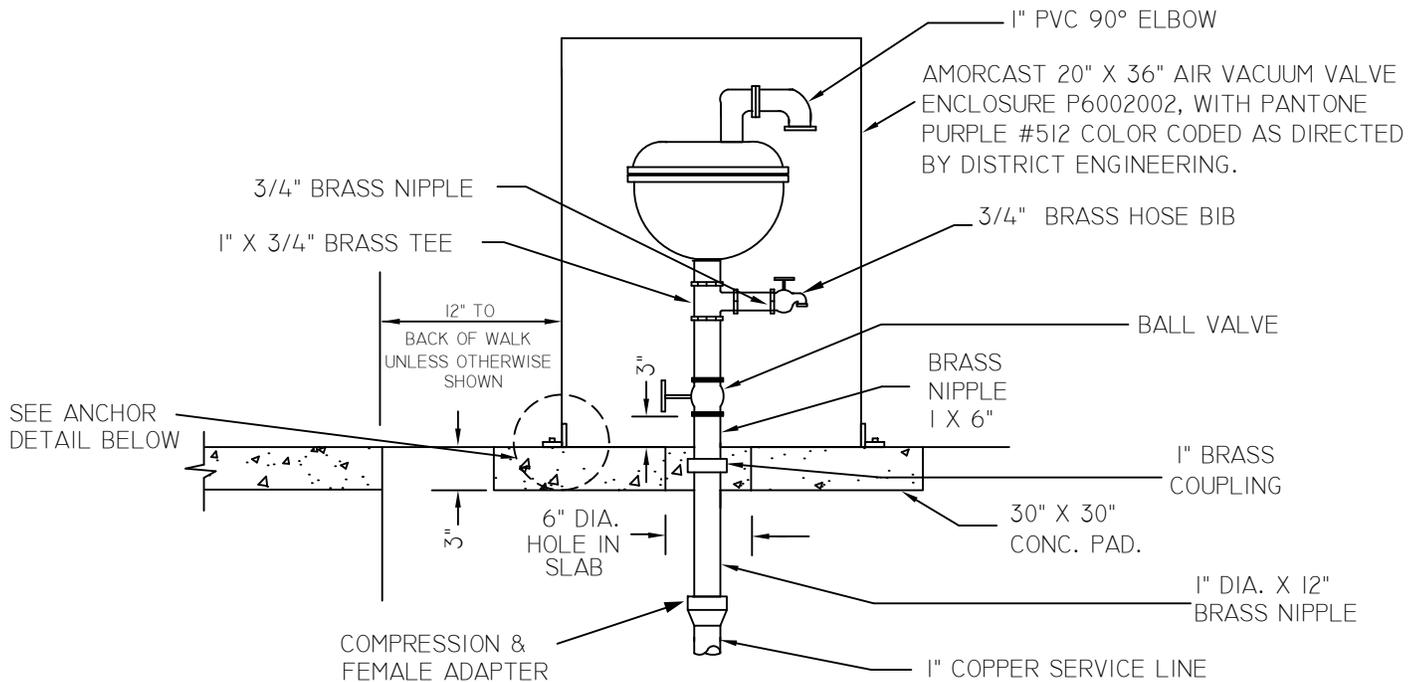
RW25

RECOMMENDED:

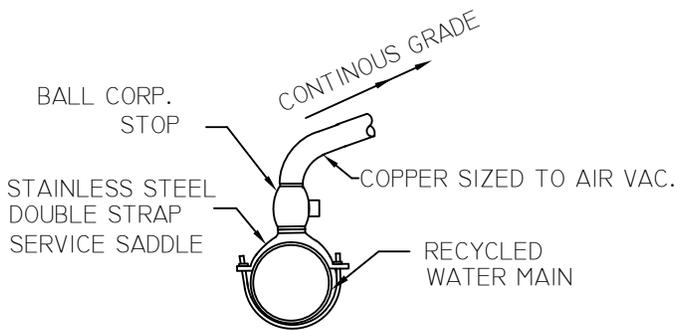
DISTRICT ENGINEER

APPROVED:

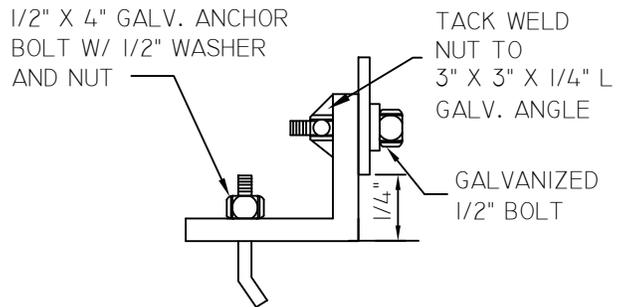
DIRECTOR OF PUBLIC WORKS



### 1" COMB. AIR RELEASE AND VACUUM VALVE ASSEMBLY



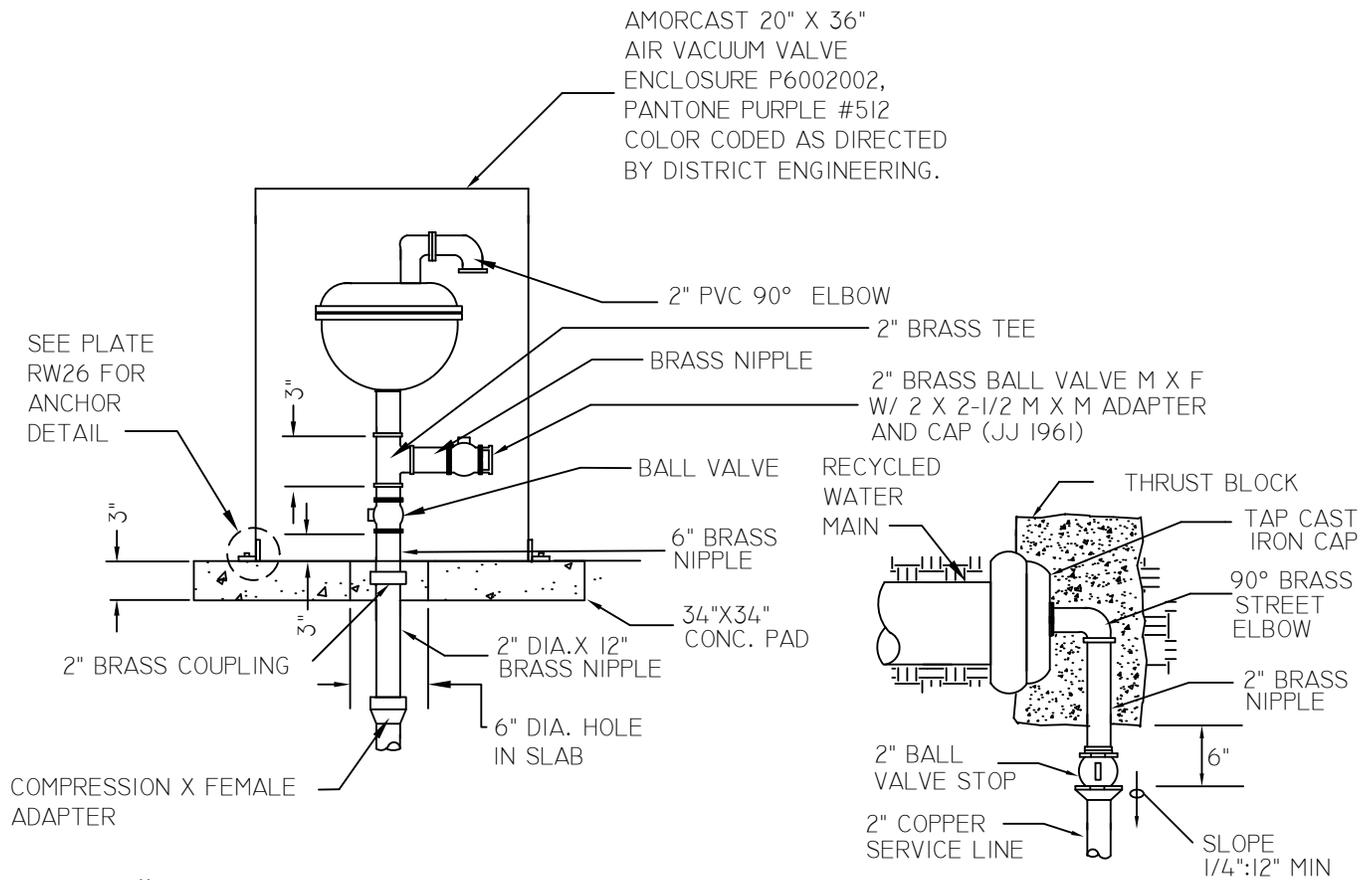
### AIR VAC CONNECTION AT HIGH POINT ON WATER MAIN



### ANCHOR DETAIL

NOTE: SEE RW27 FOR INSTALLATION NOTES AND END-OF-MAIN CONNECTION

<b>City of Simi Valley</b>  DEPARTMENT OF PUBLIC WORKS	VENTURA COUNTY WATERWORKS DISTRICT NO. 8		PLATE
	1-INCH COMBINATION AIR RELEASE AND VACUUM VALVE INSTALLATION		RW26
DISTRICT ENGINEERING	RECOMMENDED:	APPROVED:	FEB 2004
	DISTRICT ENGINEER	DIRECTOR OF PUBLIC WORKS	



2" COMB. AIR RELEASE AND  
VACUUM VALVE ASSEMBLY

END-OF-MAIN  
CONNECTION

NOTES

1. SERVICE LINE TO BE LAID UPHILL AT 2% OR GREATER SLOPE.
2. ASSEMBLIES IN EASEMENTS OR STREETS WITHOUT CURBS REQUIRE GUARD POSTS. GUARD POSTS TO BE 6" LENGTHS OF 4" STD. WT PIPE FILLED WITH GROUT AND SET 3' BELOW GRADE IN 18" O.D. CONC. BASE POSTS TO BE PLACED 2' IN FRONT OF AND 2'-6" EACH SIDE OF COMB. AIR RELEASE AND VACUUM VALVE ASSEMBLY.
3. USE 2" SERVICE LINES AND APPURTENANCES FOR END OF LINE LOCATIONS REGARDLESS OF VALVE SIZE REQUIRED.
4. ALL PIPING SHALL BE EXTRA STRONG BRASS AND SHALL BE OF THE SAME NOMINAL SIZE AS THE VALVE.
5. LOCATE EDGE OF HOUSING 12" BEHIND BACK OF SIDEWALK.
6. USE 4 ANCHOR CLIPS WITH SOLID CAN, 3 WITH HINGED CAN.
7. PAINT HOUSING AFTER FABRICATION IN ACCORDANCE WITH SECTION 3.16.

