



WEST VALLEY WATER DISTRICT
855 W. Base Line Road Rialto, CA 92376
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**SPECIAL POLICY REVIEW AND
OVERSIGHT COMMITTEE
MEETING AGENDA**

THURSDAY, FEBRUARY 25TH, 2021 - 6:00 PM

NOTICE IS HEREBY GIVEN that West Valley Water District has called a meeting of the Policy Review and Oversight Committee to meet in the Administrative Conference Room, 855 W. Base Line Road, Rialto, CA 92376.

Teleconference Notice: In an effort to prevent the spread of COVID-19 (Coronavirus), and in accordance with the Governor's Executive Order N-29-20 and the order of the County of San Bernardino dated March 17, 2020, there will be no public location for attending this Committee Meeting in person. Members of the public may listen and provide public comment via telephone by calling the following number and access code: Dial: (888) 475-4499, Access Code: 840-293-7790 or you may join the meeting using Zoom by clicking this link: <https://us02web.zoom.us/j/8402937790>. Public comment may also be submitted via email to administration@wvwd.org. If you require additional assistance, please contact the Executive Assistant at administration@wvwd.org.

BOARD OF DIRECTORS

Director Greg Young (Chair)

Director Dr. Michael Taylor

1. **CONVENE MEETING**
2. **PUBLIC PARTICIPATION**

The public may address the Board on matters within its jurisdiction. Speakers are requested to keep their comments to no more than three (3) minutes. However, the Board of Directors is prohibited by State Law to take action on items not included on the printed agenda.

3. **DISCUSSION ITEMS**

A. General Updates to Policy Review & Oversight Committee

B. West Valley Water District Standards for Domestic Water Facilities

4. ADJOURN

DECLARATION OF POSTING

I declare under penalty of perjury, that I am employed by the West Valley Water District and posted the foregoing Policy Review and Oversight Committee Agenda at the District Offices on February 22nd, 2021.



Maisha Mesa, Executive Assistant



**BOARD OF DIRECTORS
POLICY REVIEW AND OVERSIGHT COMMITTEE
STAFF REPORT**

DATE: February 25, 2021
TO: Policy Review and Oversight Committee
FROM: Shamindra Manbahal, Acting General Manager
SUBJECT: WEST VALLEY WATER DISTRICT STANDARDS FOR DOMESTIC WATER FACILITIES

BACKGROUND:

The West Valley Water District (“District”) Standards for Domestic Water Facilities (“Standards”) are provided as direction to developers, contractors, consultants, and staff in the design and construction of water facilities in the District’s water service area. The Standards consist of five (5) parts; Part I - Design Criteria, Part II – Procedural Documents, Part III – General Conditions, Part IV – Detailed Technical Specifications, and Part V – Standard Drawings. The Standards were revised and approved by the Board in October 1999 and attached as **Exhibit A**. In 2016, the Standards were given a new cover sheet and the Standard Drawings were updated and approved by the District Engineer (i.e. ranking licensed engineer at the District). Attached as **Exhibit B** are the Standard Drawings updated in 2016. In 2019, the Standard Drawings were updated by staff to revise the pipeline material from cement mortar lined and coated to ductile iron pipe as requested by upper management. A copy is attached as **Exhibit C**.

DISCUSSION:

The Standards are not a policy document of the District. Unlike policy documents, which should not be changed without approval by the Board of Directors, the Standards are largely a technical document which by nature need to be updated on an as-needed basis. A number of reasons would warrant updates to the Standards, including but not limited to: changes in industry standards, changes in local requirements, lessons learned through the implementation of the Standards, changes in model numbers or part numbers, specific project-by-project requirements, clarification/correction of requirements, etc. It recommended the District Engineer continue to be given discretion to update the technical portions of the Standards on an as-needed basis.

Though the Standard Drawings were updated in 2019, the remainder Standards, Parts I thru IV, with only a handful of exceptions date back to 1999. It is critical to continuously update the Standards as needed as they often require updates to keep up with current industry standards and it is in the District’s best interest to bring these standards current. The Standards are prepared and approved under the direction of a registered engineer and are backed by engineering analysis, calculations, and/or other methods. They are a living document and has a major role in projects.

Standards including specifications are written instructions describing the work that is to be undertaken and are part of the contract documents, which may also include the drawings, bid or proposal documents, agreement forms, and contract modifications. Specifications communicate to bidders prior to contract award, and to the selected contractor thereafter, the definitive directions, procedures, and material and equipment requirements the District considers necessary for completing the contract work. Standards can directly affect the quality of design and construction of projects, as well as the cost of construction and maintenance. Through continued improvements, the Standards will be used to improve efficiency and effectiveness and help ensure the quality improvement process can move forward successfully.

In November 2019, the District sent out a Request for Proposal (“RFP”) to five (5) Consulting firms. The RFP requested the consultant to update the Standard’s Part IV - Detailed Technical Specifications and Part V - Standard Drawings of the District’s Standards for Domestic Water Facilities. Two (2) of the five (5) Consulting firms, Albert A. Webb Associates (“WEBB”) and Water Systems Consulting (“WSC”), submitted proposals for professional engineering services. A summary of the bids received are as follows:

Consultant	Cost
WEBB	\$29,460.00
WSC	\$38,330.00

The cost for updating Part IV of the District’s Standards for Domestic Water Facilities and Standard Drawings by WEBB is \$29,460.00. WEBB proposed to take a proactive role in keeping all tasks on schedule and within budget to ensure timely completion of the updating the Standards in two (2) months. The remainder portion of the Standards also need to be updated which would be an additional cost.

Another more contemporary option, is to update the Standards in-house utilizing staff. Currently, the District employs three (3) registered engineers who are experienced in working with and updating standards. The task of updating the Standards in-house will require a demand on engineering staff time, however it will eliminate the need for a consultant expenditure.

FISCAL IMPACT:

Anticipated cost to update Part IV and V of the Standards by consultant is estimated at \$29,460.00. However, staff will avoid this cost and perform those updates in-house. In addition, a small portion of the Standards have a contractual component to them and will be presented to legal counsel for review.

STAFF RECOMMENDATION:

For information only.

Respectfully Submitted,

Shamindra Manbahal

Shamindra Manbahal, Acting General Manager

BP:pa

ATTACHMENT(S):

1. Exhibit A - District Standards revised in 1999
2. Exhibit B - Standard Drawings updated in 2016
3. Exhibit C - Standard Drawings updated in 2019

EXHIBIT A

WEST VALLEY WATER DISTRICT
855 W. Baseline
Rialto, California 92377

**STANDARDS FOR
DOMESTIC WATER FACILITIES**

BOARD OF DIRECTORS:

Oliver P. Roemer, President
Beverly Smith, Vice President
Alan Dyer, Director
Earl Tillman, Jr., Director
Joseph T. Raden, Director

ADMINISTRATIVE STAFF:

Anthony W. Araiza, General Manager/Secretary
Leon Long, Assistant General Manager
Pat Lundin, Auditor/Office Manager
Mariada A. Ashworth, Administrative Secretary

OPERATION:

Ken Sikorski, Superintendent
Lon Tsai, Engineering/Construction Supervisor

REVISED OCTOBER 1999

WEST VALLEY WATER DISTRICT
STANDARDS FOR
DOMESTIC WATER FACILITIES

PREFACE

To maintain the integrity of the District's water systems and to assure proper and efficient water delivery to the customer in years to come, all facilities installed in the **WEST VALLEY WATER DISTRICT** service area must be installed to meet certain minimum standards.

The establishment of minimum standards make Developers, Contractors, Engineers, as well as District personnel, aware of what is expected for the installation or construction of all water facilities in the District's water systems.

These "STANDARDS FOR DOMESTIC WATER FACILITIES" establishes the minimum requirements for the design and construction of all water facilities installed in the District.

Upon review of each project, certain circumstances may require the installation of facilities which will meet more rigid specifications than those included in the standards.

WEST VALLEY WATER DISTRICT
RIALTO, CALIFORNIA

**STANDARDS FOR
DOMESTIC WATER FACILITIES**

PART I
DESIGN CRITERIA

PART II
PROCEDURAL DOCUMENTS

PART III
GENERAL CONDITIONS

PART IV
DETAILED TECHNICAL SPECIFICATIONS

PART V
STANDARD DRAWINGS

REVISED JUNE 1991

REVISED JULY 1999

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WEST VALLEY WATER DISTRICT

PART I
DESIGN CRITERIA

WEST VALLEY WATER DISTRICT**SECTION 1.1
OF
DESIGN CRITERIA****DESIGN CRITERIA****1.1.1 General**

- a. Scope - All water system components including water services, meters, fire hydrants, pressure regulation stations, backflow preventer, pressure relief valves, transmission and distribution mains, storage reservoirs, wells and booster stations to be owned, maintained and/or operated by the District, shall be designed and constructed in accordance with the criteria set forth in this section, and in conformance with all applicable Federal, State and local laws, ordinances and regulations.
- b. Design Competence - All water facilities shall be designed by Professional Engineers licensed in the state of California, according to accepted practice in the water field.
- c. Legal Access - Each lot to be served by water shall abut a public street or recorded easement containing a waterline, or be provided with permanent legal access to such a waterline.
- d. Deviations - Deviations from any of the criteria adopted herein shall be permitted only upon written request to and approval by the General Manager.

1.1.2 Water Demand

- a. Domestic. Use - Domestic flows shall be based on the following:

An average daily demand of 200 gallons per capita per day (gpcd) and three person per dwelling unit or 600 gallon per day (gpd) per dwelling unit.

The water systems average daily flow shall be equal to the average daily demand times the number of dwelling units in each service area; a peak daily flow of two times the average daily flow; and a peak hourly flow of two times the peak daily flow.

- b. Fire Flow - Minimum fire flow demand on the system shall be as follows: (or as required by the local fire agency, if higher fire flow demand is required).

Low Density Residential (R-1)	1,500 gpm for 2 hours
High Density Residential (R-2 & R-3)	2,000 gpm for 4 hours
School/Commercial	3,000 gpm for 6 hours
Office/Light Industrial	3,000 gpm for 6 hours
USFS	2,000 gpm for 2 hours

1.1.3 Supply

- a. General - The supply system shall be designed as a multi-source system, capable of handling peak daily demand, with the largest source of supply not in operation.
- b. Wells- Wells shall be housed in a weather tight structure compatible with the surroundings. Provisions within this structure shall be made to facilitate removing of pumps, motors and other equipment. Wells shall be located upon land to which legal access is provided and for which a permanent easement or title is recorded. Vertical turbine pumps shall meet the standards set forth in AWWA Standard E- 10 1. The minimum size of well site shall be 100 feet by 100 feet. Well site shall be protected with chain link fence and shall have asphalt concrete paving or slag surfacing. Legal access shall be provided.

1.1.4 Storage

Storage capacity shall consist of operational storage plus fire flow storage as related to each pressure zone. Operational storage shall consist of peak daily flow for one day. The inclusion of emergency storage should be considered depending upon the reliability of supply.

Storage reservoir shall be either reinforced concrete or welded steel construction. Design of welded steel water reservoirs shall conform to AWWA Standard D-100. Appurtenances shall include two (2) wall access hatches, gauge board, overflow and drain pipe, proper ventilation, roof hatch, inside stainless steel ladder with safety climbs outside ladder with safety cage and anti-climb devices, hose bib, and paint/coatings, in conformance with all Federal, State, Local, and District requirements.

The design shall also include, but not limited to, containment, berm, drainage, aesthetics, and landscaping,

Storage facilities shall be located upon land to which legal access is provided and for which a permanent easement or title is recorded. Access road shall be paved and the site protected by a chain-link fence.

1.1.5 Booster Stations

- a. General - Booster stations shall be located in areas accessible to both District personnel and equipment. Legal access shall be provided and for which a permanent easement or title is recorded. Access road shall be paved.

1.1-2

- b. Pumps - Booster stations shall be designed with a minimum of two pumps. In systems where pumps shall meet instantaneous peak demands, without supplementary flows from storage, the pump capacity shall be based on peak hour demand with one pump out of service. In systems with adequate available flows from storage to supplement pumping, pump capacity shall be based on peak day demand with one pump out of service. Protection shall be provided to prevent pumps from operating under no-flow conditions, overpumping and overloading by means of appropriate automatic controls. Vertical turbine pumps shall meet or exceed the standards set forth by AWWA Standard E- 10 1.
- c. Structure - Booster pumps shall be housed in a weather-tight structure compatible with the surroundings. Provisions within this structure shall be made to facilitate removing of pumps, motors and other equipment.

1.1.6 Transmission and Distribution Mains

- a. Pipe Size - Mains shall be sized to accommodate the greater of the following, while maintaining a minimum pressure as specified herein, at street service connections.
 - 1) Peak hour demand with a minimum 40 psi residual pressure
 - 2) Peak day demand plus fire flow with a minimum 20 psi residual pressure
 - 3) Size as indicated on District's Master Plan

The capacity of water mains and water service laterals shall be determined by using the William's & Hazen Formula with a "C" value = 120. The velocity of the water in the pipe shall be limited to 5-feet per second maximum during peak hour demand flow or 10-feet per second maximum during peak day demand flow plus fire flow.

The minimum pipe diameter shall be 6-inch or 8-inch minimum when supporting fire hydrants. Deadend line supporting two or more fire hydrants shall be 12 inches diameter minimum.

- b. Operating Pressures - Maximum pressure in mains shall not exceed 130 psi. Pressure reducers will be required on service connections having greater than 80 psi to reduce service pressure to 65 psi.
- c. Depth of cover - A minimum cover depth is required from top of pipe to the proposed finished grade. In cases where sub-grade base is required, the cut for the base shall be added to the minimum cover. Minimum cover for pipelines shall be as follows: pipelines up to 10" diameter shall have 36" of cover; 12" and larger pipelines shall have 42" of cover. Sub-grade is to be maintained on pipelines at all times.
- d. Location and Alignment - Wherever possible, water mains shall be located in public streets parallel to street centerlines. On a typical road section the main shall be located 7 feet off curb face on south or west side of street.

1.1-3

- e. Clearance from Sewer Lines - A minimum horizontal clear distance of 10 feet shall be provided between water mains and sewer lines. A minimum vertical clearance of 1 foot shall be provided with the sewer under the water line. Water service laterals shall be a minimum of 5 feet from sewer lateral, horizontally and 1 foot minimum above sewer laterals.

If the above conditions cannot be met, special construction shall be required according to the Section 4.6 of Detailed Technical Specification herein and subjected to approval by the Governing Health Agency.

- f. Mains Under Structures - No water mains shall be located beneath a structure except as approved in writing by the District.
- g. Looped Lines and Flushouts - All water lines shall be looped. Where deadends are necessary, provisions for flushing shall be included. Maximum length of deadend lines shall be limited to 660 feet. Approval will be required from the General Manager to deviate from these Standards. No flushing device shall be connected directly to a sewer. Flushout assembly and size required shall conform to Standard Drawing No. W-8.

Fire hydrants may be used for flushout, where applicable, and upon approval by the District.