**City of Simi Valley**

DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

2-INCH COMBINATION AIR RELEASE  
AND VACUUM VALVE INSTALLATION

RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

RW27

FEB 2004

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

NOT USED

RECOMMENDED:

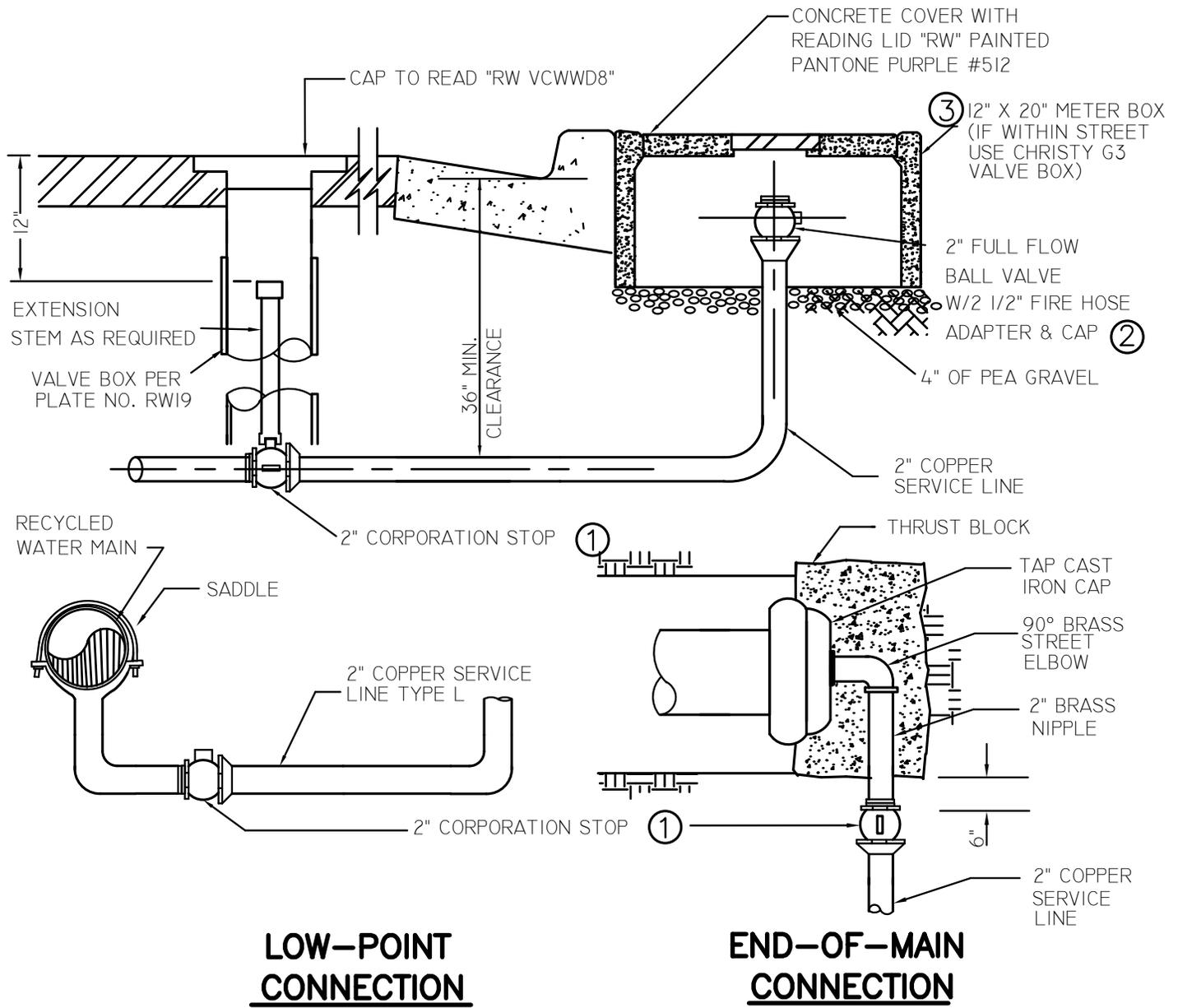
DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

RW28



- ① 2" CORPORATION STOP REFER TO SECTION 3.10 A5; FOR MATERIALS.
- ② 2" BALL VALVE REFER TO SECTION 3.10 A2; FOR MATERIALS.
- ③ VALVE BOX/VAULT; REFER TO SECTIONS 3.6 AND 3.10 A3; FOR MATERIALS.

**City of Simi Valley**  
  
 DEPARTMENT OF PUBLIC WORKS

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

PLATE  
**RW29**

**2" BLOW-OFF ASSEMBLY**

**DISTRICT ENGINEERING**

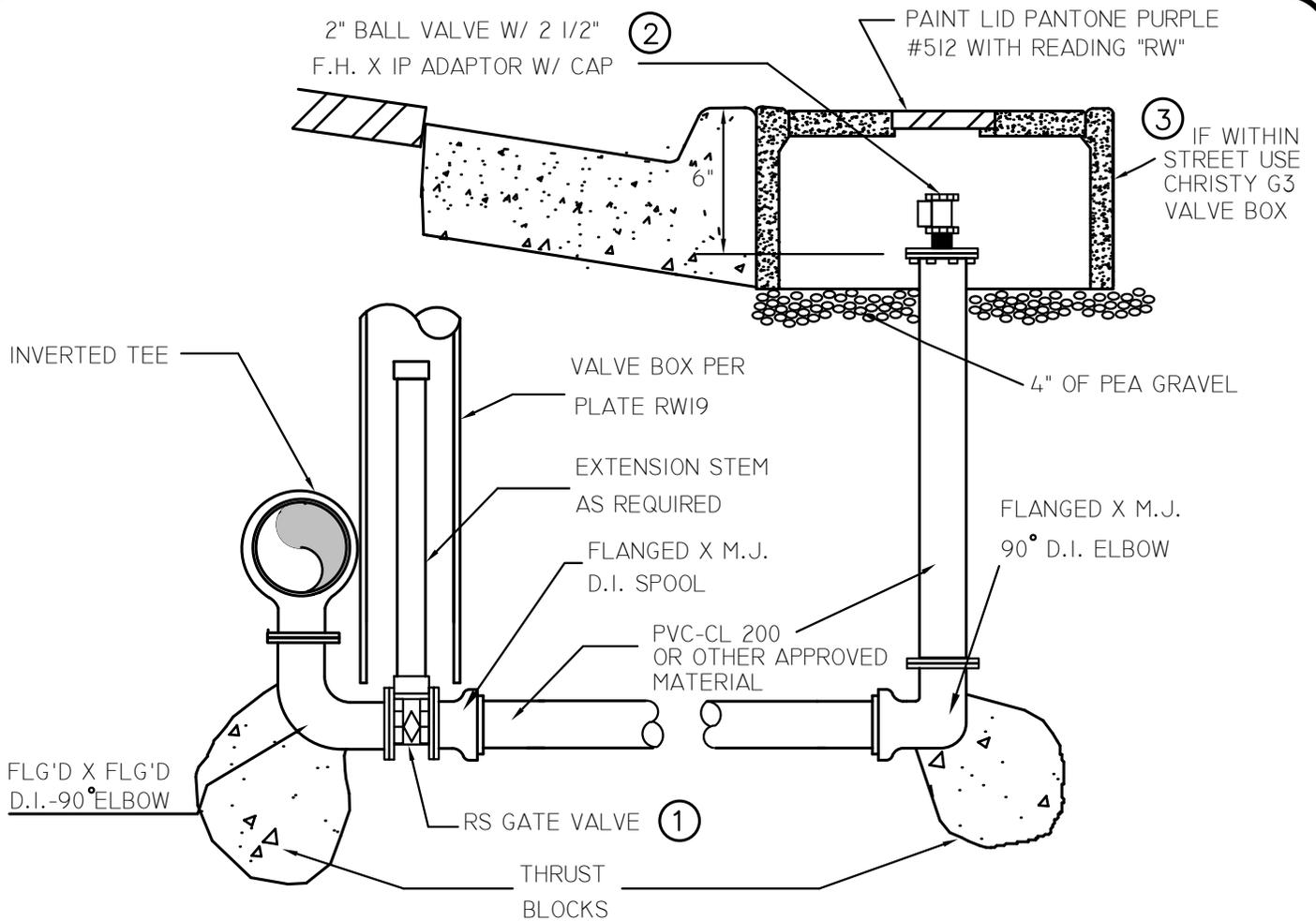
RECOMMENDED:

APPROVED:

DISTRICT ENGINEER

DIRECTOR OF PUBLIC WORKS

FEB 2004



### NOTES

1. REFER TO SECTIONS 3.4 (MAINLINE FITTINGS), 3.8 (MAINLINE VALUES), AND 7.11 AND 7.12 (INSTALLATION) FOR THE INSTALLATION AND PROTECTION OF BOLTED CONNECTIONS.
2. SEE PLATE RW38 FOR THRUST BLOCK DETAILS

- ① REFER TO SECTION 3.8B FOR MATERIALS.
- ② REFER TO SECTION 3.8E FOR MATERIALS.
- ③ VALVE BOX/VAULT; REFER TO SECTION 3.10 B6, FOR MATERIALS.

**City of Simi Valley**

DEPARTMENT OF PUBLIC WORKS

**DISTRICT ENGINEERING**

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

**4" BLOW-OFF ASSEMBLY**

PLATE  
**RW30**

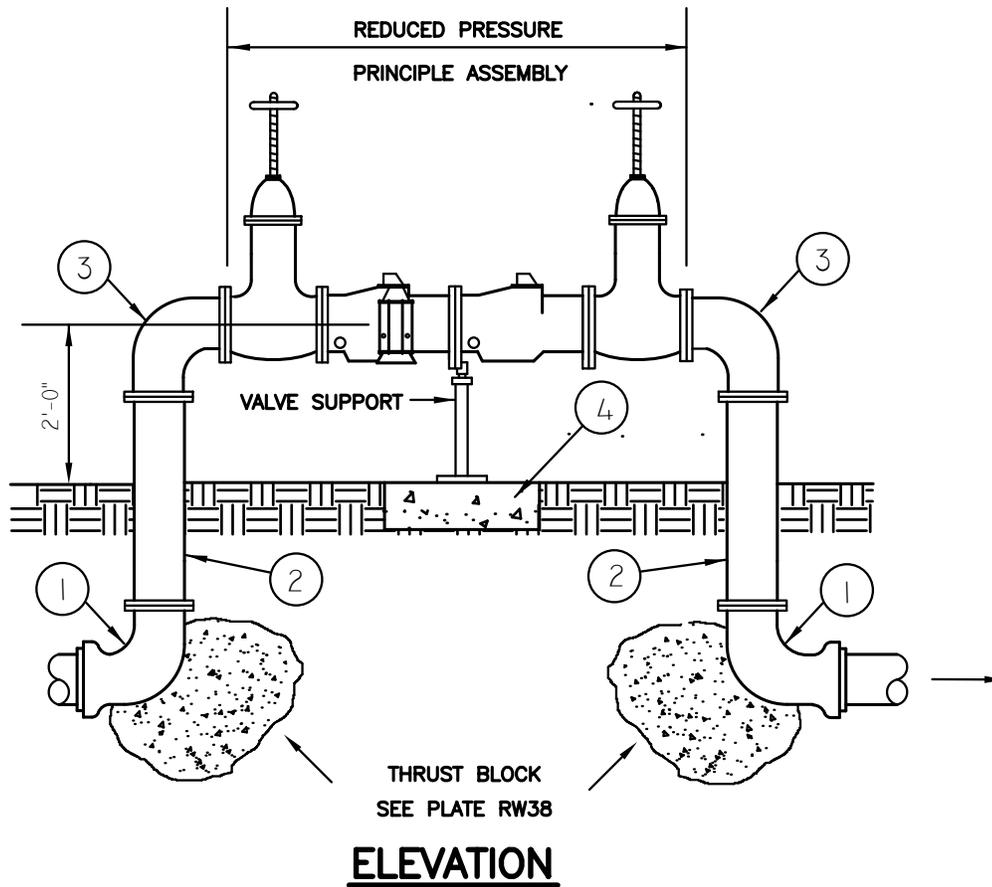
RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

FEB 2004



THIS ASSEMBLY SHALL BE INSPECTED BY VENTURA COUNTY WATERWORKS DISTRICT #8. AFTER DISTRICT APPROVAL, ASSEMBLY SHALL BE TESTED BY A COUNTY ENVIRONMENTAL HEALTH APPROVED TESTER. THE DEVELOPER/OWNER IS RESPONSIBLE FOR THE COST OF TESTING THE ASSEMBLY. A COPY OF THE TEST REPORT IS TO BE SUBMITTED TO THE WATER DISTRICT. PHONE # (805) 583-6894

NOTES:

1. 90°, DUCTILE IRON ELBOW: CL 350 FLG X FLG (UNI-FLANGE SHALL NOT BE USED)
2. FLANGED DUCTILE IRON SPOOL
3. 90°, FLANGED DUCTILE IRON ELBOW CL 350.
4. 12" X 12" X 4" CONCRETE SUPPORT PAD

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

**DISTRICT ENGINEERING**

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

**REDUCED PRESSURE  
PRINCIPLE ASSEMBLY**

RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

**RW31**

FEB 2004

**City of Simi Valley**



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

NOT USED

PLATE

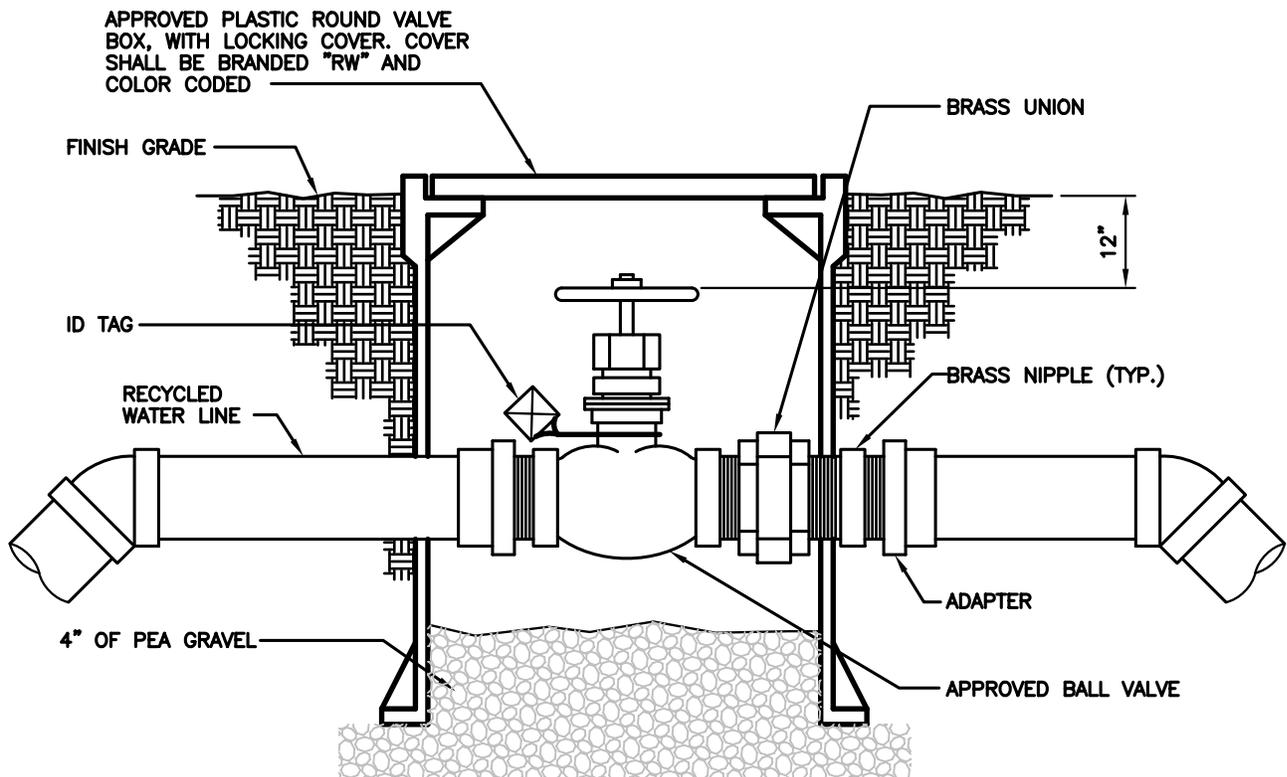
RW32

RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS



**NOTES:**

1. ATTACH PURPLE RECYCLED WATER IDENTIFICATION TAGS AS REQUIRED FOR RECYCLED WATER SYSTEMS.
2. ATTACH GREEN POTABLE WATER USED FOR IRRIGATION IDENTIFICATION TAGS AS DIRECTED ON POTABLE IRRIGATION SYSTEMS.
3. VALVES UP TO 3" DIA. SHALL HAVE MALLEABLE IRON OPERATING HANDLES. VALVES LARGER THAN 3" SHALL HAVE SQUARE OPERATING NUTS.
4. 4-45° ELBOW FITTINGS SHALL BE USED TO RAISE BALL VALVE TO WITHIN 12" OF FINISH GRADE.

City of Simi Valley

DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

IRRIGATION BALL VALVE

RECOMMENDED:

DISTRICT ENGINEER

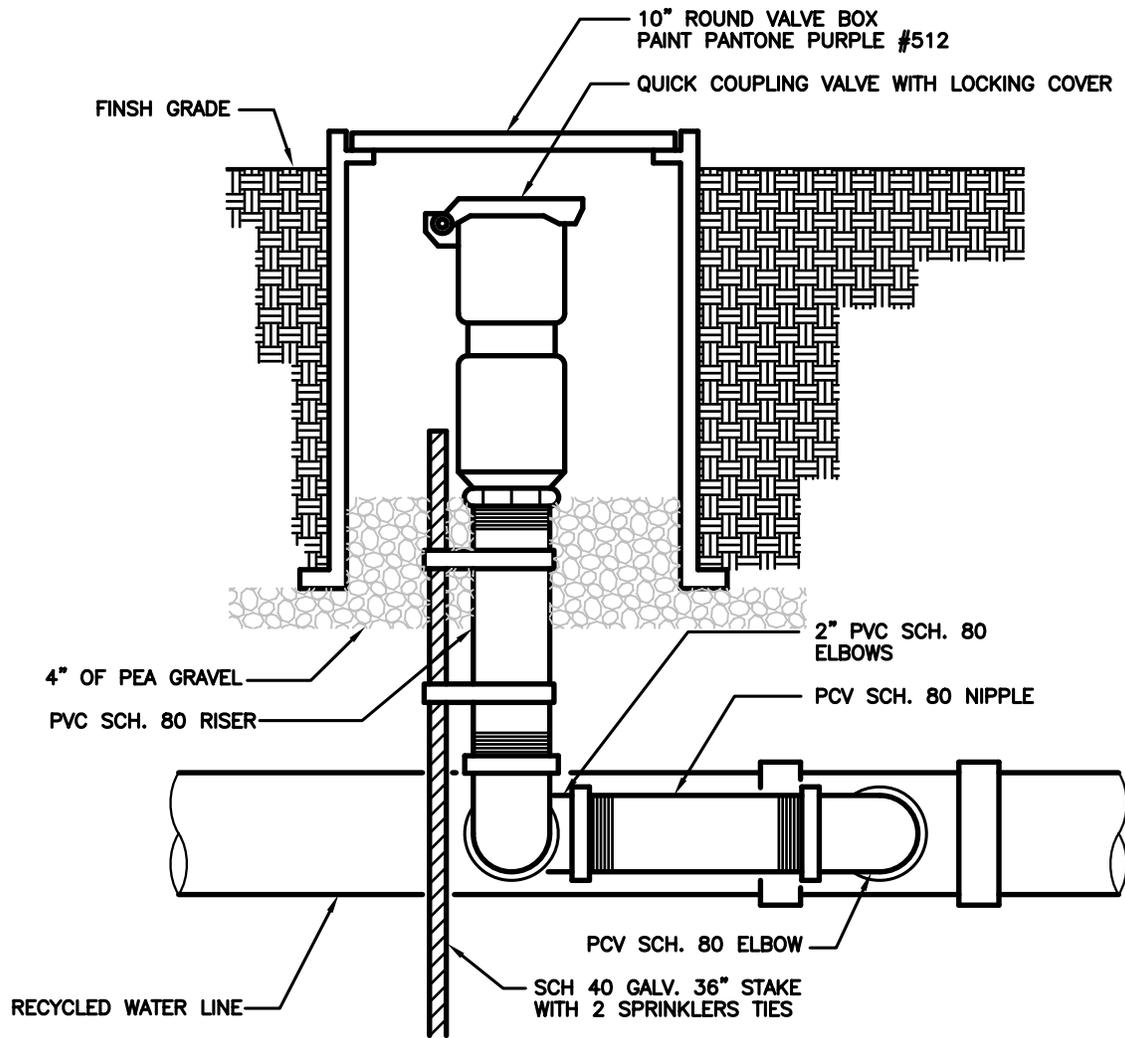
APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

RW33

FEB 2004



**NOTES:**

1. VALVE BOX LID SHALL BE BRANDED "RW" AND COLOR CODED
2. ATTACH RECYCLED WATER IDENTIFICATION TAGS.
3. ACME THREAD PIPE TYPE DEVICE FOR RECYCLED WATER USE.
4. PIN LOCK TYPE DEVICE.

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

QUICK COUPLING VALVE

RECOMMENDED:

DISTRICT ENGINEER

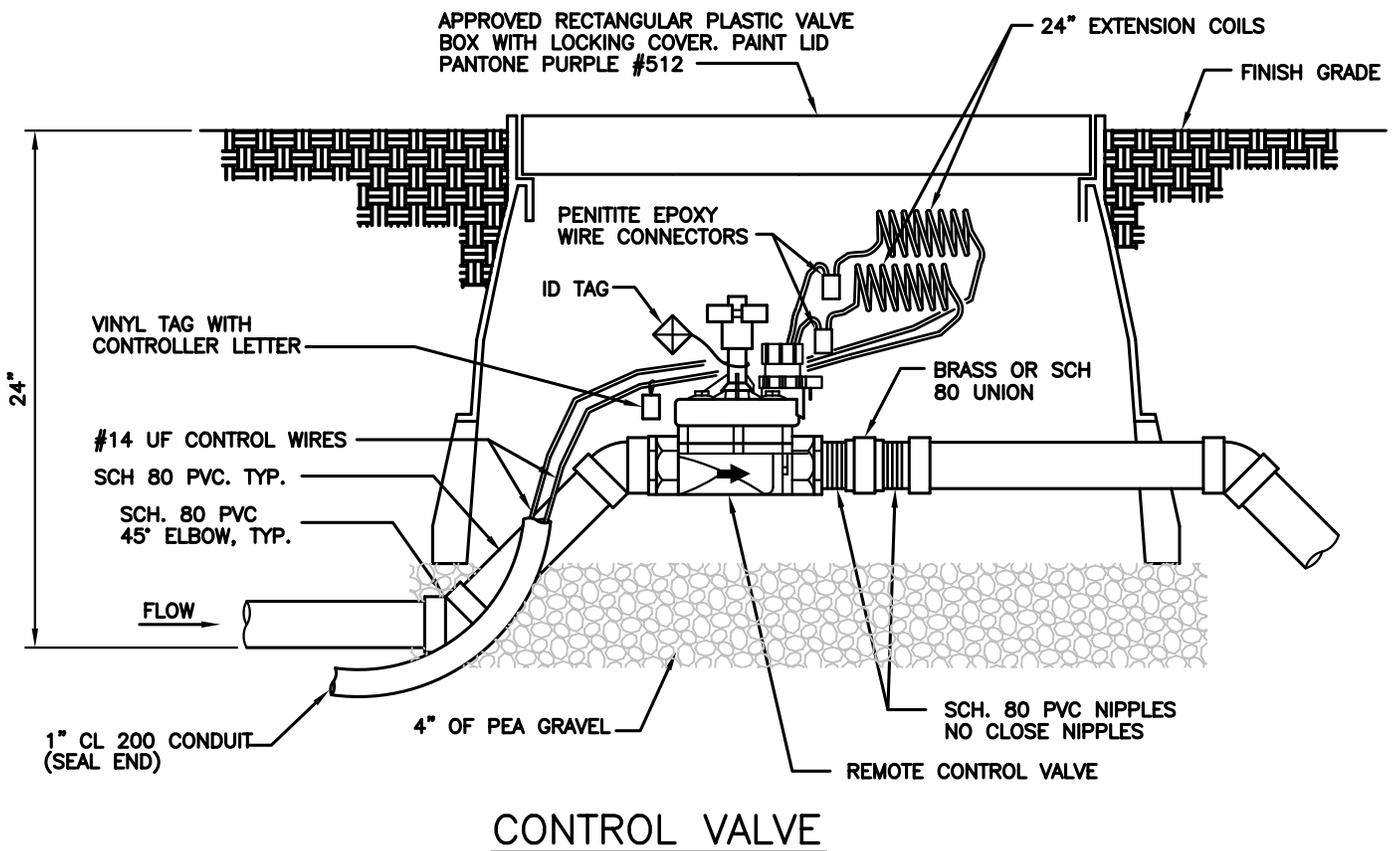
APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