- h. Valves - Provide sufficient valves to permit isolation and repair of leaks and breaks in accordance with good water works practice. Provide at least two valves at each 3-way junction and three valves at each 4-way junction. For transmission lines, no length of pipe greater than 1000 feet or as required by the District, shall be left without valve control. A valve box and cover shall be provided for all valves below grade and shall conform to Standard Drawings No. W-11 herein. Control valve 12” and smaller shall be of a resilient wedge gate valve, 14” and larger shall be a butterfly valve.
- i. Fire Hydrants (FH) - Fire hydrants shall be spaced along distribution mains as follows:

	<u>Spacing</u>	<u>Distance to Farthest Service Point</u>
Low Density Residential (R- 1)	500 Ft. Maximum	250 Ft. Maximum
High Density Residential, Commercial Industrial, and School	300 Ft. Maximum	200 Ft. Maximum

Spacing of fire hydrants shall not exceed the above maximum distances, but hydrants may be spaced at closer intervals in conformance with requirements of local fire control authorities. Hydrant installation assemblies shall conform to Standard Drawing No. W-2 herein.

- j. Service Connection - Service connection assemblies shall conform to Standard Drawing No. W-4 herein. Service lateral shall be sized to limit the water flow velocity to 5-feet per second.

1.1-4

- k. Water Meters – Water meters shall be sized in accordance with American Water Works Association (AWWA) Standard C700, C701 and the following table.

<u>Meter Size</u>	<u>Meter Type</u>	<u>Maximum Operation Flow</u>
¾"	Displacement	30 gpm
1"	Displacement	50 gpm
1 ½"	Turbine	100 gpm
2"	Turbine	160 gpm
3"	Turbine	350 gpm
4"	Turbine	600 gpm
6"	Turbine	1250 gpm
8"	Turbine	1800 gpm
10"	Turbine	2900 gpm
12"	Turbine	4300 gpm

- l. Backflow preventers – Backflow preventers shall be installed in accordance with California Health and Safety Code, Chater 5, Article 2 and shall be sized in accordance with America Water Works Association (AWWA) Standard C510, C511 and the following table.

<u>Backflow Preventer Size</u>	<u>Maximum Operation Flow</u>
¾"	30 gpm
1"	50 gpm
1 ½"	100 gpm
2"	160 gpm
3"	320 gpm
4"	500 gpm
6"	1000 gpm
8"	1600 gpm
10"	2300 gpm
12"	3000 gpm

- m. Air and Vacuum Valves - Air-vacuum combination valves shall be installed in pump line, transmission, and distribution lines according to accepted practice in the water field. Airvacuum combination valves shall be provided at all high points in the water system mains.

Valve assemblies shall conform to Standard Drawing No. W-6 herein.

- n. Blowoffs - Blowoff assemblies shall be required at all low points in distribution system mains, except at deadends where a flushout is provided. Blow-off assemblies shall conform to Standard Drawing No. W-7. Dead-end flush-out shall conform to Standard Drawing No. W-8.

1.1-5

- o. Thrust Blocks - Concrete thrust blocks shall be installed as required, according to Standard Drawing No. W-3 herein.
- p. Location Wire - A continuous locator wire shall be placed along the full length of all non-metallic water mains. The locator wire shall be solid copper, 12 TW gauge minimum. The locator wire shall affixed to the top of above the pipe and brought to the surface at each valve box cover. Wire shall be laid on services that do not come off on a 90' angle of the water main, (Disregard on copper service laterals).

1.1.7 Electrical Equipment

All electrical starters, switches, lights, motors, fixtures, controllers, and instruments shall be enclosed and constructed in accordance with the National Board of Fire Underwriter's Specifications to meet the hazardous conditions anticipated. The Health and Safety Code of the State of California shall also be met. Outside type convenience outlets shall have ground fault with separate circuit and breaker.

All starters shall be of the magnetic type and shall be provided with hand-off automatic selector switches. Only copper wire conductors shall be permitted. Starter for 50 horsepower and larger shall be of reduced voltage and/or soft-start starter.

1.1.8 Automatic Controls

Wells, booster stations, and storage facilities shall be electrically inter-connected to give the system complete automatic control. Provisions shall be made for manual operation of all controls in the event of failure of automatic controls. All automatic controls shall be designed fail-safe. A sensor or air line shall be installed the full depth of the well with a gauge in the control panel that reads in feet of water above the well pump.

1.1.9 Miscellaneous Requirements

- a. Pump Discharge Lines - A gate valve, check valve and a flow meter shall be placed on the discharge line of each pump. Flow meters shall be installed with upstream and downstream straight sections per meter manufacturer recommendation.
- b. Sufficient valves shall be provided to isolate each pump from the system.
- c. An air release valve, properly vented to the outside of the pumphouse, shall be provided on each pump discharge line between the check valve and the pump.
- d. Pump discharge lines shall be protected by a pump control valve to prevent pressure surges created by starting and stopping of the pumps. A pressure relief valve shall also be required in the discharge line as well as a flushing blow off.

WEST VALLEY WATER DISTRICT

**SECTION 1.2
OF
DESIGN CRITERIA**

PLAN PREPARATION AND PLAN CHECK

1.2.1 Plan Preparation

Plans prepared for additions to the District's water system and submitted to the District for approval shall be in substantial form and shall be in accordance with the following requirements.

- a. Drawings shall be in ink on linen or mylar. Sheet size shall be 36-inch X 24-inch.
- b. The Water Notes shall appear once on the first sheet of the plans. All required Certifications and approvals shall also appear on the first sheet. See section 1.2.2.
- c. Each sheet shall have a title and revision block in the lower right hand comer.
- d. Each sheet shall have a North arrow, when applicable.
- e. A key map having a scale of I -inch = 200 feet shall be shown on the first sheet of each set of drawings. Said key map shall show all water lines, their sizes, gate valves, fire hydrants, and appurtenances in their scaled relation to one another. All roads shall be shown and named.
- f. Plan and profile are required for all pipelines. Double plan and profile sheets may be used. Scales to be used are as follows:

Plan and Profile:	1 -inch = 40 feet horizontal
(Mild grades)	1 -inch = 4 feet vertical
 Plan and Profile:	 1 -inch = 100 feet horizontal
(Steep grades)	1 -inch = 10 feet vertical

Profiles shall show pipe size; existing ground elevation or finish grade elevation; appurtenances; the depth, size, location, and nature of all other utilities which cross over or under the water line; the location and nature of special construction such as concrete blankets or encasements; flow line elevations at grade changes; and any other information pertinent and necessary to the proper construction and recordation of the water lines.

g. At least one Bench Mark shall be shown and/or described on each sheet. The indicated elevation shall be referenced to an U.S.G.S. datum.

- h. The plans shall show the Tract legal description and lot numbers of all property adjacent to the water line to be constructed. Assessor parcel number is also to be listed.
- i. The plans shall show all right-of-way lines, the distance from the centerline of all roads, right-of-way and easements to the center of the water line and other distances necessary to easements.
- j. Show limits and type of street pavement, curb, gutter and sidewalk.
- k. Show location of proposed service connections.
- l. Show exact location of all existing or proposed utilities and structures within 20 feet of the water centerline.
- m. Technical Specifications and Standard Drawings - The District's Technical Specifications and Standard Drawings shall be utilized in design of water facilities.
- n. When a tract is to be phased, water plans shall indicate the limit of each phasing and the location of bulkhead test station and temporary blowoff assembly.
- o. Blue line drawings submitted for District review shall be submitted in accordance with section 1.2.4 Plan Check Requirements.
- p. After plans are approved by the District, changes to the plans shall not be made without the permission of the District.
- q. If construction has not commenced within two (2) years of the District approved date, the water improvement plan shall be resubmitted to the District for review and approval in accordance with section 1.2.4.

1.2.2 Water Notes

The following water notes shall appear on the water system improvement plans.

WATER NOTES

- a. Pipe 12" and smaller shall be Class 51 Ductile Iron pipe, or AWWA C900 PVC pipe Class 200, or Class 150, 10 GA Cement Mortar Lined and Coated Steel. Pipe greater than 14" shall be Class 52 Ductile Iron pipe, or Class 150, 10 GA Cement Mortar Lined and Coated steel pipe or as specified.
- b. Water service laterals shall be type K copper line, minimum 1" diameter, with 1" x 3/4 " angle valves with lock wing on lots less than 10,000 sq. ft. 1 " x I " angle valves with lock wing on lots larger than 10,000 sq. ft. There shall be a separate service for each lot being served. One service per pipe trench.
- c. All water service laterals to be installed at same time as main line. No splice shall be allowed on copper service lateral line.
- d. Water service laterals to be terminated 12" behind rear of curb or future curb. In City limits terminate 12" behind future sidewalk.
- e. Fire hydrants shall be 6" x 4" x 2 1/2" - Clow F-850, or equal, painted with one coat primer and one coat yellow. The 4" steamer outlet shall be perpendicular to the curb or future curb.
- f. Depth of cover for water service laterals shall be minimum 30"; for water mains 10" and smaller shall be minimum 36" ; for 12" and larger pipe shall be minimum 42" or as specified on plans. All measurements from finish grade.
- g. All water mains shall be flushed and disinfected per A.W.W.A. Standards C651 prior to use after installation or repair.
- h. Construction to be in accordance with the **WEST VALLEY WATER DISTRICT "STANDARDS FOR DOMESTIC WATER FACILITIES."**
- i. Water service is subject to the current District rules and regulation and any amendments thereto.
- j. If construction has not commenced within two years of the District approval date, this plan shall be resubmitted to the District for review and approval.

1.2.3 Certifications

The following certification shall appear on the Water System Improvement Plans.

Design

This certifies that these plans and specifications have been designed under the direct supervision of a Civil Engineer License in state of California and are in accordance with Title 22 Code of Regulations Chapter 16 California Waterwork Standard of the state of California.

Signature of Designing Engineer	RCE NO. & Expiration Date	Date

Water

This certifies that these plans and specifications have been reviewed by and are accepted by the West Valley Water District and that this District is willing and able to supply water to this location.

Signature	Title	Date

Fire

Fire protection system approved _____
(Date)

By: _____
Signature of City Fire Chief, or County Fire Warden, or Fire Chief of Local District

1.2.4 Plan Check Requirements

a. General

The water system improvements shall be designed and constructed in accordance with West Valley Water District's "Water Service Regulations" and "Standards Domestic Water Facilities". The water improvement plans shall be prepared under the direction of a Civil Engineer licensed in the state of California. The water service improvement plan shall be submitted to the District for review and approval.

b. Submission for Plan Check

1) **First Review submittal -**

When water plans are submitted for first plan check review, the District will require the following:

- a. Fees payable to the District in the amount of rate established by the "Water Service Regulations" as adopted by the Board of Directors of the District.
- b. Three (3) copies of water plans, prepared in accordance with plan preparation requirements.
- c. One (1) copy of hydraulic calculations. The calculations shall indicate both domestic and fire flow demands.
- d. One (1) copy of condition of approval of tentative map.
- e. One (1) copy of recorded tract map or parcel map.
- f. One (1) copy of street improvement plans.
- g. One (1) copy of grading plans.
- h. One (1) copy of storm drain plan, if applicable.
- i. One (1) copy of approved planned unit development, if applicable.
- j. One (1) copy of all water line easement legal descriptions, if applicable.
- k. One (1) copy of landscape plan, if applicable.
- l. One (1) copy of plan check information sheet.

2) Second and subsequent Review submittal -

a. The "Red-lined" check plan of the previous review submittal.

b. Two (2) copies of revised water plan.

3) Originals

Upon approval, the original of water Plans shall be signed by all agencies involved prior to submitting to the District for signature.

c. Plan Check List -

1) Conformance to District's standard and specification.

2) Construction notes with reference to District standards.

3) Signature of Registered Civil Engineer (Design Engineer).

4) Signature of Fire Protection Agency.

5) Water line location with reference to center line of street, pipe size, material and pressure rating.

6) Valve size, spacing and station. Use flanged resilient gate valve for 10" and smaller. Use flanged butterfly valve for 12" and larger.

7) Fire hydrant spacing and station.

8) High point in water line with combination air valve and station.

9) Low point in water line with blow-off assembly and station.

10) Utility crossing and separation (vertical and horizontal) between water line and sewer line.

11) Make sure every lot is served.

12) Check easement requirement. Use CML & C steel pipe in easement, call out easement on water plan. Easement legal description and documents must be submitted with final plan check.

13) Irrigation meter, size, location and station.

14) The following information shall be required on the plan:

North arrow; scale; tract
number; lot number; lot lines; section corner; street right-of-way and street names;
basis of bearing, bearing and distance, curve data and bench mark.

d. Plan Check Information Sheet

The attached plan check information sheet shall be filled in and submitted with the first plan check submitted.

WEST VALLEY WATER DISTRICT

PLAN CHECK INFORMATION SHEET

Dear Plan Check Applicant:

This Plan Check Information Sheet must be filled in and submitted with all plan check applications. Plan Check will be in accordance with the Plan Check Requirements.

Date of Application: _____

Project Name: _____

Project Location/Address: City: _____ County: _____

Tract No. _____ or Parcel Map No. _____

Owner Name: _____ Telephone No. _____

Owner Address: _____

Engineer Company: _____ Telephone No. _____

Contact Person: _____

Estimated Water Demand: Peak Hour Domestic Demand: _____ Gpm.

Fire Flow: _____ Gpm for _____ Hrs.

Fire Sprinkler Flow: _____ Gpm. @ _____ psi.

Landscaping Flow: _____ Gpm. @ _____ psi.

WEST VALLEY WATER DISTRICT

PART II

PROCEDURAL DOCUMENTS

WEST VALLEY WATER DISTRICT

**SECTION 2.1
OF
PROCEDURAL DOCUMENTS**

REQUEST FOR PROPOSAL

TO: ALL DISTRICT LISTED PIPELINE CONTRACTORS

RE:

Invitation is hereby given that the secretary on behalf of and as authorized by the board of directors of the West Valley Water District (hereinafter referred to as "District"), is now accepting bids on the above referenced project.

Enclosed is a material description listing with quantities required. This material list only indicates major pipeline materials and it is the responsibility of the contractor to include in his bid all materials required to complete this project in a proper workmanship manner.

When submitting bids, the outside of the envelope must be plainly marked: BID - (PROJECT NAME) and should be delivered or mailed as follows:

WEST VALLEY WATER DISTRICT
855 West Base Line, Building B
P.O. Box 920
Rialto, CA 92377-0920

No bids shall be submitted after 10:00 a.m. on _____.

Bids will be opened at 10:00 a.m. in the District office at 855 West Base Line, Building B, Rialto. This District retains the right to reject any and/or all bids. The bids will be presented to the Board of Directors for their consideration of award, (Date and Time).

WORKS OF IMPROVEMENT

Installation of water facilities to serve (Project Name) and appurtenances located in the City of Rialto, in the service area of the West Valley Water District.

PROPOSALS

Proposals must be submitted on blank forms prepared and furnished with this Request for Proposal, for that purpose. Bidders may obtain copies of the plans and specifications for the contemplated improvements at the District office.

BONDS and INSURANCE

The Contractor will be required to furnish with the contract a payment bond in the amount of 100 percent (100%) of the aggregate amount of the bid, and a contract performance bond in the amount of 100 percent (100%) of the aggregate amount of the bid. The Contractor will also furnish certificates of insurance evidencing all insurance coverage as required by the specifications has been so secured.

Bonds and insurance certificates must be in the form required by the District (substitutions are not permitted) and the company must be authorized to do business in the state of California.

PREVAILING WAGES

Bidders on this Work will be required to comply with the President's Executive Order No. 11246 (Equal Employment Opportunity Clause) as amended, California Government Code Section 12900 et. seq., California Labor Code Section 177.6 and implementing regulations concerning equal opportunity for Apprentices.

The Director of the Department of Industrial Relations has ascertained the general prevailing rate of per diem wages and the general rate for holiday and over-time work in the locality in which the work is to be performed for each craft or type of workmen needed to execute the Contract of Work as hereinafter set forth (see Labor Code 1770 et. seq., effective January 1, 1977). Copies of rates are on file at the office of the Owner, which copies shall be made available to any interested party on request. The successful Bidder shall post a copy of such determinations at each job site. Attention is called to the fact that not less than the minimum salaries and wages shall be paid on these Projects by all Contractors and Subcontractors.

Pursuant to Section 1740 of the California Labor Code, Bidders are notified that the said wage rates shall be subject to modification to comply with revisions in Federal Minimum Wage schedules without necessity of republication.

WORKERS COMPENSATION CLAUSE

The Contractor and its Subcontractor(s) shall comply with the provisions of Section 3700 of the California Labor Code which requires every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that code.

PAYMENT

Payments will be made in cash to the Contractor in accordance with the provisions of the specifications and on itemized estimates duly certified and approved by the Engineer of Work submitted in accordance therewith, based on labor and materials incorporated into said Work during the preceding month by the Contractor. Payment shall not be made more often than once each thirty (30) days, nor shall the amount be paid in excess of ninety percent (90%) of the contract at time of completion. Final payment to be made thirty-five (35) days subsequent to filing of Notice of Completion. Contractor may upon written request, and at his expense, after approval by the District, substitute securities equivalent to any monies withheld by the District to ensure performance under the contract. Such securities shall be deposited with the District or with a State or Federal Chartered Bank, Bank of America, Rialto Branch, as escrow agent who shall pay such monies to the Contractor upon satisfactory completion of the contract. The Contractor shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.

For projects which require less than thirty (30) days construction time, payment will not be made UNTIL project has been completed and accepted by the District.

BID GUARANTY

All proposals or bids shall be accompanied by cash or a cashier's or certified check payable to the order of the Districts amounting to ten percent (10%) of the Bid, or by a bond in said amount, and payable to the District, signed by the bidder and a corporate surety, or by the bidder and two sureties who shall testify before any officer competent to administer oaths, in double said amount over and above all statutory exemption. Said cash or check shall be forfeited or said bond shall become payable in case the bidder depositing same does not, within fifteen (15) days after written notice of award, signs the Agreement.

REQUIRED LICENSE CLASSIFICATION

Under Section 7059 of the Business and Professions Code, the Bidder must have a license classification, which is sufficient for the project. The agency has determined that a Class A or Class license is necessary to bid this project. If the Bidder is a specialty contractor, the bidder is alerted to the requirements of Business and Professions Code Section 7059.

AWARD AND EXECUTION

The award of contract, if made, will be made within thirty (30) calendar days from the date of the bid opening, to the lowest responsible bidder.

The Contractor shall execute the Agreement within fifteen (15) days from the date of the Notice of Award.

The Contractor shall receive the Notice to Proceed within ten (10) days from the date of the execution of the Agreement by the District and shall complete all work _____ (number of calendar days) _____ from the date of the Notice to Proceed.

The District hereby reserves the right to reject any and all proposals, to waive any irregularity, and to award the contracts to the lowest responsive bidder. No bidder may withdraw his bid and the bid is to remain firm for a period of ninety (90) days after bid opening.

CONTRACTUAL DOCUMENTS

Contractual Documents, including drawings and specifications, may be examined at the following office:

WEST VALLEY WATER DISTRICT
855 West Base Line
P.O. Box 920
Rialto, CA 92377-0920
Telephone: (909) 875-1804

Copies of the District Standards for domestic water facilities may be obtained at the office of WEST VALLEY WATER DISTRICT, address listed above, upon a nonrefundable payment of \$30.00 for each set.

An additional nonrefundable charge of \$5.00 to cover postage and handling will be made for each set of Contract Documents mailed.

SPECIAL NOTES

All materials and workmanship shall meet all Federal, State, Local Government and District's Standards for Domestic Water Facilities.

The District has a charge of seventy cents (70¢) per foot to cover the cost of inspection, water main and service lateral installation. The District will charge seventy cents (70¢) per 100 cubic of water for water used for testing, chlorination and compaction.

Any required permits, street cutting, etc., shall be obtained by the bidder. The successful bidder shall be required to meet all conditions of said permits (local county, state or federal that apply).

Contractor shall be responsible for obtaining a soil's compaction report from a soil engineer, approved by the District.

"As built" drawings and compaction test results shall be submitted by contractor at completion of project.

Requests for payment submitted on or before the 1st of each month will be paid on the 10th of that month; requests for payment submitted between the 1st and 15th will be paid on the 25th of that month.

DATED _____

/s/ Anthony W. Araiza
Anthony W. Araiza, Secretary of the
West Valley Water District and the
Board of Directors thereof.

WEST VALLEY WATER DISTRICT

SECTION 2.2 OF PROCEDURAL DOCUMENTS

INFORMATION FOR BIDDERS

Bids will be received by the West Valley Water District herein called the "Owner", at the office of the Owner, 855 West Baseline, Rialto, Ca. 92376 for consideration of award as indicated in the Request for Proposal.

Each bid must be submitted in a sealed envelope, plainly marked on the outside as indicated in the Request for Proposal. The envelope should bear on the outside, the name of the bidder, bid project, his address, his license number, if applicable. If forwarded by mail the sealed envelope containing the bid must be enclosed in another envelope addressed to the owner at the above referenced address. Bids received by mail must be post marked prior to the bid opening date.

All bids must be made on the required bid form. All blank spaces for bid prices must be filled in, in ink or typewritten, and the bid form must be fully completed and executed when submitted. Only one copy of the bid form is required.

The District may waive any informalities or minor defects or reject any and all bids. Any bid may be withdrawn prior to the scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within thirty (30) calendar days after the actual date of the opening thereof. Should there be reasons why the Contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the District and the bidder.

Bidders must satisfy themselves of the character of the work to be performed by examination of the site and review of the Drawings and Specifications, including Addenda. After bids have been submitted, the bidder shall not assert that there was a misunderstanding concerning the nature of the work to be done.

Quantities set forth in the bidding sheet are estimates of the amount of materials and equipment to be furnished and the amount of work to be done and are given only as a basis for comparison of bids. Final payment shall be made for the actual final quantities of the items at the unit prices or lump sum bid in the proposal.

The Contract Documents contain the provisions required for the construction of the project. The terms and conditions contained in the Contract Documents are part of the Contract. Information obtained from an officer, agent, or employee of the District or any other person shall not affect the risks or obligations assumed by the Contractor or relieve him from fulfilling any of the conditions of the Contract.

Each bid must be accompanied by a bid guaranty in the form of cash, cashiers or certified check or a Bid Bond (on the required form) made payable to the District in an amount not less than ten (10) percent of the total amount of the bid. As soon as the bid prices have been compared, the District will return the bid guaranties of all except the three lowest responsive and responsible bidders. When the Agreement is executed, the bid guaranties of the two remaining unsuccessful bidders will be returned. The bid guaranty of the successful bidder will be retained until all Contract Documents have been executed and approved, after which it will be returned. The amount so posted shall be forfeited to the owner in case the bidder depositing the same does not, within fifteen (15) days after written notice that the contract has been awarded to such bidder, enter into a Contract with the District. No bid guaranties forfeited in accordance with the provisions of the Specification shall be returned.

The failure of any bidder to whom the District may award the Contract to properly sign and return to the District all required Contract Documents within the specified time period shall entitle the District to declare a breach of Contract by such bidder, to award the Contract to another bidder in accordance with the provisions of the Specifications, and to declare a forfeiture of the bidder's bid guaranty. In the event of such failure, the District will suffer damage, the amount of which is difficult, if not impossible, to ascertain, and the District shall therefore be entitled to retain the amount of such bid guaranty, or to enforce the provisions of the bidder's bond in the amount thereof, as liquidated damages for such breach of Contract, as provided by applicable law.

The successful bidder may substitute securities in place of any funds withheld by the District to ensure performance under the Contract, provided the successful bidder furnishes to the District the Escrow Agreement on the form provided herein, as prescribed by Public Contract Code § 22300. The entire cost of this Escrow Agreement shall be borne by the successful bidder. At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the District, or with a state or federally chartered bank in this state as the escrow agent, who shall then pay those moneys to the Contractor. Upon satisfactory completion of the Contract, the securities shall be returned to the Contractor.

Alternatively, the Contractor may request and the District shall make payments of retentions earned directly to the escrow agent at the expense of the Contractor. At the expense of the Contractor, the Contractor may direct the investment of the payments into securities and the Contractor shall receive the interest earned on the investments upon the same terms provided for in this section for securities deposited by the Contractor. Upon satisfactory completion of the Contract, the Contractor shall receive from the escrow agent all securities, interest, and payments received by the escrow agent from the District, pursuant to the terms of this section.

Securities eligible for investment shall include those listed in Section 16430 of the Government Code, bank or savings and loan certificates of deposit, interest-bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by the Contractor and the District.

The Contractor shall be the beneficial owner of any securities substituted for moneys withheld and shall receive any interest thereon.

A Contractor who elects to receive interest on moneys withheld in retention by the District shall, at the request of any subcontractor, make that option available to the subcontractor regarding any moneys withheld in retention by the Contractor from the subcontractor. If the Contractor elects to receive interest on any moneys withheld in retention by the District, then the subcontractor shall receive the identical rate of interest received by the Contractor on any retention moneys withheld from the subcontractor by the Contractor, less any actual pro rata costs associated with administering and calculating that interest. In the event that the interest rate is a fluctuating rate, the rate for the subcontractor shall be determined by calculating the interest rate paid during the time that retentions were withheld from the subcontractor. If the Contractor elects to substitute securities in lieu of retention, then, by mutual consent of the contractor and subcontractor, the subcontractor may substitute securities in exchange for the release of moneys held in retention by the Contractor. However, the paragraph shall only apply to those subcontractors performing more than five percent of the Contractor's total bid. No Contractor shall require any subcontractor to waive any provision of this paragraph.

Bonds and Certificates of Insurance and Endorsements must be in the form required by the District (substitutions are not permitted) and the Company must be authorized to transact business in the State of California and to issue policies in the amount required herein.

A Payment Bond and a Contract Performance Bond (on the required form), each in the amount of one hundred (100%) percent of the Contract Price, with a corporate surety approved by the District, will be required for the faithful performance of the Contract.

Attorneys-in-fact who signs Bid Bonds or Payment Bonds and Contract Performance Bonds must file with each Bond a certified and effective dated copy of their power of attorney.

This signing of Bids, Bonds and Contracts shall be in accordance with the following:

a. Corporations.

- 1) Give name of Corporation.
- 2) Signatures shall be by the President or Vice President and Secretary.
- 3) Affix corporate seal and notary's acknowledgment.
- 4) Others may sign for the corporation if a certified copy of a resolution of the corporate board of directors authorizing them to do so is furnished.

b. Partnerships.

- 1) Signatures shall be by all members of partnership. One may sign if copy of authorization is furnished.
- 2) Affix notary's acknowledgement.

c. Joint Ventures.

- 1) Give the names of the joint venturers.
- 2) Signatures shall be by all joint venturers. One may sign if copy of authorization is furnished.

d. Individuals.

- 1) Signatures shall be made by the individual.
- 2) Affix notary's acknowledgement.
- 3) Another may sign for the individual if certified power of attorney authorizing the other person to sign is furnished.

e. Fictitious Names.

- 1) Show fictitious names.
- 2) Satisfy all pertinent requirements shown above.

f. Bonds. In addition to all pertinent requirements above, give signature of Attorney-in-Fact and apply Surety's seal.

The party to whom the contract is awarded will be required to execute the Agreement and submit the Payment Bond, Contract Performance Bond and Certificates of Insurance and Endorsements on the required forms within ten (10) calendar days from the date when Notice of Award is delivered to the bidder. The Notice of Award shall be accompanied by the necessary Agreement, bond, and Insurance Certificate forms. In case of failure of the bidder to execute the Agreement, the District may at his option consider the bidder in default, in which case the Bid Bond accompanying the proposal shall become the property of District.

The District within ten (10) days of receipt of acceptable Payment Bond, Contract Performance Bond, Insurance Certificates, and Agreement signed by the party to whom the Agreement was awarded, shall sign the Agreement and return to such party an executed duplicate of the Agreement. Should the District not execute the Agreement within such period, the bidder may by written notice withdraw his signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice by the District.

The Notice to Proceed shall be issued within ten (10) days of the execution of the Agreement by the District. Should there be reasons why the Notice to Proceed cannot be issued within such period, the time may be extended by mutual agreement between the District and Contractor. If the Notice to Proceed has not been issued within the ten (10) day period or within the period mutually agreed upon, the Contractor may terminate the Agreement without further liability on the part of either party.

In the case of any water facilities installation being financed by a developer or party other than the District, the District will not execute an Agreement or issue the Notice to Proceed until all required funds have been deposited with the District.

The District may make such investigation as it deems necessary to determine the ability of the bidder to perform the Work, and the bidder shall furnish to the District all such information and data for this purpose as the District may request. The District reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the District that such bidder is properly qualified to carry out the obligations of the Agreement and to complete the work contemplated therein.

A conditional or qualified bid will not be accepted.

Award, if made, will be made to the lowest responsive and responsible bidder, as determined by the District.

All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the contract throughout.

Each bidder is responsible for inspecting the site and for reading and being thoroughly familiar with the Contract Documents. The failure or omission of any bidder to do any of the foregoing shall in no way relieve any bidder from any obligation in respect to his bid.

Further, the bidder agrees to abide by the requirements under Executive Order No. 11375 as amended, including specifically the provisions of the Equal Opportunity Clause set forth in the General Conditions.

All bidders shall apply the names and addresses of major material suppliers and subcontractors as set forth in the bid.

WEST VALLEY WATER DISTRICT

**SECTION 2.3
OF
PROCEDURAL DOCUMENTS**

BID

Proposal of _____,
hereinafter called "Bidder", organized and existing under the laws of the State of California,
doing business as (a corporation), (a partnership) or (an individual) _____

_____*.
To the WEST VALLEY WATER DISTRICT, hereinafter called "District":

In compliance with your Request for Proposal and Information for Bidders, Bidder hereby proposes to perform all work for the installation of water facilities and appurtenances per attached material list and bid schedule in strict accordance with the Contract Documents, within the time set forth therein, and at the prices stated herein.

By submission of this Bid, each bidder certifies, and in the case of a joint bid each party thereto certifies as to his own organization that this Bid has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this Bid with any other Bidder or with any competitor.

Bidder hereby agrees to commence work under this contract on or before a date to be specified in the Notice to Proceed and to fully complete the Project within _____ calendar days thereafter.

Bidder agrees with the District that if the Project is not fully completed within said time, he will pay as liquidated damages, the sum of _____ for each consecutive calendar day thereafter as provided in Section 3.15.03 of the General Conditions, and that this amount shall be presumed to be the amount of damages sustained by District in the event of such a breach by Bidder, as it would be impracticable or extremely difficult to fix the actual damage.