RW34

FEB 2004



**NOTES:**

1. ATTACH PURPLE RECYCLED WATER IDENTIFICATION TAGS AS REQUIRED FOR RW SYSTEMS.
2. VALVE BOX LID SHALL BE BRANDED "RW."
3. ATTACH ID TAGS W/#14 UF WIRE OR ZIP TIE.
4. USE DIAELECTRIC COUPLINGS ON ALL STEEL PIPING.
5. VALVE BOXES SHOULD REST ON A GRAVEL SUMP.
6. GRAVEL SUMP MUST BE INSTALLED FIRST.

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

CONTROL VALVE

RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

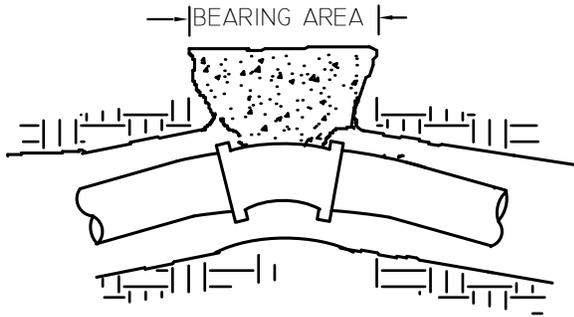
DIRECTOR OF PUBLIC WORKS

PLATE

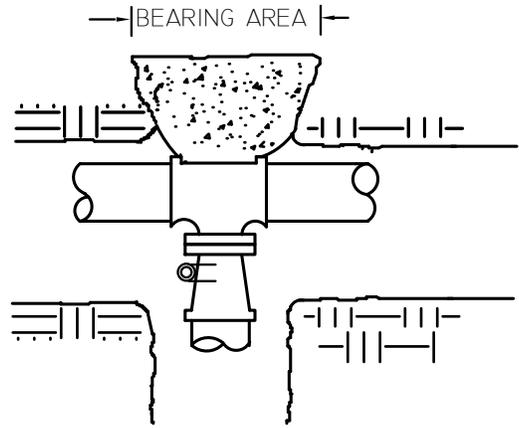
RW35

FEB 2004

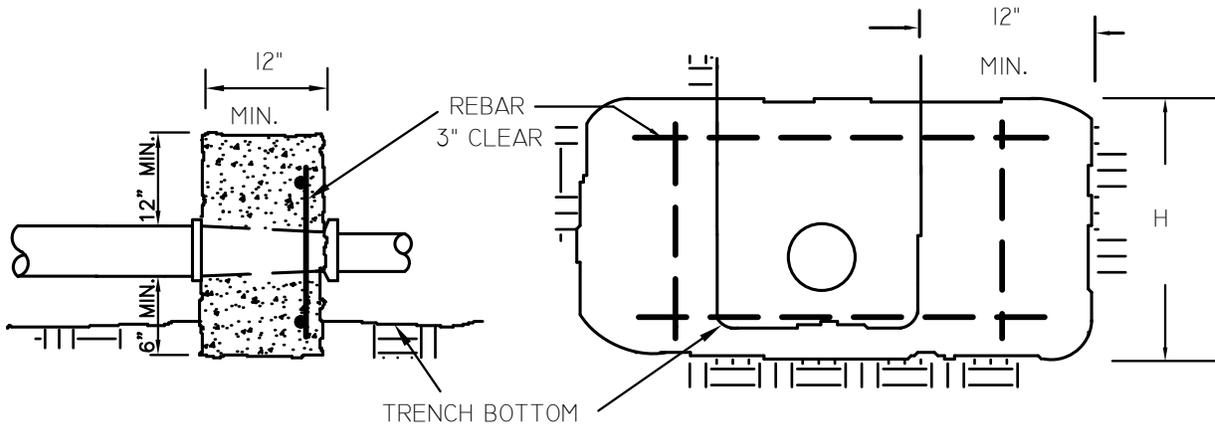
$\Delta = 90^\circ, 45^\circ, 22.5^\circ, 11.25^\circ$



**ELBOWS**



**TEES**



**REDUCERS**

NOTES:

1. THRUST BLOCKS SHALL BEAR ON AND BE KEYED INTO UNDISTURBED SOIL.
2. FOR THRUST BLOCK AND REBAR SIZES SEE PLATE RW38.
3. SPECIAL DESIGN & DISTRICT ENGINEER APPROVAL REQUIRED FOR VERTICAL ANGLES GREATER THAN 45.°

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

**DISTRICT ENGINEERING**

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

**THRUST BLOCKS**

PLATE

**RW36**

RECOMMENDED:

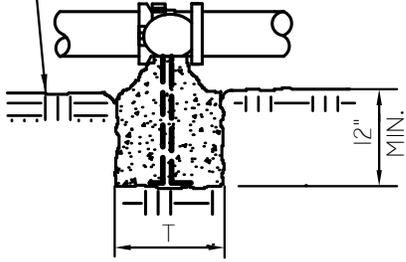
DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

FEB 2004

TRENCH  
BOTTOM

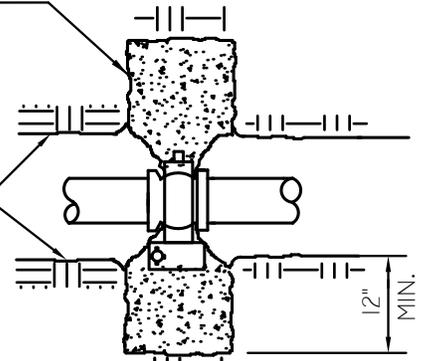


**ELEVATION**

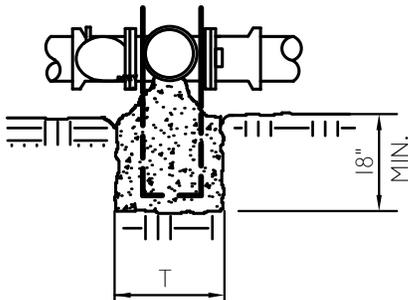
**IN-LINE VALVES**

ANCHOR  
BLOCKS, TYP

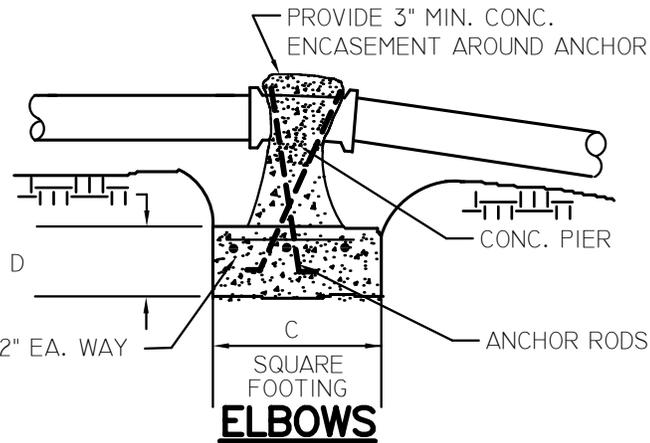
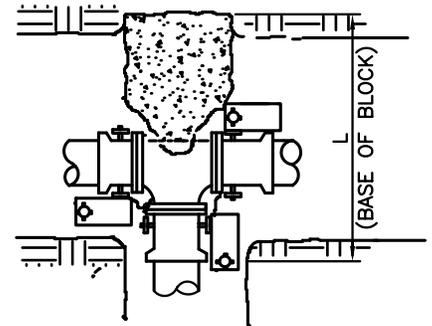
TRENCH  
SIDES



**PLAN**



**TEES**



**ELBOWS**

NOTES:

1. ANCHOR BLOCKS SHALL BEAR ON UNDISTURBED SOIL.
2. FOR ANCHOR BLOCK DIMENSIONS AND REBAR (ANCHOR ROD) SIZES SEE PLATE RW38.
3. SPECIAL DESIGN AND DISTRICT ENGINEER APPROVAL REQUIRED FOR VERTICAL ANGLES GREATER THAN 22 1/2 DEGREES.

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

**DISTRICT ENGINEERING**

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

**ANCHOR BLOCKS**

PLATE

**RW37**

RECOMMENDED:

APPROVED:

DISTRICT ENGINEER

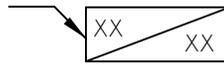
DIRECTOR OF PUBLIC WORKS

FEB 2004

## THRUST BLOCK SIZES

( MINIMUM BEARING AREA IN SQUARE FEET )

FOR CLASS  
150 PIPE



FOR CLASS  
200 PIPE

PIPE SIZE	ELBOWS				CAPPED END OR TEE	REDUCER H	REDUCER REBAR
	90	45	22 1/2	11 1/4			
6"	8 / 10	5 / 6	3 / 3	3 / 3	6 / 8	2'-0" / 2'-0"	NO. 3
8"	13 / 16	8 / 11	4 / 6	4 / 6	10 / 14	2'-0" / 2'-6"	NO. 4
10"	16 / 20	10 / 12	7 / 9	7 / 9	13 / 16	2'-6" / 3'-0"	NO. 5
12"	20 / 26	11 / 14	9 / 12	9 / 12	16 / 20	3'-0" / 3'-0"	NO. 5