* Select applicable one

RESPECTFULLY SUBMITTED:

Signature

Address

Title

Date

Contractor's License No.

Type of License

Federal I.D. No.

(Seal – if Bid is by a corporation)

ATTEST _____

WEST VALLEY WATER DISTRICT

**MATERIAL LIST
and
BID SCHEDULE**

PROJECT: _____

Bidder agrees to perform all the work described in the Contract Documents for the following unit prices or lump sum:

<u>QTY</u>	<u>DESCRIPTION</u>	<u>PRICE PER FOOT OR UNIT</u>	<u>TOTAL</u>
------------	--------------------	-----------------------------------	--------------

LUMP SUM BID \$ _____

NOTE:

THIS MATERIAL LIST ONLY LISTS MAJOR MATERIALS AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INCLUDE IN HIS BID ALL MATERIALS REQUIRED TO COMPLETE THIS PROJECT IN A PROPER WORKMANSHIP MANNER.

*Use second sheet, if necessary, to list additional materials.

ADDENDA

Bidder acknowledges receipt of the following Addenda:

_____ Dated _____.

_____ Dated _____.

_____ Dated _____.

_____ Dated _____.

*Insert "a corporation", "a partnership", or "an individual" as applicable.

BIDDING SHEET

In the blanks provided, fill in the prices at which you propose to furnish the scheduled construction, including all labor, materials, equipment, work and methods necessary to complete the work, and all applicable sales and use taxes imposed pursuant to the laws of the State of California.

Quantities above are for the purpose of comparison only, and payments will be made on a basis of actual measurements or units of work completed. When discrepancies occur between words and figures, the words shall govern.

Bidders are advised that they must include a proportional amount of overhead, profit, etc., within the Bid prices for each Bid, since the schedule of Bid under which award will be made, if made, will be determined by the Owner after the Bids have been received.

The Owner's policy is to award to the lowest responsive and responsible bidder. However, bidders are advised that the Owner reserves the right to reject any/or all Bids.

BID GUARANTIES

There is enclosed herewith cash, a cashier's check or certified check or bid bond in the sum of not less than ten (10) percent of the base bid of _____ (\$_____), made payable to the West San Bernardino County Water District, and the undersigned agrees that in case of his failure to execute the necessary Contract and furnish the required bonds and insurance certificates, the bid guaranties and the money payable thereon shall be and remain the properties of the WEST VALLEY WATER DISTRICT.

WITHDRAWAL OF BID

The Bidder agrees that this Bid shall be good and may not be withdrawn for a period of thirty (30) calendar days after the scheduled closing time for receiving Bids.

VISITING THE SITE

The undersigned has thoroughly examined the Drawings and Specifications and Addenda (if any), has visited the site, and is thoroughly familiar with the contents and all of the conditions thereof. The undersigned is aware of and will observe all security regulations enforced at this facility.

DESIGNATION OF SUBCONTRACTORS

In compliance with the provisions of Section 4100 et. seq., of the Public Contract Code of the State of California, and any amendments thereof, each Bidder shall set forth below, the name and location of the place of business of each subcontractor who will perform work or labor, or render service to the Contractor in an amount in excess of one-half (1/2) of one (1) percent of the total Bid, and the portion of the Work which will be done by each Subcontractor.

If the Contractor fails to specify a Subcontractor for any portion of the Work in excess of one-half (1/2) of one (1) percent of the total Bid to be performed under the Contract, he shall be deemed to have agreed to perform such portions himself and he shall not be permitted to subcontract that portion of the Work except under conditions permitted by law.

Subletting or subcontracting of any portion of the Work as to which no Subcontractor was designated in the original Bid shall only be permitted in case of public emergency or necessity or otherwise permitted by law, and then only after a finding reduced to writing as a public record of the Owner.

<u>Trade</u>	<u>% of Work To Be Done</u>	<u>Subcontractor - Address</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

LISTING OF MANUFACTURERS

The Contractor shall submit this sheet with his Bid, completed to list the manufacturers of materials he intends to use. It shall be understood that where the Contractor elects not to use the material manufacturers called for in the Specifications he will substitute only items of equal quality, durability, functional character and efficiency as determined by the Engineer. The Contractor should ascertain prior to bidding the acceptability of substitutes. Only one manufacturer shall be listed for each item.

<u>Item or Material</u>	<u>Manufacturer</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

No change shall be allowed of any material manufacturer listed after receipt of Bids unless the manufacturer so listed cannot furnish materials meeting the Specifications. Should such change be allowed, there will be no increase in the amount of the Bid originally submitted.

CERTIFICATION

Labor Code - Section 1861

I, the undersigned Bidder, am aware of the provisions of Section 3700 et. seq. of the Labor Code which requires every employer to be insured against liability for workers compensation or to undertake self-insurance in accordance with the provisions of that code, and I, will comply with such provisions before commencing the performance of the Work of this Contract.

BIDDER:

Company Name

Signature of Authorized Representative

Name (Please Type)

Title

**CERTIFICATION OF
NONDISCRIMINATION IN EMPLOYMENT**

The Bidder represents that he has (___), has not (___) participated in a previous contract or subcontract subject to either the equal opportunity clause herein or the clause contained in Section 202 of Executive Order 11246; and that he has (___), has not (___) filed all required compliance reports; and representation indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained prior to subcontract awards.

On behalf of the bidder making this proposal, the undersigned certifies that there will be no discrimination in employment with regards to ethnic group identification, color, religion, sex, age, or physical or mental disability, or national origin; that all federal, state, and local directives and executives orders regarding non discrimination in employment will be demonstrated positively and aggressively.

BIDDER:

Company Name

(Signature)

(Type Name)

(Title)

CONTRACTOR'S LICENSING STATEMENT

I, the undersigned Contractor, am aware of Business and Profession Code Section 7028.15 and understands the information shown below shall be included with the bid. Any bid not containing this information, or information is subsequently proven to be false shall be considered non-responsive and shall be rejected.

Name of Contractor _____

Business Address _____

Corporation organized
under the laws of the
State of _____

State License No. _____

State License Classification _____

State License Expiration Date _____

I certify under penalty of perjury under the laws of the State of California that the representations made in this bid are true and correct.

SIGNED _____

TITLE _____

DATE _____

NON-COLLUSION AFFIDAVIT
(PUBLIC CONTRACT CODE SECTION 7106)

This document is to be included, executed, and returned with bid.

_____, being first duly sworn, deposes and says that he or she

is _____
(Title)

of _____,
(Company Name)

the party making the foregoing Bid; that the Bid is not made in the interest of or on behalf of any undisclosed person, partnership, company association, organization, or corporation; that the Bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham Bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham Bid, or that anyone shall refrain from bidding; that said Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the Bid Price of the Bidder or any other Bidder, or to fix any overhead, profit, or cost element of the Bid Price, or of that of any other Bidder, or to secure any advantage against the public body awarding the Contract or anyone interested in the proposed Contract; that all statements contained in the Bid are true; and, further, that the Bidder has not, directly or indirectly, submitted his or her Bid Price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid and will not pay any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid.

Signed: _____

Title

WEST VALLEY WATER DISTRICT

**SECTION 2.4
OF
PROCEDURAL DOCUMENTS**

BID BOND

KNOWN ALL MEN BY THESE PRESENTS, that we, the undersigned, _____, as Principal, and _____ as Surety, are hereby held and firmly bound unto the **WEST VALLEY WATER DISTRICT**, as Owner in the penal sum of

_____ for the payment of which, will and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed this ____ day of _____, _____.

This Condition of the above obligation is such that whereas the Principal has submitted to the **WEST VALLEY WATER DISTRICT** a certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing for: _____

NOW THEREFORE,

- a. If said Bid shall be rejected, or
- b. If said Bid shall be accepted and the Principal shall execute and deliver, within fifteen (15) days after acceptance, a contract in the form attached hereto (properly completed in accordance with said Bid) and shall furnish a Bond for his faithful performance of said Contract and for the payment of all persons performing labor or furnishing materials in connection therewith, the required Insurance Certificates, and shall in all other respects perform the agreement created by the acceptance of said Bid, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligation of said Surety and its Bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension. In the event suit is brought upon this bond by the Obligee and judgement is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including a reasonable attorney's fee to be fixed by the Court.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Two Witnesses

PRINCIPAL: _____

BY _____

TITLE _____

ATTEST (If Corporation):

By _____

Title _____

(Corporate Seal)

ATTEST:

By _____

Title _____

(Corporate Seal)

SURETY: _____

By _____

Title _____

IMPORTANT: Surety companies executing Bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in Section 105 of the California Insurance Code, and if the work or project is finances, in whole or in part, with federal grant or loan funds, must also appear on the Treasury Department's most current list (Circular 570 as amended).

THIS IS A REQUIRED FORM

Any claims under this bond may be addressed to:

(Name and Address of Surety)

(Name and Address of Agent or representative in California, if different from above)

(Telephone number of Surety and Agent or Representative in California)

WEST VALLEY WATER DISTRICT

SECTION 2.5
OF
PROCEDURAL DOCUMENTS

AGREEMENT

THIS AGREEMENT, made this _____ day of _____, 19____, by and between the WEST VALLEY WATER DISTRICT, HEREINAFTER CALLED "Owner", and _____

_____ doing business as _____,* hereinafter called "Contractor".

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, it is agreed that:

- 1. The Contractor will commence and complete the work as set forth in the Contract Documents.
- 2. The Contractor will furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of the Project described herein.
- 3. The Contractor will commence the Work required by the Contract Documents on or before the date specified to commence work in the Notice to Proceed and will complete the same within (number of calendar days) unless the period for completion is extended otherwise by the Contract Documents.
- 4. District and Contractor have discussed the provisions of Civil Code 1671 and the damages, which may be incurred by District if the Work is not completed within the time specified in this Agreement. District and Contractor hereby represent that at the time of signing this Agreement, it is impracticable and extremely difficult to fix the actual damage which will be incurred by District if the Work is not completed within the number of calendar days allowed. Accordingly, District and Contractor agree that the sum of (\$ Amount) per day is a reasonable sum to assess as damages to District by reason of the failure of Contractor to complete the Work within the time specified.
- 5. The Contractor agrees to perform all of the Work described in the Contract Documents and comply with the terms therein for the sum of \$ _____, or as shown in the Bid Schedule; subject to additions and deductions, if any, in accordance with said documents.

* Insert "a corporation", "a partnership", or "an individual", as applicable.

Payment shall not be made more often than once each thirty (30) days. If construction time is less than thirty (30) days, no payment shall be made until project has been completed, approved and accepted by the District. Final payment shall be made thirty-five (35) days subsequent to filing of Notice of Completion. Contractor may, upon written request and at his sole expense after approval by the Board of Directors, deposit substitute securities referenced in Government Code Section 16430, or bank or savings and loan certificates of deposit, as authorized by Public Contract Code Section 22300 in lieu of retention monies withheld to ensure performance.

6. This Agreement hereby incorporate all contract documents.
The term "Contract Documents" means and includes the following:

- a. Request for Proposals
- b. Information for Bidders
- c. Bid
- d. Bid Bond
- e. Agreement
- f. Payment Bond
- g. Contract Performance Bond
- h. Certificates of Insurance & Endorsement
- i. Notice of Award
- j. Notice to Proceed
- k. Change Orders
- l. General Conditions
- m. Supplemental General Conditions
- n. Special Conditions and Detailed Technical Provisions and Standard Drawings and Details
- o. Drawings: Numbered Sheets ____ through ____.
- p. Addenda:

No.____, dated _____, 19__
 No.____, dated _____, 19__
 No.____, dated _____, 19__
 No.____, dated _____, 19__

q. Standards for Domestic Facilities

7. The District will pay to the Contractor in the manner at such times as set forth in the General Conditions such amounts as required by the Contract Documents. Final payment will be made in accordance with Section 3.19.05 and 3.20.1 of the General Conditions, and with Section 7107 of the Public Contract Code.

8. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors and assigns.

9. Should any litigation or arbitration be commenced between the parties hereto concerning this project, any provisions of this Contract, or the rights and obligations of either in relation thereto, the party, District or Contractor, prevailing in such litigation shall be entitled, in addition to such other relief as may be granted, to a reasonable sum as and for his attorney's fees in such litigation, and costs.
10. Pursuant to Section 1770, of the California Labor Code, the successful Contractor shall pay not less than the prevailing rate of per diem wages as determined by the Director of the California Department of Industrial Relations. Copies of such prevailing rate of per diem wages are on file at the office of the District, which copies shall be made available to any interested party on request. The successful bidder shall post a copy of such determination at each job site.
11. Indemnification - Contractor shall indemnify and hold harmless and defend District, its directors, employees, agents or volunteers, and each of them from and against:
 - a. Any and all claims, demands, causes of action, damages, costs, expenses, losses or liabilities, in law or in equity, of every kind and nature whatsoever for, but not limited to, injury to or death of any person including District and/or contractor, or any directors, officers, employees, agents or volunteers of District or contractor, and damages to or destruction of property of any person, including but not limited to, District and/or contractor and their directors, officers, employees, agents or volunteers, arising out of or in any manner directly or indirectly connected with the work to be performed under this agreement, however caused, regardless of any negligence of District or its directors, officers, employees, agents or volunteers, except the sole negligence or willful misconduct or active negligence of District or its directors, officers, employees, agents or volunteers;
 - b. Any and all actions, proceedings, damages, costs, expenses, penalties or liabilities, in law or equity, of every kind or nature whatsoever, arising out of, resulting from, or on account of the violation of any governmental law or regulation, compliance with which is the responsibility of contractor.

Contractor shall defend, at contractor's own cost, expense and risk, any and all such aforesaid suits, actions or other legal proceedings of every kind that may be brought or instituted against District or District's directors, officers, employees, agents or volunteers.

Contractor shall pay and satisfy any judgment, award or decree that may be rendered against District or its directors, officers, employees, agents or volunteers, in any such suit, action or other legal proceeding.

Contractor shall reimburse District and its directors, officers, employees, agents and/or volunteers, for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided.

Contractor agrees to carry insurance for this purpose as set out in the specifications. Contractor's obligation to indemnify shall not be restricted to insurance proceeds, if any, received by the District, or its directors, officers, employees, agents and/or volunteers.

The Contractor and each subcontractor hereby offer and agree to assign to the District all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C.§15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchase of goods, services, or materials pursuant to this Contract or any subcontract. This assignment shall be made and become effective at the time the District tenders final payment to the Contractor, without further acknowledgment by the parties.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, the Agreement in two (2) copies each of which shall be deemed an original on the date first above written.

OWNER:

**WEST VALLEY
WATER DISTRICT**

BY _____

NAME _____

TITLE _____

CONTRACTOR:

BY _____

NAME _____
(Please type)

ADDRESS _____

CONTRACTOR'S LICENSE NO. _____

CORPORATE CERTIFICATE

I, _____, certify that I am the
_____ Secretary of the Corporation named as CONTRACTOR, in the
foregoing contract; that _____ who signed said contract on
behalf of the CONTRACTOR, was then _____ of said Corporation;
and that said contract was duly signed for and in behalf of said Corporation by authority of its
governing body and is within the scope of its corporate powers.

(SEAL)

ATTEST:

Name _____

Title _____

WEST VALLEY WATER DISTRICT

**SECTION 2.6
OF
PROCEDURAL DOCUMENTS**

**PAYMENT BOND
(CALIFORNIA PUBLIC WORK)**

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, THE _____
(referred to hereinafter as "Obligee") has awarded to

_____,
(hereinafter designated as the "Contractor"), a contract dated _____, for work
described as follows: _____

(hereinafter referred to as the "Public Work Contract"); and
WHEREAS said Contractor is required to furnish a bond in connection with said Public Works
Contract, and pursuant to Section 3247 of the California Civil Code;

NOW, THEREFORE, we, _____, the
undersigned Contractor, as Principal, and _____, a corporation
organized and existing under the laws or the State of _____, and duly authorized
to transact business under the laws of the State of California, as Surety, are held and firmly
bound unto the _____ and to any and all persons,
companies or corporations entitled to file stop notices under Section 3181 of the California Civil
Code in the sum of _____ Dollars
(\$_____), said sum being not less than 100 percent of the total amount payable
by the Obligee under the terms of the said Public Work Contract, for which payment well and
truly to be made, we bind ourselves, our heirs, executors and administrators, successors and
assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that, if said Contractor, his or its heirs,
executors, administrators, successors or assigns, or Subcontractors, shall fail to pay for any
materials, provisions, provender or other supplies or teams, implements or machinery used in,
upon, for or about the performance of the Public Work contracted to be done, or for any work or
labor thereon of any kind, or for amounts due under the Unemployment Insurance Code with
respect to such work or labor, or for any amounts required to be deducted, withheld, and paid
over to the Franchise Tax Board from the wages of employees of said Contractor and his
Subcontractors pursuant to Section 13020 et. seq. of the Unemployment Insurance code with

respect to such work and labor as required by the provisions Section 3247 through 3252 of the Civil Code, the Surety or Sureties hereon will pay for the same in the amount not exceeding the sum specified in this bond, otherwise the above obligation shall be void. In case suit is brought upon this bond, the said Surety or Sureties will pay a reasonable attorney's fee to be fixed by the Court. In addition to the provisions herein above, it is agreed that this bond will inure to the benefit of any and all persons, companies and corporations entitled to serve stop notices under Section 3181 of the Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or additions to the terms of the said Public Work Contract or to the work to be performed thereunder or the Specifications accompanying the same shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the Specifications.

No final settlement between the Obligee and the Contractor hereunder shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this ____ day of _____, _____.

PRINCIPAL: (Contractor)

(Company Name)

BY _____

TITLE _____

SURETY:

(Company Name)

BY _____
Attorney-in-Fact

IMPORTANT: Surety companies executing Bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in Section 105 of the California Insurance Code, and if the work or project is financed, in whole or in part, with federal grant or loan funds, must also appear on the Treasury Department's most current list (Circular 570 as amended). **THIS IS A REQUIRED FORM.**

STATE OF CALIFORNIA)
) ss. COUNTY OF _____)

On this _____ day of _____, in the year _____,
before me, _____, a Notary Public in and for said state,
personally appeared _____, known to me (or proved to me
on the basis of satisfactory evidence) to be the person whose name is subscribed to the within
instrument as the Attorney-in-Fact of the _____
_____ (Surety) and acknowledged to me that he subscribed the
name of the _____ (Surety) thereto and his own
name as Attorney-in-Fact.

Notary Public in and for said State (SEAL)

Commission expires _____

NOTE: A copy of the power of attorney to local representatives of the bonding company must
be attached hereto.

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the
_____ Secretary of the
corporation named as Principal to the within bond; that
_____ who signed the said bond
on behalf of the principal was then _____ of said corporation; that I
know his signature, and his signature thereto is genuine; and that said bond was duly signed,
sealed and attested for and in behalf of said Corporation by authority of its governing bond.

(CORPORATE SEAL)

WEST VALLEY WATER DISTRICT

SECTION 2.7

OF

PROCEDURAL DOCUMENTS

CONTRACT PERFORMANCE BOND

(CALIFORNIA PUBLIC WORK)

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, THE _____
(sometimes referred to hereinafter as "Obligee") has awarded to

(hereinafter designated as the "Contractor"), a contract for the work described as follows:

(hereinafter referred to as the "Public Work"); and

WHEREAS, the work to be performed by the Contractor is more particularly set forth in that certain contract for the said Public Work dated _____, (hereinafter referred to as the "Public Work Contract"), which Public Work Contract is incorporated herein by this reference; and

WHEREAS, the Contractor is required by said Public Work Contract to perform the terms thereof and to provide a bond both for the performance and guaranty thereof.

NOW, THEREFORE, we, _____,
the undersigned Contractor, as Principal, and _____, a
corporation organized and existing under the laws of the State of
_____, and duly authorized to transact business under the
laws of the State of California, as Surety, are held and firmly bound unto
_____ in the sum
of

_____ Dollars (\$_____), said sum being not less than 100 percent of the total amount payable by the said Obligee under the terms of the said Public Works Contract, for which amount well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that, if the bounden Principal, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the said Public Work Contract and any alteration thereof made as therein provided, on his or its part, to be kept and performed at the time and in the

manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill the two-year (2) guarantee of all materials and workmanship; and indemnify and save harmless the Oblige, its officers and agents, as stipulated in said Public Work Contract, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect. In case suit is brought upon this bond, the said Surety will pay to Oblige a reasonable attorney's fee to be fixed by the Court.

The said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Public Work Contract or to the work to be performed thereunder or the Specifications accompanying the same shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the Specifications.

No final settlement between the Oblige and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____day of _____, 19__.

PRINCIPAL: (Contractor)

(Company Name)

BY _____

SURETY:

BY _____
Attorney-in-Fact

The rate of premium on this bond is _____ per thousand.

The total amount of premium charged, \$_____. (The above must be filled in by corporate surety).

IMPORTANT: Surety companies executing Bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in Section 105 of the California Insurance Code, and if the work or project is financed, in whole or in part, with federal grant or loan funds, must also appear on the Treasury Department's most current list (Circular 570 as amended). THIS IS A REQUIRED FORM.

STATE OF CALIFORNIA)
) ss.
COUNTY OF _____)

On this _____ day of _____, in the year _____, before me, _____, a Notary Public in and for said state, personally appeared _____, known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument as the Attorney-in-Fact of the _____ (Surety) and acknowledged to me that he subscribed the name of the _____ (Surety) thereto and his own name as Attorney-in-Fact.

Notary Public in and for said State (SEAL)

Commission expires _____

NOTE: A copy of the power of attorney to local representatives of the bonding company must be attached hereto.

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the _____ Secretary of the corporation named as Principal to the within bond; that _____ who signed the said bond on behalf of the principal was then _____ of said corporation; that I know his signature, and his signature thereto is genuine; and that said bond was duly signed, sealed and attested for and in behalf of said Corporation by authority of its governing bond.

(CORPORATE SEAL)

WEST VALLEY WATER DISTRICT**SECTION 2.8
OF
PROCEDURAL DOCUMENTS****CERTIFICATES OF INSURANCE
AND INDORSEMENT**

The Contractor shall not commence any work under the Contract Documents until he obtains, at his own expense, all required insurance as stipulated by the Owner. The required insurance shall be provided by the Contractor in conformance with the requirements of Section 3.21 of the General Conditions of these Contract Documents and includes the following:

- Worker's Compensation Insurance
- Comprehensive General Liability Insurance
- Builder's Risk "All Risk" Insurance
- Earthquake Insurance

The insurance company or companies utilized by the Contractor shall be authorized to transact business in the State of California and to issue policies in the amounts required in said Section 3.21 of the General Conditions of these Contract Documents.

No substitutions or revisions to the certificates and endorsements which follow will be accepted. If the insurance called for is provided by more than one company, a separate certificate, using the format presented, shall be provided for each company.

CERTIFICATE OF INSURANCE

OWNER: WEST VALLEY WATER DISTRICT

DESCRIPTION
OF CONTRACT: _____

TYPE OF INSURANCE: WORKER'S COMPENSATION INSURANCE

THIS IS TO CERTIFY that the policies of insurance listed below have been issued by the company named below in conformance with the requirements set forth in the Owner's Contract Documents, and that said policies are now in force.

Said company will give at least 45 days' advance written notice by registered mail to the Owner and Engineer prior to any material change or cancellation of said policies.

This certificate or verification of insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by policies listed herein. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate or verification of insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

<u>Policy Number</u>	<u>Effective Date</u>	<u>Expiration Date</u>
----------------------	-----------------------	------------------------

The insurance provided by said policies complies in all respects as to coverage and limits of liability with the requirements of the Worker's Compensation Insurance Laws of the State of California.

EFFECTIVE: _____

_____	_____
Named Insured	Insurance Company
_____	_____
Street Number	Street Number
_____	_____
City and State	City and State

Insurance Company Agent for service of process in California

By _____
(Authorized Representative)
(Attach Acknowledgment)

_____	_____
(Name)	(Company)
_____	_____
(Street Number)	(Street Number)
_____	_____
(City and State)	(City and State)
_____	_____
(Telephone Number)	(Telephone Number)

NOTICE: No substitution or revision to this certificate will be accepted. If the insurance called for is provided by more than one company, a separate certificate, using this format, shall be provided for each company.

WORKER'S COMPENSATION INSURANCE CERTIFICATE

The Contractor shall execute the following form as required by the California Labor Code, Sections 1860 and 1861:

I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract.

Date: _____

_____ (Contractor)

By: _____ (Signature)

_____ (Title)

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____, 19__ before me personally came

to me known, who being duly sworn, did depose and say: that _____

is an authorized representative of the _____
and acknowledged to me that _____
executed the within instrument on behalf of said insurance company.

IN WITNESS WHEREOF, I have signed and affixed my Official Seal on the date in this certificate first above written.

Notary Public in and for said County and State.

**CERTIFICATE OF INSURANCE
AND ENDORSEMENT**

OWNER: WEST VALLEY WATER DISTRICT

DESCRIPTION
OF CONTRACT: _____

TYPE OF INSURANCE: COMPREHENSIVE GENERAL LIABILITY INSURANCE

THIS IS TO CERTIFY that the policies of insurance listed below have been issued by the company named below in conformance with the requirements set forth in the Owner's Contract Documents, and that said policies are now in force.

Insurance is to be placed with insurers having a current A.M. Best's rating of no less than A: VII or equivalent.

Said company will give at least 45 days' advance written notice by registered mail to the Owner and Engineer prior to any material change or cancellation of said policies.

This certificate or verification of insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by policies listed herein. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate of verification of insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

<u>Policy Number</u>	<u>Effective Date</u>	<u>Expiration Date</u>	<u>Limits of Liability</u>	
			<u>Bodily Injury</u>	<u>Property Damage</u>

The following types of coverage are included in this policy (indicated by "X" in space):

Manufacturers' and Contractors'	Yes___	No___
Owners' and Contractors' Protective	Yes___	No___
Blanket Contractual	Yes___	No___
Completed Operations	Yes___	No___
Owned Automobiles	Yes___	No___
Hired Automobiles	Yes___	No___
Non-Owned Automobiles	Yes___	No___
Broad Form Property Damage	Yes___	No___
"XCU" Exposure	Yes___	No___

ENDORSEMENT:

The Owner, the Owner's Representative, the Engineer and his consultants, and each of their officers, agents, and employees are included as additional named insured's under these policies but only while acting in their capacity as such and only as respects operations of the original named insured, his sub-contractors, agents, and employees in the performance of the above-referenced contract.

This endorsement shall not operate to increase the Company's total limits of liability under the above-listed policies.

The insurance company hereby waives its rights of subrogation against the additional named insured's.

EFFECTIVE: _____

_____	_____
Named Insured	Insurance Company
_____	_____
Street Number	Street Number
_____	_____
City and State	City and State

Insurance Company Agent for service of process in California

By _____
(Authorized Representative)
(Attach Acknowledgment)

_____	_____
(Name)	(Company)
_____	_____
(Street Number)	(Street Number)
_____	_____
(City and State)	(City and State)
_____	_____
(Telephone Number)	(Telephone Number)

NOTICE: No substitution or revision to this certificate will be accepted. If the insurance called for is provided by more than one company, a separate certificate, using this format, shall be provided for each company.

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____, 19__ before me personally came
_____ to me known, who being duly sworn, did depose and say: that
_____ is an authorized representative of the _____ and acknowledged to me that _____ executed the within instrument on behalf of said insurance company.

IN WITNESS WHEREOF, I have signed and affixed my Official Seal on the date in this certificate first above written.

Notary Public in and for said County and State.

**CERTIFICATE OF INSURANCE
AND ENDORSEMENT**

OWNER: WEST VALLEY WATER DISTRICT

DESCRIPTION
OF CONTRACT: _____

TYPE OF INSURANCE: BUILDERS' RISK "ALL RISK" INSURANCE

THIS IS TO CERTIFY that the policies of insurance listed below have been issued by the company named below in conformance with the requirements set forth in the Owner's Contract Documents, and that said policies are now in force.

Insurance is to be placed with insurers having a current A.M. Best's rating of no less than A: VII or equivalent.

Said company will give at least 45 days' advance written notice by registered mail to the Owner and Engineer prior to any material change or cancellation of said policies.

This certificate or verification of insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by policies listed herein. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate or verification of insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

<u>Policy Number</u>	<u>Effective Date</u>	<u>Expiration Date</u>	<u>Limits of Liability</u>	
			<u>Bodily Injury</u>	<u>Property Damage</u>

ENDORSEMENT:

The Owner, the Owner's Representative, the Engineer and his consultants, and each of their officers, agents, and employees are included as additional named insured's under these policies but only while acting in their capacity as such and only as respects operations of the original named insured, his sub-contractors, agents, and employees in the performance of the above-referenced contract.

This endorsement shall not operate to increase the Company's total limits of liability under the above-listed policies.

The insurance company hereby waives its rights of subrogation against the additional named insured's.

EFFECTIVE: _____

_____	_____
Named Insured	Insurance Company
_____	_____
Street Number	Street Number
_____	_____
City and State	City and State

Insurance Company Agent for service of process in California

By _____
(Authorized Representative)
(Attach Acknowledgment)

_____	_____
(Name)	(Company)
_____	_____
(Street Number)	(Street Number)
_____	_____
(City and State)	(City and State)
_____	_____
(Telephone Number)	(Telephone Number)

NOTICE: No substitution or revision to this certificate will be accepted. If the insurance called for is provided by more than one company, a separate certificate, using this format, shall be provided for each company.

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____, 19__ before me personally came

to me known, who being duly sworn, did depose and say: that _____

is an authorized representative of the _____
and acknowledged to me that _____
executed the within instrument on behalf of said insurance company.

IN WITNESS WHEREOF, I have signed and affixed my Official Seal on the date in this certificate first above written.

Notary Public in and for said County and State.

**CERTIFICATE OF INSURANCE
AND ENDORSEMENT**

OWNER: WEST VALLEY WATER DISTRICT

DESCRIPTION
OF CONTRACT: _____

TYPE OF INSURANCE: EARTHQUAKE INSURANCE

THIS IS TO CERTIFY that the policies of insurance listed below have been issued by the company named below in conformance with the requirements set forth in the Owner's Contract Documents, and that said policies are now in force.