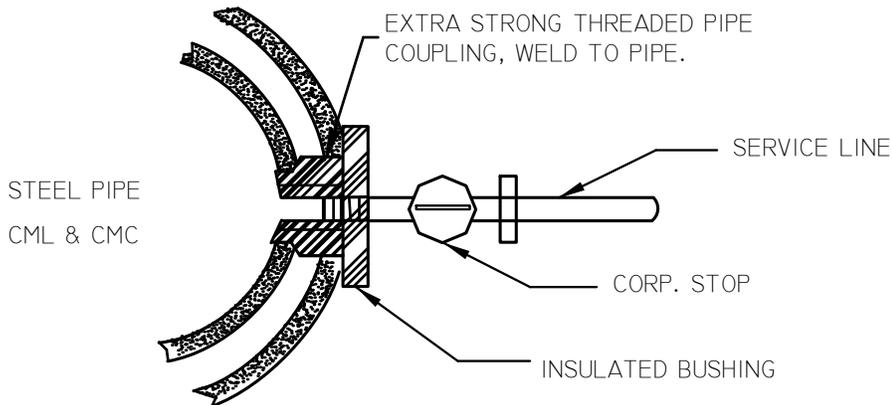
## ANCHOR BLOCK SIZES

PIPE SIZE	IN LINE VALVE	CONNECTIONS		ELBOWS		REBAR
	T	T	L	C	D	
6"	12"	12"	2'-6"	3'-0"	12"	NO. 5
8"	18"	18"	3'-9"	3'-6"	18"	NO. 5
10"	24"	24"	4'-10"	4'-6"	24"	NO. 6
12"	24"	24"	5'-0"	5'-6"	24"	NO. 6

NOTES:

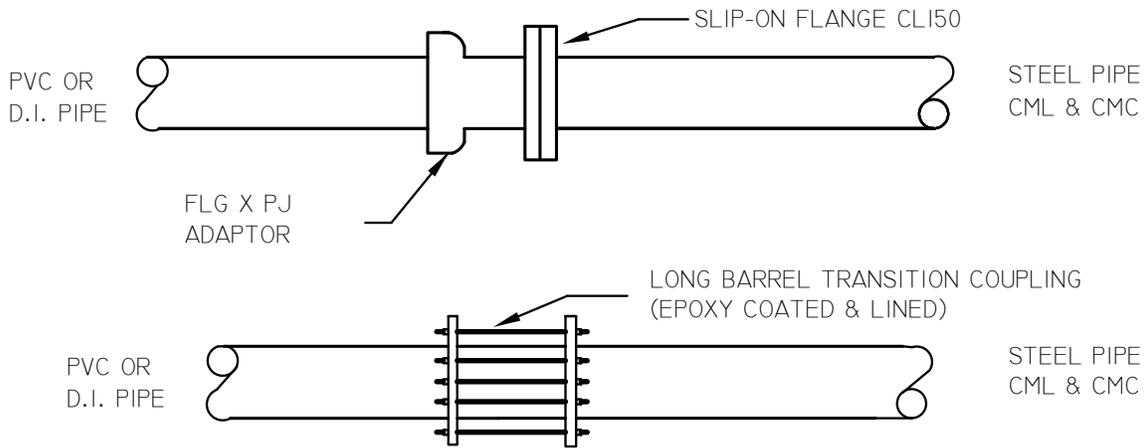
1. SIZES BASED ON 1500 PSF BEARING SOIL. SPECIAL DESIGN REQUIRED FOR SOILS OF LOWER BEARING STRENGTH.

<b>City of Simi Valley</b>  DEPARTMENT OF PUBLIC WORKS	VENTURA COUNTY WATERWORKS DISTRICT NO. 8	PLATE
	<b>THRUST AND ANCHOR BLOCK SIZES</b>	
DISTRICT ENGINEERING	RECOMMENDED: _____ DISTRICT ENGINEER	APPROVED: _____ DIRECTOR OF PUBLIC WORKS
		FEB 2004



**DIELECTRIC SERVICE CONNECTION TO STEEL MAIN**

( SEE NOTE I. )



**MAIN LINE CONNECTIONS**

NOTE:

- I. WRAP SERVICE CONNECTION WITH 20 MIL. TAPE FROM COUPLING TO 4- FEET FROM MAIN. WRAP CORP. STOP OR VALVE IN OPEN POSITION.

**City of Simi Valley**



DEPARTMENT OF PUBLIC WORKS

**DISTRICT ENGINEERING**

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

**DISSIMILAR PIPE CONNECTIONS**

PLATE

**RW39**

RECOMMENDED:

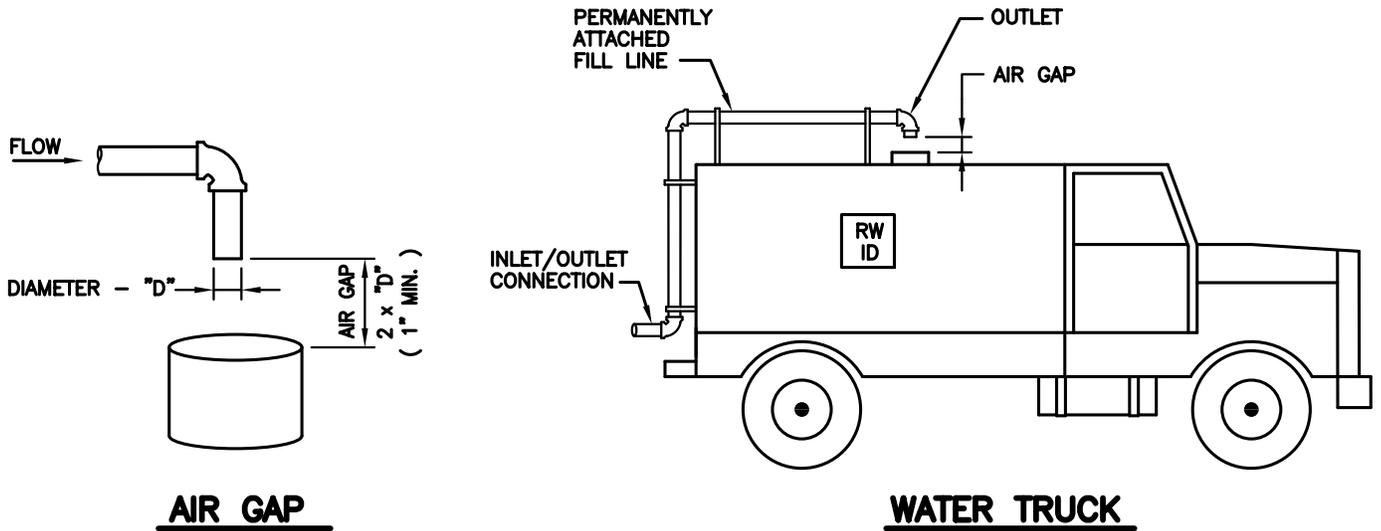
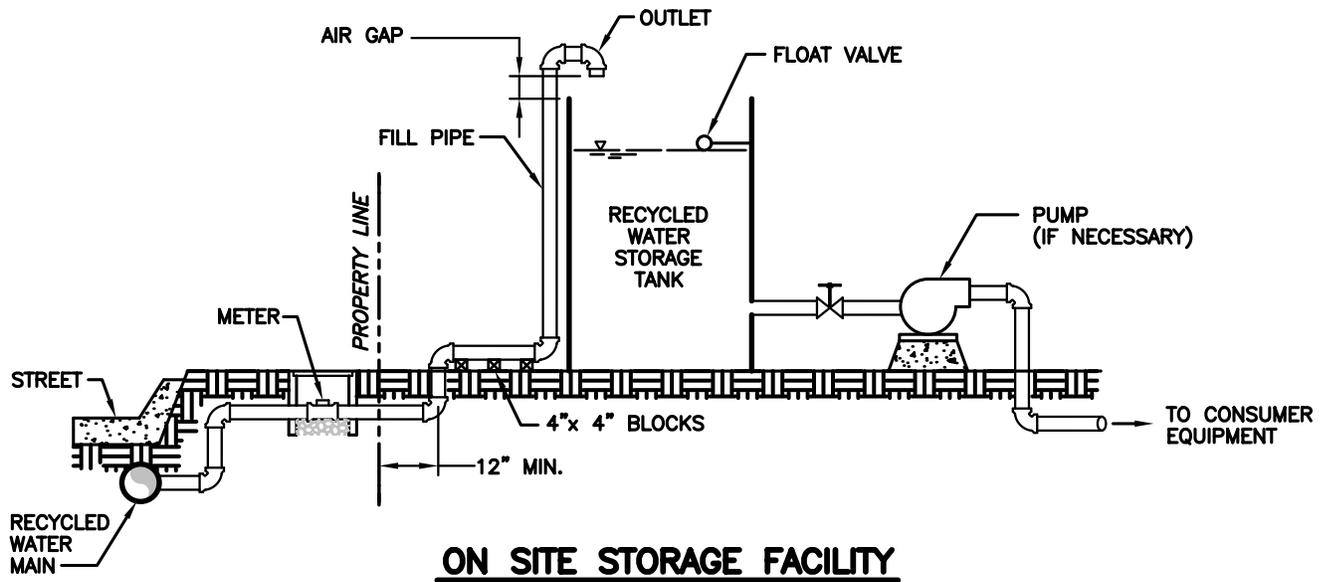
DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

FEB 2004





**NOTES:**

1. THE TERM "AIR GAP" SHALL MEAN A PHYSICAL SEPARATION BETWEEN THE FREE FLOWING DISCHARGE END AND A RECYCLED WATER SUPPLY PIPELINE AND AN OPEN OR NON-PRESSURE RECEIVING VESSEL. AN "APPROVED AIR GAP" SHALL BE AT LEAST DOUBLE THE DIAMETER OF THE SUPPLY PIPE MEASURED VERTICALLY ABOVE THE OVERFLOW RIM OF THE VESSEL - IN NO CASE LESS THAN 1 INCH.
2. ATTACH RECYCLED WATER IDENTIFICATION LABELS AND TAGS TO VEHICLE AS DIRECTED BY THE DISTRICT INSPECTOR.

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

AIR GAP

RECOMMENDED:

DISTRICT ENGINEER

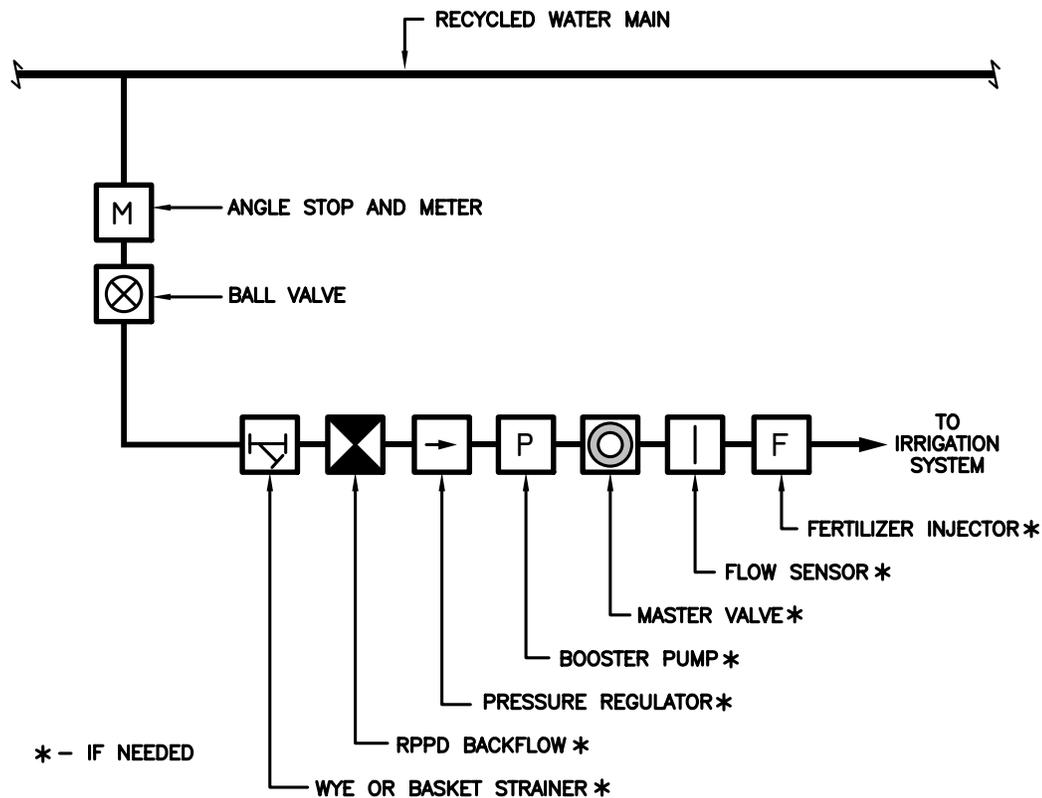
APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