Insurance is to be placed with insurers having a current A.M. Best's rating of no less than A: VII or equivalent.

Said company will give at least 45 days' advance written notice by registered mail to the Owner and Engineer prior to any material change or cancellation of said policies.

This certificate or verification of insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by policies listed herein. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate or verification of insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

<u>Policy Number</u>	<u>Effective Date</u>	<u>Expiration Date</u>	<u>Limits of Liability</u>	
			<u>Bodily Injury</u>	<u>Property Damage</u>

ENDORSEMENT:

The Owner, the Owner's Representative, the Engineer and his consultants, and each of their officers, agents, and employees are included as additional named insured's under these policies but only while acting in their capacity as such and only as respects operations of the original named insured, his sub-contractors, agents, and employees in the performance of the above-referenced contract.

This endorsement shall not operate to increase the Company's total limits of liability under the above-listed policies.

The insurance company hereby waives its rights of subrogation against the additional named insured's.

EFFECTIVE: _____

_____	_____
Named Insured	Insurance Company
_____	_____
Street Number	Street Number
_____	_____
City and State	City and State

Insurance Company Agent for service of process in California

By _____
(Authorized Representative)
(Attach Acknowledgment)

_____	_____
(Name)	(Company)
_____	_____
(Street Number)	(Street Number)
_____	_____
(City and State)	(City and State)
_____	_____
(Telephone Number)	(Telephone Number)

NOTICE: No substitution or revision to this certificate will be accepted. If the insurance called for is provided by more than one company, a separate certificate, using this format, shall be provided for each company.

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____, 19__ before me personally came

to me known, who being duly sworn, did depose and say: that _____

is an authorized representative of the _____
and acknowledged to me that _____
executed the within instrument on behalf of said insurance company.

IN WITNESS WHEREOF, I have signed and affixed my Official Seal on the date in this certificate first above written.

Notary Public in and for said County and State.

WEST VALLEY WATER DISTRICT

**SECTION 2.9
OF
PROCEDURAL DOCUMENTS**

NOTICE OF AWARD

TO:

Project Description:

The Owner has considered the Bid submitted by you for the above described work in response to its Request for Proposal dated _____, and Information for Bidders.

You are hereby notified that your Bid has been accepted in the amount of _____.

You are required by the Information for Bidders to execute the Agreement and furnish the required Contractor's Payment Bond, Contract Performance Bond, and Certificates of Insurance and Endorsements within ten (10) calendar days from the date of this Notice.

If you fail to execute said Agreement and to furnish said Bonds and Certificates of Insurance and Endorsements within ten (10) days from the date of this Notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid is abandoned and as a forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner.

Dated this _____ day of _____, 19 .

**WEST VALLEY
WATER DISTRICT**

(Owner)

By _____
Anthony W. Araiza

Title General Manager/Secretary

ACCEPTANCE OF NOTICE

RECEIPT OF THE ABOVE NOTICE OF AWARD IS HEREBY ACKNOWLEDGED

BY: _____.

Dated this _____ day of _____.

(Contractor)

By: _____

Title: _____

WEST VALLEY WATER DISTRICT

**SECTION 2.10
OF
PROCEDURAL DOCUMENTS**

NOTICE TO PROCEED

TO:

Project Description:

You are hereby notified to commence work in accordance with the Agreement dated _____, 19 _____, on or before _____, 19 _____, and you are to complete the Work within _____ calendar days thereafter.

You are required to return an acknowledged copy of this Notice to Proceed to the Owner.

Dated this _____ day of _____, 19 .

**WEST VALLEY
WATER DISTRICT**

By _____
Anthony W. Araiza

Title - General Manager/Secretary

ACCEPTANCE OF NOTICE

Receipt of the above Notice to Proceed is hereby acknowledged by _____
_____.

THIS THE _____ DAY OF _____, 19 .

Contractor

By _____

Title _____

WEST VALLEY WATER DISTRICT

**SECTION 2.11
OF
PROCEDURAL DOCUMENTS**

CHANGE ORDER

Order No. _____
Date _____
Agreement Date _____
Sheet _____ **of** _____

Owner: _____

Project: _____

Contractor: _____

The following changes are hereby made to the Contract Documents:

JUSTIFICATION:

2.11-1

CHANGE TO CONTRACT PRICE

Original Contract Price \$ _____

Current Contract Price Adjusted by Previous Change Order(s) \$ _____

Contract Price due to this Change Order will be (increased) (decreased) \$ _____

New Contract Price including this Change Order \$ _____

CHANGE TO CONTRACT TIME

Contract Time will be (increased) (decreased) _____ (Calendar Days)

Date for Completion of all Work _____ (Date)

APPROVED

Owner

Contractor

WEST VALLEY WATER DISTRICT

By _____
Anthony W. Araiza, Gen. Mgr.

By _____
Authorized Signature

By _____
Leon Long, Assit. Gen. Mgr.

Developer

BOARD APPROVED _____

By _____
Authorized Signature

WEST VALLEY WATER DISTRICT

SECTION 2.12
OF
PROCEDURAL DOCUMENTS

Field Change Order

Owner: _____

Project: _____

Contractor: _____

Description of addition, deletions, and changes:

JUSTIFICATION:

District Inspector

Developer's Representative
(verification of changes only)

2.12-1
(Attach Contractor's Documentation)

WEST VALLEY WATER DISTRICT

SECTION 2.13
OF
PROCEDURAL DOCUMENTS

ESCROW AGREEMENT FOR
SECURITY DEPOSITS IN LIEU OF RETENTION

This Escrow Agreement is made and entered into by and between _____
_____ who address is _____,
hereinafter called "Owner," _____, whose address is _____
_____, hereinafter called "Contractor" and _____,
whose address is _____, hereinafter called "Escrow Agent."

For the consideration hereinafter set forth, the Owner, Contractor, and Escrow Agent agree as follow:

(1) Pursuant to Section 22300 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by Owner Pursuant to the Construction Contract entered into between the Owner and Contractor for _____ in the amount of _____ dated _____ (hereinafter referred to as the "Contract"). Alternatively, on written request of the Contractor, the Owner shall make payments of the retention earnings directly to the Escrow Agent. When the Contractor deposits the securities as a substitute for Contract earnings, the Escrow Agent shall notify the Owner within 10 days of the deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as retention under the terms of the Contract between the Owner and Contractor. Securities shall be held in the name of _____, and shall designate the Contractor as the beneficial owner.

(2) The Owner shall make progress payments to the Contractor for those funds which otherwise would be withheld from progress payments pursuant to the Contract provisions, provided that the Escrow Agent holds securities in the form and amount specified above.

(3) When the Owner makes payment of retentions earned directly to the Escrow Agent, the Escrow Agent shall hold them for the benefit of the Contractor until the time that the escrow created under this Contract is terminated. The Contractor may direct the investment of the payments into securities. All terms and conditions of this agreement and the rights and responsibilities of the parties shall be equally applicable and binding when the Owner pays the Escrow Agent directly.

(4) Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account and all expenses of the Owner. These expenses and payment terms shall be determined by the Owner, Contractor, and Escrow Agent.

(5) The interest earned on the securities or the money market accounts held in escrow and all interest earned on that interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to the Owner.

(6) Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from the Owner to the Escrow Agent that Owner consents to the withdrawal of the amount sought to be withdrawn by Contractor.

(7) The Owner shall have a right to draw upon the securities in the event of default by the Contractor. Upon seven days' written notice to the Escrow Agent from the owner of the default, the Escrow Agent Shall immediately convert the securities to cash and shall distribute the case as instructed by the Owner.

(8) Upon receipt of written notification from the Owner certifying that the Contract is final and complete, and that the Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payments of fees and charges.

(9) Escrow Agent shall rely on the written notifications form the Owner and the Contractor pursuant to Sections (5) to (8), inclusive, of this Agreement and the Owner and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of the securities and interest as set forth above.

(10) The names of the persons who are authorized to give written notice or to receive written notice on behalf of the Owner and on behalf of the Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of Owner:

On behalf of Contractor:

Title

Title

Name

Name

Signature

Signature

Address

Address

On behalf of Escrow Agent:

 Title

 Name

 Signature

 Address

At the time the Escrow Account is opened, the Owner and Contractor shall deliver to the Escrow Agent a fully executed counterpart of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement by their proper officers on the date set forth above.

Owner:

Contractor:

 Title

 Name

 Signature

 Title

 Name

 Signature

WEST VALLEY WATER DISTRICT

PART III

GENERAL CONDITIONS

WEST VALLEY WATER DISTRICT**SECTION 3.1
OF
GENERAL CONDITIONS****DEFINITIONS**

3.1.01 General - Wherever used in the Contract Documents, the following shall have the meanings indicated which shall be applicable to both the singular and plural thereof.

Acceptance, Final Acceptance - The formal action by the District accepting the Work as being complete.

Accepted Bid - The Bid (proposal) accepted by the District.

Addenda - Written or graphic instructions issued prior to the opening of sealed bids which modify or interpret the Contract Documents and Drawing by additions, deletions, clarifications or corrections.

Agreement - The written agreement (contract) executed between the District and the Contractor covering the performance of the Work.

Bid - The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

Bidder - Any person, firm or corporation submitting a Bid for the Work.

Bonds - Bid, Performance, and Payment Bonds and other instruments of security, furnished by the Contractor and his surety in accordance with the contract Documents.

Change Order - A written order to the Contractor authorizing an addition, deletion or revision in the Work within the general scope of the Contract Documents, or authorizing an adjustment in the Contract price or Contract time.

Contract Documents - The Contract Documents, including Advertisement for Bids and Addenda, Information for Bidders, Bid, Bid Bond, Agreement, Payment Bond, Performance Bond, Insurance Certificates, Notice of Award, Notice to Proceed, Change Order, General Conditions, Supplemental General Conditions, Special Conditions, Detailed Technical Provisions, Drawings, and District's Standards for Domestic Water Facilities.

Contract Price - The total monies payable to the contractor under the terms and conditions of the Contract Documents.

Contract Time - The number of calendar days stated in the contract Documents for the completion of the Work.

Contractor - The person, firm or corporation with whom the District has executed the Agreement.

Detailed Technical Provisions - A part of the Contract Documents consisting of written descriptions of a technical nature of materials, equipment, construction system, standards and workmanship.

Developer – A corporation, partnership or individual who funds the construction of a project in accordance with the rules and regulations of the West San Bernardino County Water District.

District - The West Valley Water District, its officials, staff and agents.

Drawings - The part of the Contract Documents which show the characteristics and scope of the Work to be performed and which have been prepared or approved by the Engineer.

Emergency - That period of time when action is imperative and where the normal channels or procedure could cause delay, thereby creating a condition of danger to life or property.

Engineer – The person, firm and corporation named as such in the contract documents. The Engineer of the development fee funded project shall be the design Engineer employed by the developer. The Engineer of the capital improvement fund project shall be the District's agent.

Field Order - A written order effecting a change in the Work not involving an adjustment in the Contract Price or an extension of the Contract Time, issued by the Engineer to the Contractor during construction.

Laboratory - The laboratory authorized by the District or the District's representative to test materials and work involved in the Project.

Manufacturer - A person, firm or corporation that fabricates, processes, or creates from raw materials or component parts, materials or equipment to be incorporated into the Project.

Notice of Award - The written notice of the acceptance of the Bid from the District to the successful Bidder.

Notice to Proceed - Written communication issued by the District to the Contractor authorizing him to proceed with the work and establishing the date of commencement of the work.

Or Equal - Where used with brand names or specific manufactured products, shall mean the named commodity is a standard or quality. Items of equal quality may be substituted. However, the decision as to what constitutes "or equal" is the responsibility of the Engineer. Approval in writing from the Engineer must be obtained prior to making any substitutions.

Owner – The Owner of the capital improvement funded project shall be the West San Bernardino County Water District. The Owner of the development fee funded project shall be the developer.

Owner's Representative - The person or engineering firm authorized by the Owner to represent him during the performance of the Work by the Contractor and until final acceptance. The Owner's Representative is referred to throughout the contract Documents as if singular in number and masculine in gender. The Owner's Representative means the Owner's representative or his assistants.

Plans – See Drawings.

Projects - The undertaking to be performed as provided in the Contract Documents.

Resident Project Representative - The authorized representative of the District who is assigned to the Project site or any part thereof.

Shop Drawings - All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the Contractor, a Subcontractor, Manufacturer, Supplier or Distributor, which illustrate how specific portions of the Work Shall be fabricated or installed.

Special Conditions - Modifications to Detailed Technical Provisions.

Specifications - The General Conditions, Supplemental General Conditions, Special Conditions, Detailed Technical Provisions and Standard Drawings of these Contract Documents, and the District's Standards for Domestic Water Facilities.

Subcontractor - An individual, firm or corporation having a direct contract with the Contractor or with any other Subcontractor for the performance of a part of the Work at the site.

Substantial Completion - That date as certified by the Engineer when the construction of the Project or a specified part thereof is sufficiently completed, in accordance with the Contract Documents, so that the project or specified part can be utilized for the purposes for which it is intended.

Superintendent - Any authorized representative designated in writing by the Contractor, who shall have the authority to represent and act for the Contractor.

Supplemental General Conditions - Modification to General Conditions that are specifically applicable to this Project.

Supplier - Any person or organization who supplies materials or equipment for the Work, including that fabricated to a special design, but who does not perform labor at the site.

Utility - Public or private fixed works for the transportation of fluids, gases, power, signals or communications.

Work - All labor necessary to produce the construction required by the Contract Documents, and all materials and equipment incorporated or to be incorporated in the Project.

Written Notice - Any notice to any party of the Agreement, relative to any part of this Agreement, in writing, and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his last given address, or delivered in person to said party or his authorized representative on the Work.

3.1.02 Terms - Wherever used in the Contract Documents, the terms "directed," "required," "permitted," "ordered," "designated," "prescribed," or terms of like import are used, it shall be understood that the direction, requirements, permission, order, designation, or prescription of the District's Representative is intended. Similarly, the terms "approved," "acceptable," "satisfactory," "or equal," or terms of like import shall mean approved by or acceptable to or satisfactory to the District's representative, unless otherwise expressly stated. The word "provide" shall be understood to mean furnish and install.

3.1.03 Abbreviations - Whenever used in the Contract Documents, the following abbreviations shall have the meanings indicated:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGA	American Gas Association
AI	The Asphalt Institute
AIA	American Institute of Architects
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron & Steel Institute
ANSI	American National Standards Institute (formerly USASI, USAU, ASA)
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineering Association
ASA	American standards Association (now ANSI)
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
CRSI	Concrete Reinforcing Steel Institute

IEEE	Institute of Electrical & Electronics Engineers
NBFU	National Board of Fire Underwriters
NEMA	National Electrical Manufacturers Association
PCA	Portland Cement Association
SSPC	Steel Structures Painting Council
UBC	Uniform Building Code, Pacific Coast Building Officials Conference of the International Conference of Building Officials
U/L or UL	Underwriter's Laboratories, Inc.
USASI	United States of America Standards Institute (Now ANSI)

WEST VALLEY WATER DISTRICT**SECTION 3.2
OF
GENERAL CONDITIONS****ADDITIONAL INSTRUCTIONS AND
DETAIL DRAWINGS**

- 3.2.01 The Contractor may be furnished additional instructions and detail drawings by the Engineer and the District as necessary to carry out the Work required by the Contract Documents.
- 3.2.02 The additional drawings and instruction thus supplied will become a part of the Contract Documents. The Contractor shall carry out the Work in accordance with the additional detail drawings and instructions.

WEST VALLEY WATER DISTRICT

SECTION 3.3 OF GENERAL CONDITIONS

SCHEDULES, REPORTS AND RECORDS

- 3.3.01 A preconstruction conference shall be held prior to commencement of the Work. Attendees shall be the Contractor, his Superintendent to be assigned to the Work, the District, the Developer (if applicable), the Engineer, representatives of Federal, State or Local regulatory or enforcement agencies, and any other parties deemed appropriate by the District.
- 3.3.02 The Contractor shall submit to the District such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data where applicable, as are required by the Contract Documents for the Work to be performed.
- 3.3.03 Prior to the start of construction, the Contractor shall submit a construction progress schedule to the District for approval. Said schedule shall include, but is not limited to, the following information: Contractor's name; address and telephone number; project/contract number; date prepared; Engineer's name; Developer's name; date of Notice to Proceed; contract completion date; and, list of all important activities, including construction and material delivery, with starting and ending dates for each activity.
- The schedule shall be prepared so that it can be updated by the Contractor when significant changes in an activity time and/or completion time occur, as the District may direct. After the schedule is approved by the District, six (6) copies shall be furnished to the District for distribution. All costs for schedule preparation and printing are included in the Contractor's Bid.
- The District reserves the right to alter said schedule to prevent excessive public nuisance or to exclude areas where right-of-way acquisition might still be in progress, or provide timely facilities for testing and connection to other installations dependent upon this project.
- 3.3.04 Prior to starting construction, the Contractor shall submit to the District, for his approval, a detailed breakdown of his cost estimate into the various elements of materials and construction operations for any lump sum bid items on the proposal. When approved, this breakdown will serve as a basis for the District to determine partial payments.
- 3.3.05 Prior to start of construction, the Contractor shall submit the dates at which special drawings will be required and the respective dates, when applicable, for submission of shop drawings, the beginning of manufacture, the testing, and the installation of materials, supplies and equipment.

3.3-1

WEST VALLEY WATER DISTRICT**SECTION 3.4
OF
GENERAL CONDITIONS****DRAWINGS AND SPECIFICATIONS**

- 3.4.01 The intent of the Drawings and Specifications is that the Contractor shall furnish all labor, materials, tools, equipment, and transportation necessary for the proper execution of the Work in accordance with the Contract Documents and all incidental work necessary to complete the Project in an acceptable manner, ready for use, occupancy or operation by the District.
- 3.4.02 In case of conflict between the Drawings and Specifications, the Specifications shall govern. Figure dimensions on Drawings shall govern over scale dimensions, and detailed Drawings shall govern over general Drawings.
- 3.4.03 Any discrepancies found between the Drawings and Specifications and site conditions, or any inconsistencies or ambiguities in the Drawings or Specifications, shall be immediately reported to the Engineer, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. Work done by the Contractor after his discovery of such discrepancies, inconsistencies or ambiguities shall be done at the Contractor's risk.
- 3.4.04 Contractors who act negligently in failing to point out defects, discrepancies in, or omission from, Drawings, Specifications or any other Contract Document prior to commencement of work on that portion of the project affected by the defect, discrepancy or omission, expressly waive the right to raise the defect, discrepancy or omission for the purpose of rendering Owner liable in tort or contract as a result of the defect, discrepancy or omission or as a defense to any subsequent litigation involving Owner and Contractor. This section shall be interpreted so as to comply with applicable provisions of State and Federal Law regarding Owner's right to seek indemnity for his own negligence, including Civil Code §2782 and §2782.5.

WEST VALLEY WATER DISTRICT

**SECTION 3.5
OF
GENERAL CONDITIONS**

SHOP DRAWINGS

3.5.01 The Contractor shall provide Shop Drawings as may be necessary for the execution of the Work as required by the Contract Documents. The Engineer shall promptly review all Shop Drawings. The Engineer's approval of any Shop Drawings shall not release the Contractor from responsibility for deviations from the Contract Documents. The approval of any Shop Drawings which substantially deviate from the requirement of the Contract Documents will be evidenced by a Change Order.

3.5.02 When submitted for the Engineer's review, Shop Drawings shall bear the Contractor's certification that he has reviewed, checked, and approved the Shop Drawings and that they are in conformance with the requirements of the Contract Documents. The following Contractor's certification shall appear on all submittals:

"It is hereby certified that the (equipment, material) shown and marked in this submittal is that proposed to be incorporated into this project, is in compliance with the contract documents, can be installed in the allocated spaces, and is submitted for approval."

Certified By:

Date

3.5.03 Portions of the Work requiring a Shop Drawing or sample submission shall not begin until the approved Shop Drawing or submission has been approved by the Engineer and accepted by the District. A copy of each approved Shop Drawing, and each approved sample, shall be kept in good order by the Contractor at the site and shall be available to the Engineer.

3.5.04 The following procedures will apply to shop drawing submittals:

- a. The Contractor shall submit to the Engineer for approval six (6) copies of all shop drawings. These drawings shall be complete, certified by the Contractor, and shall contain all required information in detail. The Contractor shall make any corrections to shop drawings required by the Engineer.

- b. When approved by the Engineer, each copy of the drawings will be stamped approved, signed, and dated by the Engineer.
- c. Two (2) sets of said approved drawings will be returned to the Contractor.
- d. The approval of the drawings shall not be construed as a complete check, but will indicate only that the general method of construction and detailing is satisfactory.
- e. Upon the Contractor's receipt of approved shop drawings, he shall furnish to the Engineer instruction and maintenance manuals and a parts list of all major equipment furnished. Data in these manuals shall cover completely all items as specified and as supplied.
- f. The time allowed for shop drawing review and approval by the Engineer shall be thirty (30) days.

WEST VALLEY WATER DISTRICT**SECTION 3.6
OF
GENERAL CONDITIONS****MATERIALS, SERVICES AND FACILITIES**

- 3.6.01 It is understood that, except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the Work within the specified time.
- 3.6.02 Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the Work. Stored materials and equipment to be incorporated in the work shall be located so as to facilitate prompt inspection. The Contractor shall be entirely responsible for damage or loss to material and equipment until the Work has been completed by the Contractor, approved by the Engineer, and accepted by the District.
- 3.6.03 Manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.
- 3.6.04 Materials, supplies, and equipment shall be in accordance with samples submitted by the Contractor, approved by the Engineer, accepted by the District.
- 3.6.05 Materials, supplies, or equipment to be incorporated into the work shall not be purchased by the Contractor or the Subcontractor subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.
- 3.6.06 Whenever, under this Agreement, it is provided that the Contractor shall furnish materials or manufactured articles, or shall do work for which no detailed specifications are set forth, the materials or manufactured articles shall be of the best grade in quality and workmanship obtainable in the market from firms of established good reputation; or, if not ordinarily carried in stock, shall conform to the usual standards for first-class materials or articles of the kind required, with due consideration of the use to which they are to be put. In general, the Work performed shall be in full conformity and harmony with the intent to secure the best standard of construction and equipment of the Work as a whole or in part.
- 3.6.07 All equipment, materials, and supplies to be incorporated in the work shall be new, unless otherwise specified.

WEST VALLEY WATER DISTRICT**SECTION 3.7
OF
GENERAL CONDITIONS****INSPECTION AND TESING**

- 3.7.01 All materials and equipment used in the construction of the Project shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the Contract Documents.
- 3.7.02 The District will provide inspection and testing services not required by the Contract Documents. Performance of these tests and all costs will be borne by the District, except, that the cost of any test which shows unsatisfactory results shall be borne by the Contractor.
- 3.7.03 The Contractor shall provide, at his expense, the testing and inspection services required by the Contract Documents.
- 3.7.04 If the Contract Documents, laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction, require any Work to specifically be inspected, tested, or approved by someone other than the Contractor, the Contractor will furnish the District timely notice of readiness. The Contractor shall furnish the District the required certificates of inspection, testing, or approval. All inspection fees imposed by public agencies other than the District shall be paid by the Contractor.
- 3.7.05 Inspections, tests, or approvals by the District or others shall not relieve the Contractor from his obligations to perform the Work in accordance with the requirements of the Contract Documents.
- 3.7.06 The District and its representatives shall, at all times, have access to the Work. In addition, authorized representatives and agents of any participating Federal State or Local agency shall be permitted to inspect all work materials, and other relevant data and records. The Contractor shall provide proper facilities for such access and observation of the Work and also for any inspection, or testing thereof.
- 3.7.07 If any Work is covered contrary to the written instructions of the District or Engineer, or work done for which the Contractor has not requested and received inspection, it must, if requested by the District or Engineer, be uncovered for his observation and replaced at the Contractor's expense.

- 3.7.08 If the District or Engineer considers it necessary or advisable that covered Work be inspected or tested by others, the Contractor, at the District or Engineer's request, shall uncover, expose or otherwise make available for observation, inspection or testing, as the District and the Engineer may require, that portion of the Work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such Work is defective, the Contractor shall bear all the expenses of such uncovering, exposure, observation, inspection, and testing, and of satisfactory reconstruction. If, however, such Work is not found to be defective, the Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time or both, directly attributable to such uncovering, exposure, observation, inspection, testing, and reconstruction, and an appropriate Change Order will be issued.
- 3.7.09 Upon request of the District or Engineer, the Contractor shall furnish certification of compliance that fabricated or manufactured products conform to the standards of the industry as specified in the Contract Documents, and that said fabricated or manufactured products were fabricated or manufactured under the quality control standards of the stated specifications of these Contract Documents.
- 3.7.10 The Contractor shall notify, in writing, the District, Engineer and Inspector one (1) week in advance of when he plans to start construction. The Contractor shall immediately notify all involved agencies when intermittent construction, end of construction, or stoppage of construction occurs.

WEST VALLEY WATER DISTRICT**SECTION 3.8
OF
GENERAL CONDITIONS****SUBSTITUTIONS**

- 3.8.01 Whenever a material, article, or piece of equipment is identified in the Contract Documents by reference to brand name or catalog number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements, and that other products of equal capacities, quality and function shall be considered. The Contractor may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the Contract Documents by reference to brand name or catalog number, and if, in the opinion of the District or Engineer, such material, article, or piece of equipment is of equal substance and function to that specified, the District or Engineer may approve its substitution and use by the Contractor. Any cost differential shall be deductible from the Contract Price and the Contract Documents shall be appropriately modified by Change Order. The Contractor warrants that if substitutes are approved, no major changes in the function or general design of the Project will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the Contractor without a change in the Contract Price or Contract Time.
- 3.8.02 In accordance with Section 3400 of the Public Contract Code of the State of California, the Contractor shall submit data substantiating requests for substitution of "equal" items within five (5) calendar days of bid opening and prior to the contract awarded by the Board of Directors.

WEST VALLEY WATER DEPARTMENT**SECTION 3.9
OF
GENERAL CONDITIONS****PATENTS**

3.9.01 The Contractor shall pay all applicable royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and hold the District harmless from loss on account thereof, including attorney's fees, except that the District shall be responsible for any such loss when a particular process, design, or the product of a particular manufacturer or manufacturers is specified by them. However, if the Contractor has reason to believe that the design, process or product specified, is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the District.

WEST VALLEY WATER DISTRICT**SECTION 3.10
OF
GENERAL CONDITIONS****SURVEYS, PERMITS, REGULATIONS**

- 3.10.01 The District and/or the Developer shall furnish all boundary surveys and establish all base lines for locating the principal component parts of the Work together with a suitable number of bench marks adjacent to the Work as shown in the Contract Documents. Additional construction surveys required by the Contractor not set forth in the Procedural Documents shall be provided by the Contractor.
- 3.10.02 The Contractor shall carefully preserve bench marks, reference points, and stakes established to aid in the construction of the Work. The expense of re-establishing or replacing bench marks, reference points, and stakes shall be charged to the Contractor at his expense. The Contractor shall also be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.
- 3.10.03 Permits and licenses of a temporary nature necessary for the execution of the Work shall be secured and paid for by the Contractor unless otherwise stated herein. In cases where the work is done under a permit issued to the District by another agency, the word "permittee" shall be construed to be the Contractor. Permits, licenses and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the District and/or the Developer, unless otherwise specified. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the Work as drawn and specified. If the Contractor observes that the Contract Documents are at variance therewith, he shall promptly notify the District in writing, and any necessary changes shall be adjusted as provided in Section 3.13, "Changes in the Work."

WEST VALLEY WATER DISTRICT**SECTION 3.11
OF
GENERAL CONDITIONS****PROTECTION OF WORK, PROPERTY AND PERSONS**

- 3.11.01 The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. He shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to, all employees on the work and other persons who may be affected thereby; all the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site; and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.
- 3.11.02 The Contractor shall comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction, including the applicable provisions of the California Occupational Safety and Health Act of 1973, Part 1, Division 5, of the Labor Code §6300 et. seq. and the Construction Safety Orders of the Division of Industrial Safety. The Contractor shall erect and maintain, as required by the conditions and progress of the Work, all necessary safeguards for safety and protection. The Contractor shall notify owners of adjacent utilities when execution of the Work may affect them.
- 3.11.03 The Contractor shall remedy all damage, injury, or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, Subcontractors, or anyone directly or indirectly employed by any of them, or anyone for whose acts any of them be liable, except damage or loss attributable to the fault of the Contractor Documents, or to the acts or omissions of the Owner or the Engineer or anyone employed by either of them, or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the Contractor.
- 3.11.04 In emergencies affecting the safety of persons or the Work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Engineer or the District, shall act to prevent threatened damage, injury, or loss. The Contractor shall give the Engineer or the District prompt written notice of any significant changes in the Work or deviations from the Contract Documents caused thereby, and a Change Order shall thereupon be issued covering the changes and deviations involved.
- 3.11.05 Until the formal acceptance by the District of the performance of the Contractor hereunder, either by furnishing equipment and/or materials or by performance of Work, the Contractor shall have the charge and care thereof, and shall bear the risk of injury or damage to any

part thereof by the action of the elements or from any other cause, whether arising from the execution or from the nonexecution of the Work. The Contractor shall rebuild, repair, restore, and make good all injuries or damage to any portion of that which he is to provide or complete hereunder occasioned by any of the above causes before completion and acceptance, and shall bear the expense thereof, except for such injuries or damages as are occasioned by acts of the Federal Government and public enemy. In case of suspension of Work from any cause whatsoever, the Contractor shall be responsible for all equipment and/or materials then upon District property and shall properly store them, if necessary, and shall erect temporary structures where necessary in so doing. Nothing in these Contract Documents shall be considered as vesting in the Contractor any right of property in materials used after they have been attached or affixed to the Work or the soil upon District's real property, but all such materials shall, upon being so attached or affixed, become the property of the District.