RW41

FEB 2004



City of Simi Valley

DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

APPURTENANCE LAYOUT

RECOMMENDED:

DISTRICT ENGINEER

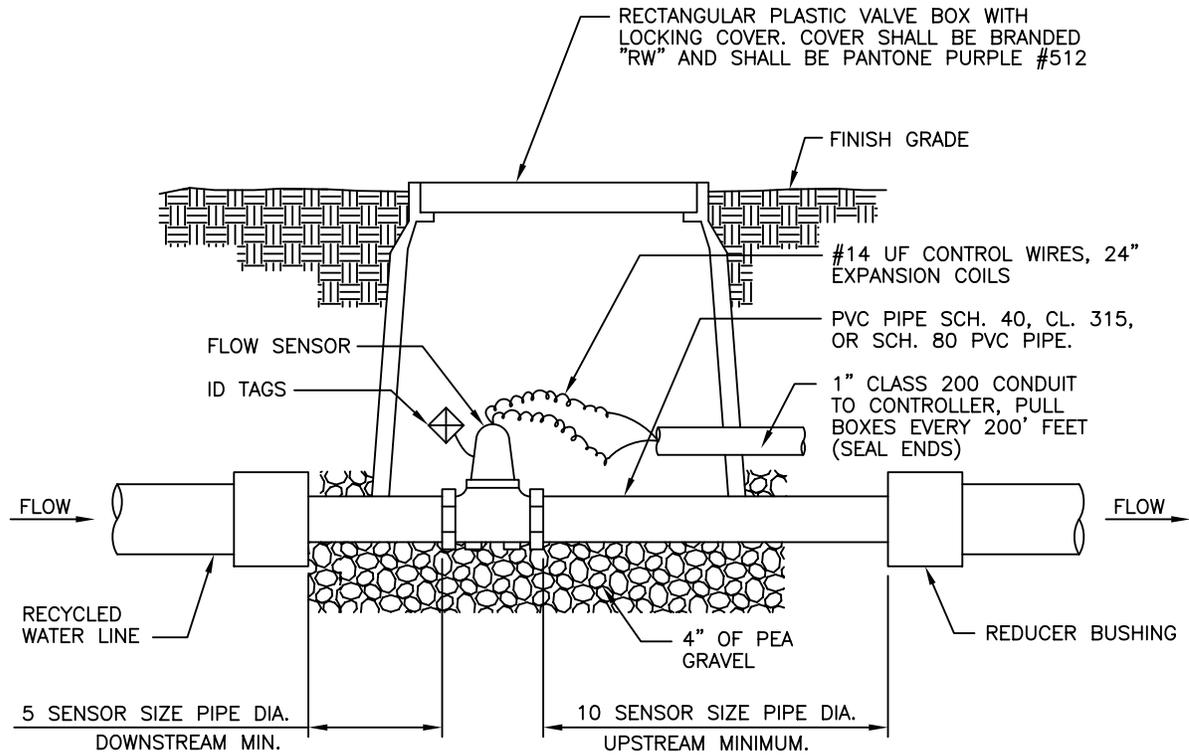
APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

RW42

FEB 2004



NOTES:

ATTACH PURPLE RECYCLED WATER IDENTIFICATION TAGS.

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

FLOW SENSOR

RECOMMENDED:

DISTRICT ENGINEER

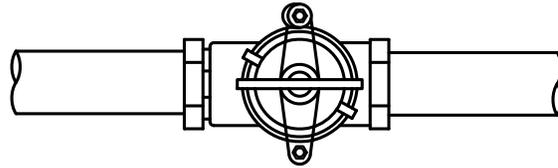
APPROVED:

DIRECTOR OF PUBLIC WORKS

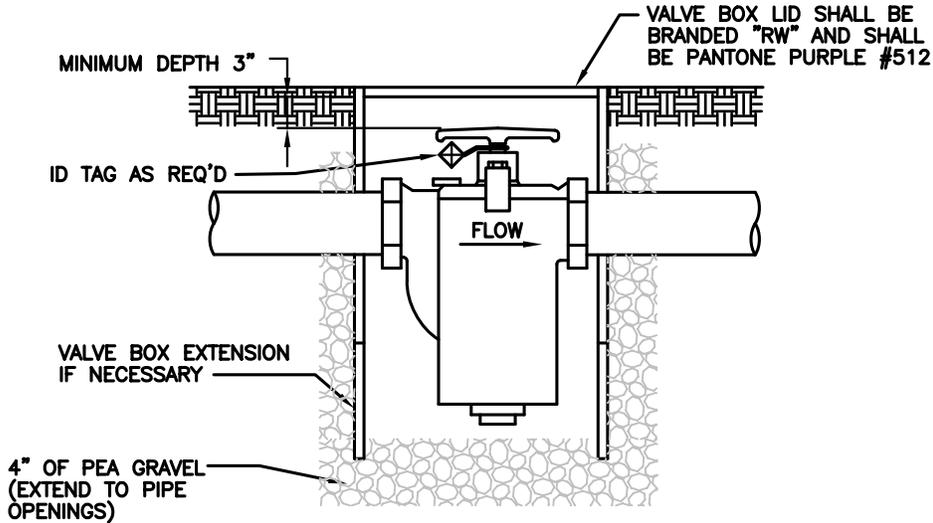
PLATE

RW43

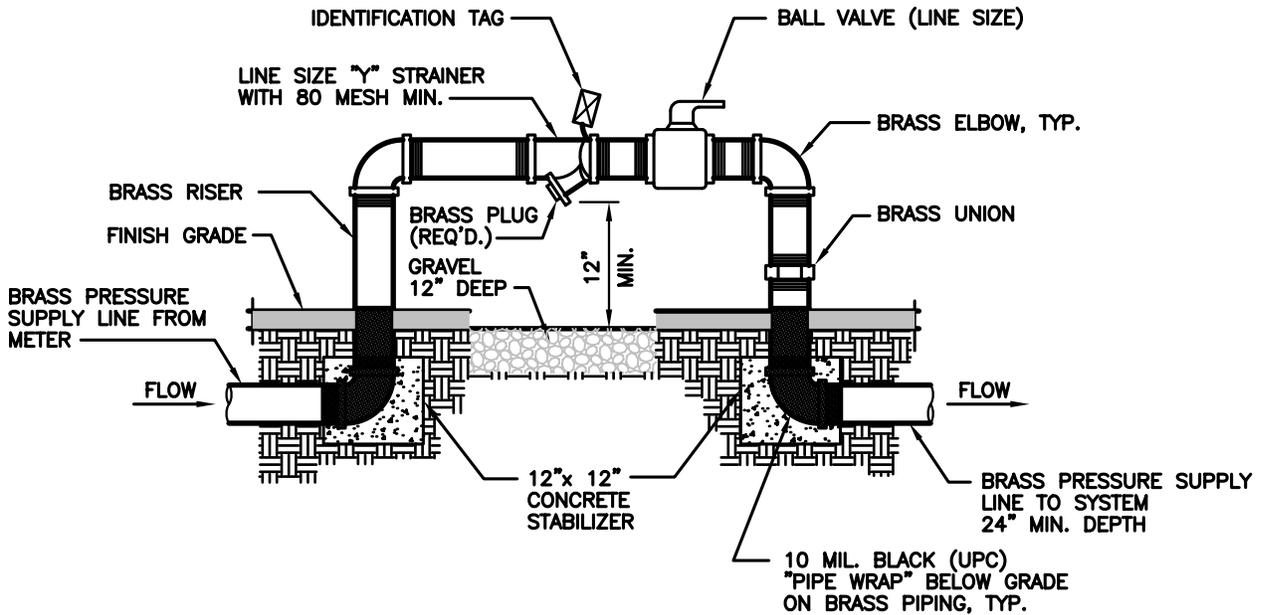
FEB 2004



**IN-LINE STRAINERS - PLAN VIEW**



**IN-LINE STRAINERS - SECTION VIEW**



**WYE STRAINERS - SECTION VIEW**

**NOTE:**

ATTACH PURPLE RECYCLED WATER IDENTIFICATION TAGS.

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

STRAINERS

RECOMMENDED:

DISTRICT ENGINEER

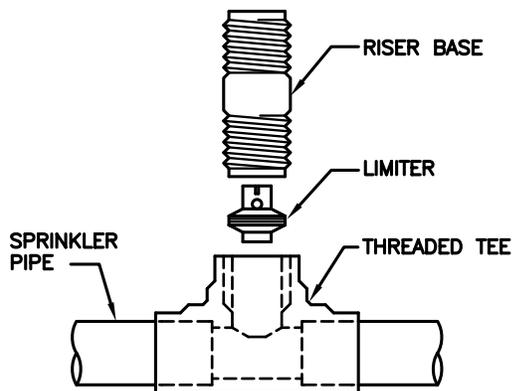
APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

RW44

FEB 2004



**NOTE:**

ASSURE THAT LIMITER IS SCREWED TO TEE BEFORE RISER IS INSTALLED.

SPRINKLER HEAD GPM	LIMITER PART NO.	PART NO. EXPLANATION
.25 TO 1.00	FSS - 6	<p><b>FS S - 6 - 3/4</b></p> <p>↑ ↑ ↑ ↑</p> <p>FLOOD STOP ORFICE SCREEN RISER SIZE</p>
1.00 TO 2.00	FSS - 8	
2.00 TO 3.00	FSS - 16	
3.00 TO 4.00	FSS - 24	
4.00 TO 5.00	FSS - 32	
5.00 TO 6.00	FSS - 40 - 3/4 (AVAILABLE IN 3/4" ONLY)	

**NOTES:**

LIMITERS ARE INDIVIDUALLY SCREENED TO PREVENT CONTAMINATION FROM ENTERING WATER LINES AND PLUGGING ORIFICE.

THE ABOVE GPM RANGE BASED ON WORKING (DYNAMIC) PRESSURE (OF 25 TO 60PSI).

CONSULT FACTORY FOR:

- (A) PRESSURE OUTSIDE RANGE OF 25 TO 60 PSI
  - (B) GPM'S IN EXCESS OF 6.00
  - (C) PIPE SIZES LARGER THAN 3/4"
- (NOTE: STANDARD PART NUMBER IS FOR 1/2")

- \* RECOMMENDED IN HIGH TRAFFIC AREAS.
- \* REQUIRED IN AREAS WHERE HEADS FREQUENTLY DAMAGED.

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

FLOODSTOP LIMITER

PLATE

RW45

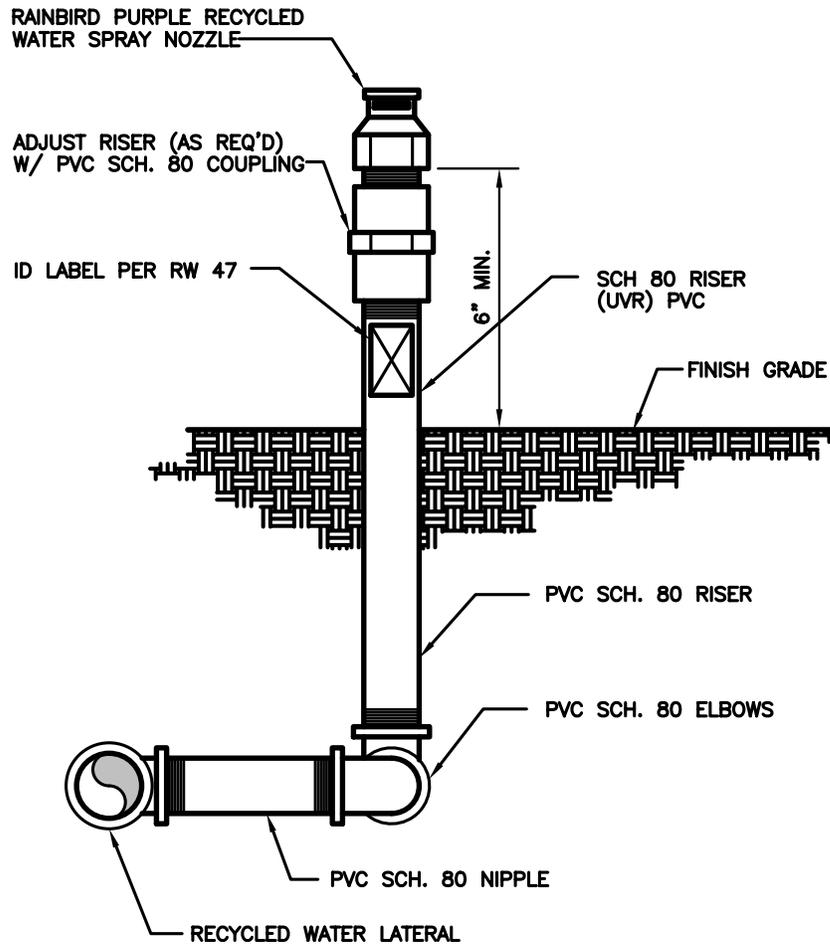
RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

FEB 2004



**NOTE:**

ATTACH PURPLE RECYCLED WATER IDENTIFICATION LABEL.

City of Simi Valley

DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

IDENTIFICATION ON RISER

RECOMMENDED:

DISTRICT ENGINEER

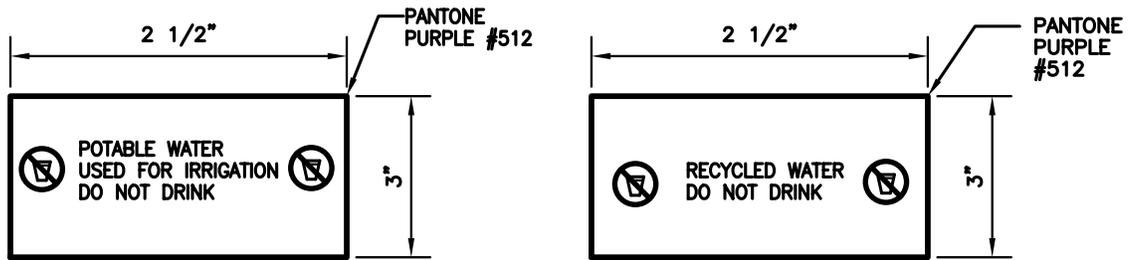
APPROVED:

DIRECTOR OF PUBLIC WORKS

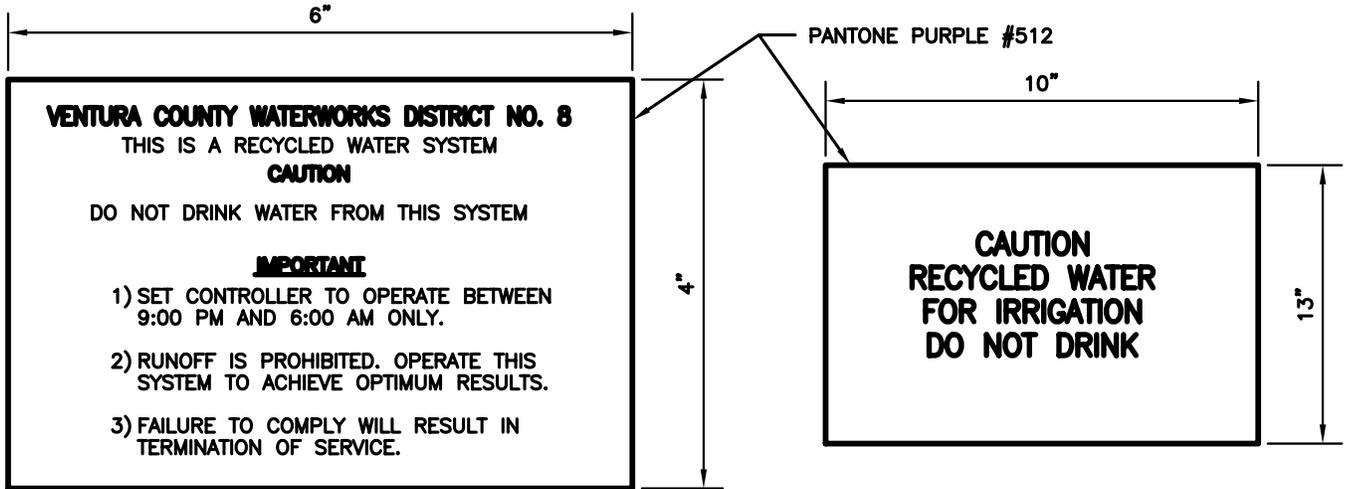
PLATE

RW46

FEB 2004

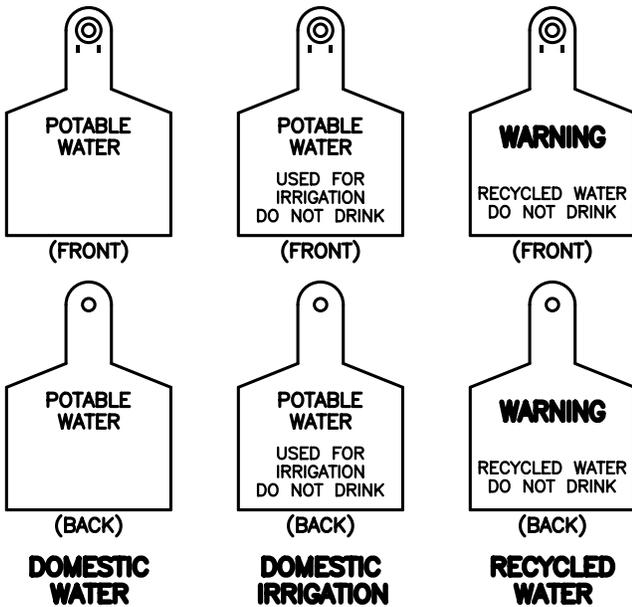


ABOVE GROUND PIPING LABELS



CONTROLLER ENCLOSURE LABEL

CONTROLLER LABEL



TAGS



WARNING  
TAPE

City of Simi Valley  
  
 DEPARTMENT OF PUBLIC WORKS

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

IDENTIFICATION TAGS AND LABELS

PLATE  
RW47

DISTRICT ENGINEERING

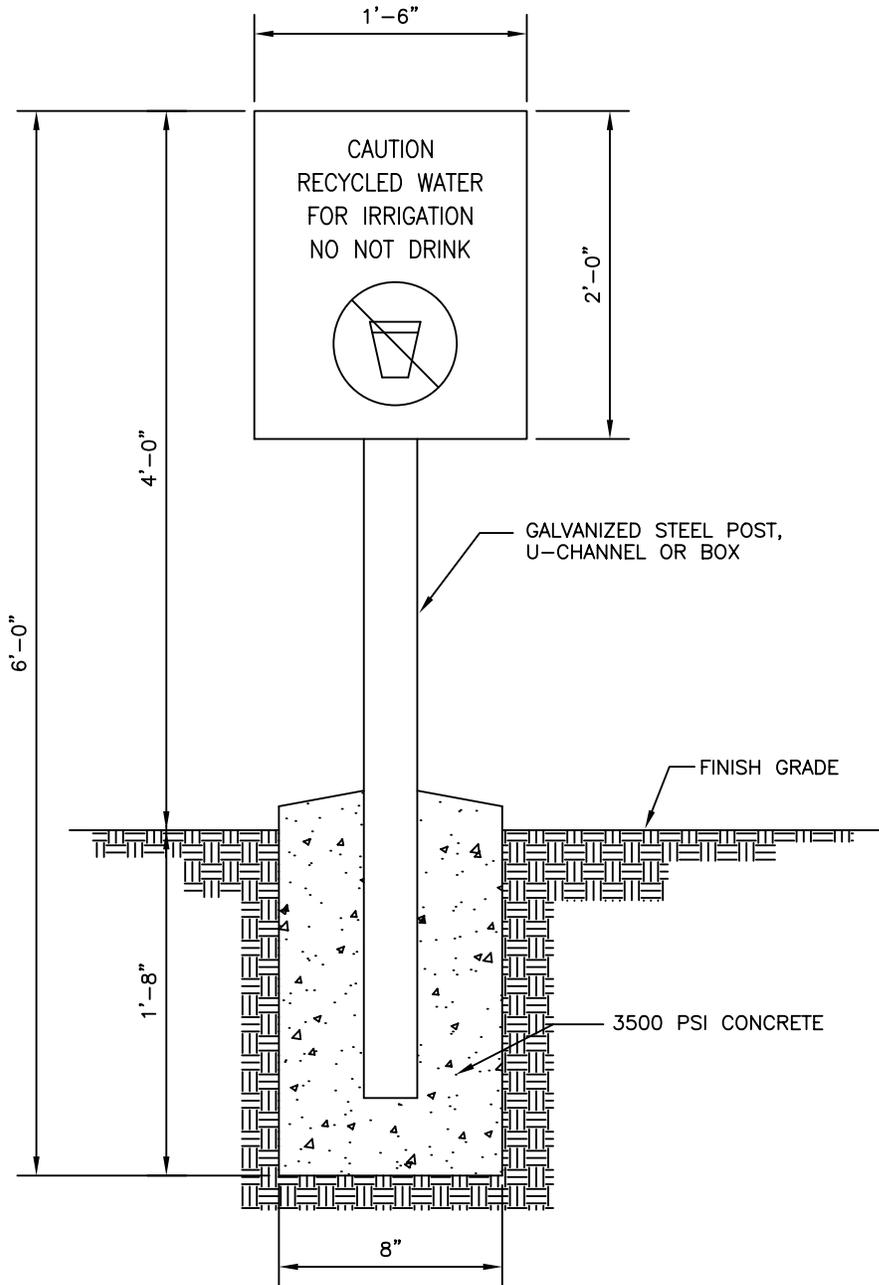
RECOMMENDED:

APPROVED:

DISTRICT ENGINEER

DIRECTOR OF PUBLIC WORKS

FEB 2004



NOTE:

TWO SIGNS MINIMUM PER SITE.

City of Simi Valley



DEPARTMENT OF PUBLIC WORKS

DISTRICT ENGINEERING

VENTURA COUNTY WATERWORKS DISTRICT NO. 8

RECYCLED WATER CAUTION SIGN

RECOMMENDED:

DISTRICT ENGINEER

APPROVED:

DIRECTOR OF PUBLIC WORKS

PLATE

RW48

FEB 2004

## GENERAL NOTES – RECYCLED WATER

1. THE RECYCLED WATER FACILITIES TO BE CONSTRUCTED SHALL BE IN ACCORDANCE WITH THE RECYCLED WATER DESIGN AND CONSTRUCTION STANDARDS OF VENTURA COUNTY WATERWORKS DISTRICT NO. 8.
2. THE CONTRACTOR SHALL NOTIFY THE DEPUTY DIRECTOR / WATERWORKS SERVICES, AT (805) 583-6408 AT LEAST TWO WORK DAYS PRIOR TO THE START OF WORK OR THE RESUMPTION OF WORK. NO TIE-IN SHALL BE MADE WITHOUT THE PERMISSION OF THE DEPUTY DIRECTOR. NO DISRUPTION TO EXISTING RECYCLED WATER DISTRIBUTION MAINS WILL BE ALLOWED ON MONDAYS OR FRIDAYS. ALL SHUTDOWNS FOR SYSTEM TIE-INS WILL BE SCHEDULED BETWEEN TUESDAY, WEDNESDAY AND THURSDAY, AND WILL BE CONFINED TO NORMAL WORKING HOURS.
3. THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT TWO (2) WORKING DAYS PRIOR TO STARTING EXCAVATION, AND EXISTING WATER FACILITIES SHALL BE MARKED IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. (UNDERGROUND SERVICE ALERT: 1-800-227-2600).
4. CONTRACTOR SHALL OBTAIN A CONSTRUCTION WATER PERMIT AND SHALL BE RESPONSIBLE FOR METERING AND PAYING FOR ALL RECYCLED WATER USED DURING CONSTRUCTION. PRIOR TO START OF CONSTRUCTION, PAYMENT CORRESPONDING TO THREE TIMES THE CALCULATED VOLUME OF WATER CONTAINED WITHIN THE NEW WATER SYSTEM SHALL BE PAID TO ACCOUNT FOR FLUSHING. THE CALCULATED VOLUME OF THE NEW WATER SYSTEM IS \_\_\_\_\_.
5. THE EXISTENCE AND LOCATION OF EXISTING WATER FACILITIES AS SHOWN ON THE PLANS SHALL BE CONFIRMED BY FIELD MEASUREMENTS AND EXCAVATION EXPLORATION (POTHOLING) BY THE CONTRACTOR. THE DISTRICT AND THE CITY OF SIMI VALLEY SHALL NOT BE HELD RESPONSIBLE FOR ANY ERROR IN THE LOCATION AND ELEVATION OF THE EXISTING WATER FACILITIES.
6. THE CONTRACTOR SHALL VERIFY AND PROTECT IN PLACE ALL EXISTING UNDERGROUND STRUCTURES. ANY DAMAGE TO EXISTING UNDERGROUND STRUCTURES SHALL BE IMMEDIATELY REPAIRED AT NO COST TO THE DISTRICT.
7. NO DEVIATION FROM OR REVISION TO THESE PLANS SHALL BE MADE WITHOUT THE APPROVAL OF THE DISTRICT ENGINEER.
8. APPROVAL OF PLANS EFFECTIVE FOR TWO (2) YEARS AFTER DATE OF SIGNATURE BY THE DISTRICT ENGINEER.
9. ALL WATER LINE ELEVATIONS SHOWN ON PLANS ARE TOP OF PIPE UNLESS OTHERWISE NOTED.
10. STATIONING IS BASED ON WATER PIPELINE CENTERLINE AND NOT STREET CENTERLINE.
11. PIPE DEFLECTIONS FOR SHORT RADIUS CURVES AND ANGLE POINTS SHALL NORMALLY BE ACCOMPLISHED BY MEANS OF STANDARD FITTINGS, THE LOCATIONS OF WHICH SHALL BE DETAILED ON THE PLANS.
12. THE INSIDE AND OUTSIDE OF THE PIPE SHALL BE CLEAN AND FREE FROM FOREIGN MATERIAL OF ANY KIND BEFORE BEING INSTALLED.
13. UNLESS OTHERWISE DIRECTED BY THE DISTRICT ENGINEER, ALL VALVES 10" DIAMETER OR SMALLER, SHALL BE RESILIENT SEATED GATE VALVES. ALL RESILIENT SEATED GATE VALVES SHALL BE EPOXY COATED, WITH STAINLESS STEEL NUTS AND BOLTS AS MANUFACTURED BY THE CLOW CORPORATION, THE MULLER COMPANY, THE AMERICAN WATER COMPANY, OR APPROVED EQUAL.
14. ALL VALVES 12" DIAMETER AND LARGER, SHALL BE BUTTERFLY VALVES CONFORMING TO AWWA C-504, LATEST EDITION EXCEPT THAT THE VALVE SHAFT SHALL BE A ONE PIECE UNIT EXTENDING COMPLETELY THROUGH THE VALVE DISC, 18-8 STAINLESS STEEL TYPE 304. ALL BUTTERFLY VALVES SHALL HAVE A TWO PART 100 PERCENT SOLIDS CATALYTICALLY SETTING EPOXY LINING MANUFACTURED FOR POTABLE WATER SERVICE. ACCEPTABLE MANUFACTURES ARE PRATT GROUNDHOG, OR APPROVED EQUAL.

 <b>City of Simi Valley</b> DEPARTMENT OF PUBLIC WORKS	VENTURA COUNTY WATERWORKS DISTRICT NO. 8	PLATE
	<b>GENERAL NOTES RECYCLED WATER</b>	<b>RW49</b> I OF 2
<b>DISTRICT ENGINEERING</b>	RECOMMENDED:	APPROVED:
	DISTRICT ENGINEER	DIRECTOR OF PUBLIC WORKS
		FEB 2004

## GENERAL NOTES – RECYCLED WATER (CONT.)

15. NUTS AND BOLTS ON ALL FLANGE FITTINGS SHALL BE CADMIUM PLATED AND COATED PER CHAPTER 3 OF THE DISTRICT STANDARDS, EXCEPT FOR BURIED SERVICE WHICH SHALL BE 316 STAINLESS STEEL. ALL BOLT THREADS SHALL BE COATED WITH KOPPERS BITUMATIC No. 50 PRIOR TO INSTALLATION. BURIED SERVICE SHALL ALSO BE WRAPPED PER CHAPTER 3.

16. ALL UNDERGROUND DUCTILE IRON PIPE AND FITTINGS SHALL BE ENCASED IN 2 LAYERS OF 8-MIL POLYETHYLENE ENCASUREMENT, AND INSTALLATION SHALL BE IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 AND CHAPTER 3.16C OF THE DISTRICT RULES AND REGULATIONS.

17. PCV OR NON CONDUCTIVE RECYCLED WATER MAINS SHALL HAVE 12 GAGE INSULATED COPPER WIRE. WIRE SHALL BE LOOPED IN VALVE STACKS AND EXTENDED TO FINISH GRADE.

18. FOR SERVICE CONNECTIONS, THE CONTRACTOR SHALL INSTALL A BALL VALVE CORPORATION STOP, BALL VALVE ANGLE STOP, BALL CUSTOMER HAND VALVE, AND WATER SERVICE WITH A METER BOX. METER BOXES SHALL BE COMPOSITE MODEL 37S OR APPROVED EQUAL WITH TOUCH READ LIDS (COMPOSITE). LID SHALL BE PURPLE COLOR. THE SERVICE LOCATIONS SHALL BE SHOWN ON THE RECORD DRAWINGS BY STATIONING PRIOR TO ACCEPTANCE BY THE DISTRICT. ALL SERVICE SADDLES SHALL BE STAINLESS STEEL FOR C900 PVC PIPE. SADDLES SHALL BE FORD-202-BS-IP, JONES-J969 OR APPROVED EQUAL. SUBSTITUTES MAY ONLY BE USED UPON APPROVAL BY THE DEPUTY DIRECTOR / WATERWORKS SERVICES. METER BOXES SHALL BE LOCATED DIRECTLY BEHIND THE CURB AND THE LOCATION SHALL BE INSCRIBED ON THE FACE OF THE CURB WITH AN "RW". UNDER NO CIRCUMSTANCES SHALL THE RECYCLED METER BE PLACED IN A DRIVEWAY. THERE SHALL BE A MINIMUM SEPARATION OF 10 FT. BETWEEN RECYCLED WATER SERVICES AND SEWER LATERALS OR POTABLE WATER SERVICES. THERE SHOULD ALSO BE A MINIMUM SEPARATION OF 5 FT. BETWEEN THE CENTER OF A STREET TREE AND THE NEAREST EDGE OF THE METER BOX. RECYCLED WATER METERS WILL BE FURNISHED AND INSTALLED BY THE DISTRICT UPON APPLICATION AND PAYMENT OF APPLICABLE FEES PRIOR TO LANDSCAPING.

19. RECYCLED WATER IDENTIFICATION TAPE AND/OR TAGS SHALL BE INSTALLED ON ALL RECYCLED WATER PIPING, INCLUDING SERVICES LINES, APPURTENANCES, AND CONNECTIONS IN ACCORDANCE WITH THE DISTRICT RULES AND REGULATIONS.

20. PIPE BEDDING AND TRENCH BACKFILL SHALL CONFORM TO DISTRICT STANDARD DRAWINGS AND TO PUBLIC WORKS TRENCH BACKFILL AND PAVING REQUIREMENTS. THE PIPE SHALL BE LAID ON 4-INCH MINIMUM SAND BED WITH SAND EQUIVALENT OF 45 OR MORE. THE BEDDING MATERIAL FOR THE PIPE ZONE SHALL BE SAND OR NATIVE MATERIAL WITH A S.E. OF 45 OR MORE, FREE FROM STONES, CLODS, AND OTHER DELETERIOUS MATERIALS.

21. FAILURE BY THE CONTRACTOR TO SUBMIT REQUIRED SHOP DRAWINGS OR INSTALLATION OF UNACCEPTABLE COMPONENTS MAY REQUIRE REMOVAL OF NON-COMPLYING COMPONENTS AND REPLACEMENT WITH ACCEPTABLE COMPONENTS AT NO COST TO THE DISTRICT.

22. PRIOR TO CONNECTION TO THE DISTRICT'S RECYCLED WATER SYSTEM, CONTRACTOR SHALL PRESSURE TEST ALL NEWLY CONSTRUCTED RECYCLED WATER FACILITIES IN ACCORDANCE WITH DISTRICT REQUIREMENTS AND APPLICABLE STATE AND COUNTY HEALTH STANDARDS. ALL TESTING SHALL BE UNDER THE OBSERVATION OF THE DISTRICT REPRESENTATIVE.

23. ALL WATER DISCHARGE FROM FLUSHING, TESTING, AND DEWATERING SHALL COMPLY WITH REQUIREMENTS OF THE LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD, REGION 4.

24. THE CONTRACTOR SHALL SALVAGE ALL APPROVED FITTINGS WHICH ARE REMOVED AND DELIVER THEM UNDAMAGED TO THE DISTRICT'S YARD (2799 WALNUT AVENUE, SIMI VALLEY) AT NO COST TO THE DISTRICT.

<b>City of Simi Valley</b>  DEPARTMENT OF PUBLIC WORKS	VENTURA COUNTY WATERWORKS DISTRICT NO. 8	PLATE
	<b>GENERAL NOTES RECYCLED WATER</b>	<b>RW49</b> 2 OF 2
<b>DISTRICT ENGINEERING</b>	RECOMMENDED:	APPROVED:
	DISTRICT ENGINEER	DIRECTOR OF PUBLIC WORKS
		FEB 2004