- 3.11.06 Prior to the beginning of any work, the Contractor shall obtain, at his sole expense, a permit from the California Division of Industrial Safety for work on the Project, and shall provide a copy of same to the District.
- 3.11.07 In accordance with Government Code Section 4216.2, Contractor shall notify Underground Service Alert at least two working days, but not more than 14 calendar days, prior to excavation with a description of the area to be excavated to determine if any participant has a subsurface installation in the area. Contractor shall comply with Government Code Section 4216.4.
- 3.11.08 If the Work involves digging trenches or other excavations that extend deeper than four feet below the surface, Contractor shall promptly, and before the following conditions are disturbed, notify the District, in writing, of any: (1) material the Contractor believes may be material that is hazardous waste, as defined in Health and Safety Code section 25117, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law; (2) subsurface or latent physical conditions at the work site differing from those indicated; or (3) unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract. The District shall promptly investigate the conditions. If the District finds the conditions are as alleged by the Contractor and such conditions cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the work, the District shall issue a change order. If a dispute arises whether the District's findings are correct, the Contractor shall not be excused from any scheduled completion date provided for by the Contract, and shall proceed with all work to be performed under the Contract. The Contractor shall retain any and all rights provided either by the Contract or by law which pertain to the resolution of disputes and protests between the contracting parties.

The Contractor shall not commence any excavation over five (5) feet in depth until he as submitted to the District a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for work protection from the hazard of caving ground during the excavation of trenches and such plan has been accepted by the District or by a registered civil or structural engineer, employed by the District, to whom authority to accept has been delegated. If such plan varies from the shoring system standards promulgated by the Department of Industrial Safety, the plan shall be prepared by a registered civil or structural engineer employed and paid by the Contractor. Nothing in this section shall be deemed to allow the use of a shoring, sloping, or protective system less effective than that required by the Construction Safety Orders. Nothing contained in this article shall be construed as relieving the Contractor of the full responsibility for providing shoring, bracing, sloping, or other provisions which are adequate for worker protection.

In addition to any requirements imposed by law, the Contractor shall shore up, brace, underpin, and protect, as may be necessary, all foundations and other parts of all existing structures adjacent to and adjoining the site of the work which are in any way affected by the excavations or other operations connected with the performance of the Work. Whenever any notice is required to be given by the District or the Contractor to any adjacent or adjoining landowner or other party before commencement of any work, such notice shall be given by the Contractor.

- 3.11.09 A working platform for any scaffolding swung or suspended from an overhead support more than ten (10) feet above the ground, floor or area in which an employee on the scaffolding might fall, shall have a safety rail of wood or other equally rigid material of adequate strength; such rail shall be in compliance with the applicable orders of the Division of Industrial Safety. The suspended scaffolding shall be fastened so as to prevent the same from swaying from the building, or structure, or other object being worked on from such scaffolding. All parts of such scaffolding shall be of sufficient strength to support, bear, and withstand with safety, any weight of persons, tools, appliances or materials which might reasonably be placed on it or which are to be supported by it.

In addition to the duties imposed by any law regulating or relating to scaffolding, the Contractor who uses scaffolding in connection with the construction, alteration, repairing, painting, cleaning, or doing of any work upon any building or structure shall furnish safety lines to tie all hooks and hangers back on the roof of such building or structure and provide safety lines hanging from the roof, securely tied thereto, for all swinging scaffolds which rely upon stirrups of the single point of suspension type to support the working platform. One such line shall be provided for each workman with a minimum of one line between each pair of hangers or falls.

Platforms or floors of scaffolding shall be not less than fourteen (14) inches in width and shall be free from knots or fractures impairing their strength.

The use of lean-to scaffolds, sometimes known as jack scaffolds, as support for scaffolds is prohibited.

3.11.10 The Contractor shall not load nor permit any part of any structure to be loaded with any weights that will endanger the structure, nor shall any part of the Work be subjected to stresses or pressures that will endanger it.

3.11.11 The Contractor shall be required to certify that he has an Injury and Illness Prevention Plan for his company as required by Labor Code Section 6401.7.

The names and telephone numbers of at least two medical doctors practicing in the vicinity and the telephone number of the local ambulance service shall be prominently displayed adjacent to telephones and carried by the supervisor of the work being performed.

3.11.12 The Contractor shall provide assurance to the District that all equipment has proper permits issued by the South Coast Air Quality Management District, or the local air quality district.

3.11.13 In addition, the Contractor shall be required to post notices required by Proposition 65 for any hazardous chemicals listed by the State Health Department, which are brought onto the property as part of the construction program.

3.11.14 If the Work involves digging trenches or other excavations that extend deeper than four feet below the surface:

(a) The Contractor shall promptly, and before the following conditions are disturbed, notify the District or the Developer, in writing, of any:

(1) Material the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, and that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.

(2) Subsurface or latent physical conditions at the site differing from those indicated.

(3) Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the contract.

(b) The District or the Developer shall promptly investigate the conditions reported in (a) above, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the Work shall issue a change order under the procedures described in the Contract.

- (c) In the event that a dispute arises between the District or the Developer and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the work, the Contractor shall not be excused from any scheduled completion date provided for by the Contract, but shall proceed with all work to be performed under the contract. The Contractor shall retain any and all rights provided either by contract or by law, which pertain to the resolution of disputes and protests between the contracting parties.

WEST VALLEY WATER DISTRICT**SECTION 3.12
OF
GENERAL CONDITIONS****SUPERVISION BY CONTRACTOR**

- 3.12.01 The Contractor shall supervise and direct the Work. He shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The Contractor shall employ and maintain on the Work a qualified supervisor or superintendent who shall have been designated in writing by the Contractor as the Contractor's representative at the site. The superintendent shall have full authority to act on behalf of the Contractor and all communications given to the superintendent shall be as binding as if given to the Contractor. The superintendent shall be present on the site at all times as required to perform adequate supervision and coordination of the Work
- 3.12.02 The Contractor shall employ only such foremen, mechanics, and laborers as are competent and skilled in the respective lines of work, and whenever the District shall notify the Contractor that any person on the Work is, in his opinion, incompetent, unfaithful, intemperate, or disorderly or refuses to carry out the provisions of this Contract, or uses threatening or abusive language to any person on the Work representing the District, or is otherwise unsatisfactory, such man shall be discharged immediately from the Work and shall not be re-employed upon it except with the consent of the District. Such discharge shall not be the basis of any claim against the District or his agents.
- 3.12.03 During the performance of this Contract, the Contractor shall maintain a suitable office at the site of the Work which shall be the headquarters of representatives of the Contractor and the District. Drawings, instructions, or other communications or articles from the District or its agents given to the Contractor's representative or delivered at said Contractor's office at the site of the Work in his absence shall be deemed to have been given to the Contractor. The office shall be equipped with a telephone for the use of the representatives, provided however, that toll calls placed by the District or his agent shall not be charged to the Contractor. If the construction cost is less than \$300,000, a construction office as herein defined will not be required.

WEST VALLEY WATER DISTRICT**SECTION 3.13
OF
GENERAL CONDITIONS****CHANGES IN THE WORK**

- 3.13.01 The Contract Agreement may not be altered in whole or in part except by modification in writing and properly executed by all parties hereto or by change order as provided herein.
- 3.13.02 The District may at any time, as the need arises, order changes within the scope of the Work without invalidating the Agreement. If such changes increase or decrease the amount due under the Contract Documents, or in the time required for performance of the Work, an equitable adjustment shall be authorized by Change Order.
- 3.13.03 The Engineer, also, may at any time, by issuing a Field Change Order, make changes in the details of the Work. The Contractor shall proceed with the performance of any changes in the Work so ordered by the Engineer unless the Contractor believes that such Field Order entitles him to a change in Contract Price or Time, or both, in which event he shall give the Engineer written notice thereof within seven (7) days after the receipt of the ordered change. Thereafter, the Contractor shall document the basis for the change in Contract Price or Time within thirty (30) days. The Contractor shall not execute such changes pending the receipt of an executed Change Order or further instruction from the Owner.

WEST VALLEY WATER DISTRICT**SECTION 3.14
OF
GENERAL CONDITIONS****CHANGES IN CONTRACT PRICE**

3.14.01 The Contract Price may be changed only by a Change Order. The value of any Work covered by a Change Order or of any claim for increase or decrease in the Contract Price shall be determined by one or more of the following methods in the order of precedence listed below:

- a. Unit prices - Original bid items. Unit prices previously approved are acceptable for pricing changes in quantities of original bid items. However, when changes in quantities exceed fifteen percent (15%) of the original bid quantity and the total dollar change of that bid item is significant, the District shall review the unit price to determine if a new unit price should be negotiated.
- b. An agreed lump sum.
- c. Cost Reimbursement - The actual cost for labor, direct overhead, materials, supplies, equipment, and other services necessary to complete the work plus an amount to be agreed upon, but not to exceed fifteen (15) percent of the actual cost to cover the cost of general overhead and profit.
- d. A copy of the contractor's invoice as covered in Section c shall be attached to the Field Change Order.
- e. Work by Subcontractor – When all or any part of the work covered by Change Order is performed by any of the Contractor's Subcontractors, the markups established in this section shall be applied to the Subcontractor's actual cost of such work, to which a markup of five (5) percent on the subcontracted portion of the work may be added by the prime Contractor.
- f. All Change Orders shall be approved by the Board of Directors of the District.

WEST VALLEY WATER DISTRICT**SECTION 3.15
OF
GENERAL CONDITIONS****TIME FOR COMPLETION
AND LIQUIDATED DAMAGES**

- 3.15.01 Time is of the essence. The Work embraced shall be commenced on or before a date specified in the Notice to Proceed.
- 3.15.02 The Contractor shall proceed with the Work at such rate of progress to ensure full completion within the Contract Time. It is expressly understood and agreed by and between the Contractor and the District, that the Contract Time for the completion of the Work described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the Work.
- 3.15.03 Should Contractor fail to complete any part or all of the Work within the Contract Time, or extension of time approved by the District, the District shall suffer damage, the amount of which is difficult, if not impossible, to ascertain and, pursuant to Government Code Section 14376, the Contractor shall pay to the District the amount for liquidated damages as specified in the Agreement for each calendar day or part thereof that actual completion extends beyond the time specified. Liquidated damages due the District may be deducted from payment due Contractor or may be collected directly from Contractor or from Contractor's sureties.
- 3.15.04 The Contractor shall not be charge with liquidated damages or any excess cost when the delay in completion of the Work is due to the following, and the Contractor has promptly given Written Notice of such delay to the District or Engineer:
- a. To any preference, priority, or allocation order duly issued by the District.
 - b. If delays are caused by unforeseen events beyond the control of both the Contractor and the District, such delays will entitle the Contractor to an extension of time as provided herein, but the Contractor shall not be entitled to damages or additional payment due to such delays. War, government regulations, labor disputes, strikes, fires, floods, adverse weather necessitating cessation of work, other similar action of the elements, inability to obtain materials, equipment or labor, required "extra work," or other specific reasons as may be further described in the specifications may constitute such a delay.

No extension of time will be granted for a delay caused by the inability to obtain materials unless the Contractor furnishes to the Engineer documentary proof of the inability to obtain such materials in a timely manner in accordance with the sequence of the Contractor's operations and the approved construction schedule.

- c. To any delays of Subcontractors occasioned by any of the causes specified in paragraphs 3.15.04a and 3.15.04b of this article.
- d. If delays beyond the Contractor's control are caused by reasons other than those mentioned above, but substantially equal in gravity to those enumerated, and an extension of time is deemed by the Engineer to be in the best interests of the District, an extension of time may be granted; but, the Contractor shall not be entitled to damages or additional payment due to such delays.

If delays beyond the Contractor's control are caused solely by action or inaction by the District, such delays will entitle the Contractor solely to an extension of time.

- e. Extensions of time, when granted, will be based upon the effect of delays to the project as a whole and will not be granted for noncontrolling delays to minor included portions of work, unless it can be shown that such delays did, in fact, delay the progress of the project as a whole.
- f. If the Contractor desires payment for a delay or an extension of time, he shall, within thirty (30) days after the beginning of the delay, file with the District a written request and report as to the cause and extent of the delay. The request for payment or extension must be made at least fifteen (15) days before the specified completion date. Failure by the Contractor to file these items within the times specified will be considered grounds for refusal by the District to consider such request.

- 3.15.05 In case the Work called for under this Contract is not completed within the time limit stipulated herein, the District shall have the right, in lieu of assessing liquidated damages, to extend the time of completion thereof. If the time limit be so extended, the District shall have the right to charge to the Contractor and to deduct from the final payment for the Work, the actual cost to the District of engineering, inspection, superintendence, and other overhead expenses which are directly chargeable to the Contract and which accrue during the period of such extension, except that the cost of final surveys and preparation of final estimate and the cost accruing by reason of unavoidable delays shall not be included in such charges.

WEST VALLEY WATER DISTRICT**SECTION 3.16
OF
GENERAL CONDITIONS****CORRECTION OF WORK**

- 3.16.01 The Contractor shall promptly remove from the premises all Work rejected by the Engineer or District for failure to comply with the Contract Documents, whether incorporated in the construction or not. The Contractor shall promptly replace and re-execute or repair the Work in accordance with the Contract Documents and without expense to the District, and shall bear the expense of making good all Work of other Contractors destroyed or damaged by such removal or replacement.
- 3.16.02 If the Contractor fails to make the repairs, removal or replacements promptly, or if, in the sole discretion of the District, the nature of the defect is such that time does not permit notice to the Contractor, the District may do the work and the Contractor and his surety shall be liable to the District for the cost of such work and for any storage of materials.

WEST VALLEY WATER DISTRICT**SECTION 3.17
OF
GENERAL CONDITIONS****SUBSURFACE CONDITIONS AND
EXAMINATION OF CONTRACT DOCUMENTS**

- 3.17.01 The Contractor represents that he has carefully examined the Contract Documents and the site where the work is to be performed and that he has familiarized himself with all local conditions and Federal, State, and local laws, ordinances, rules, and regulations that may affect performance of the Work in any manner. The Contractor further represents that he has studied all surveys and investigation reports governing subsurface and latent physical conditions pertaining to the job site; that he has performed such additional surveys and investigations as he deems necessary to complete the Work at the Contract Price; and, that he has correlated the results of all such data with the requirements of the Contract Documents. The submittal of a Bid shall be conclusive evidence that the Contractor has investigated and is satisfied as to the conditions to be encountered and as to the character, quality and scope of the Work.
- 3.17.02 The Drawings for the Work show conditions as they are supposed or believed by the Engineer to exist; but it is not intended, nor should it be inferred that the conditions as shown thereon constitute a representation that such conditions actually exist. The District and the Engineer shall not be liable for any loss sustained by the Contractor as a result of any variance of the conditions as shown on the Drawings and the actual conditions revealed during the progress of the Work or otherwise.

Where the District or the Engineer or their consultants have made investigations of subsurface conditions in areas where the Work is to be performed, such investigations were made only for the purpose of study and design. The conditions indicated by such investigations apply only at the specific location of each boring or excavation at the time the borings or excavations were made. Where such investigations have been made, the Contractor may inspect the records as to such investigations subject to and upon the conditions hereinafter set forth. The inspection of the records shall be made at the office of the Engineer.

The records of such investigations are not a part of the Agreement and are shown solely for the convenience of the Contractor. It is expressly understood and agreed that the District, the Engineer, and their consultants assume no responsibility whatsoever in respect to the sufficiency or accuracy of the investigations; the records thereof; or of the interpretations set forth therein or made by the District's consultants, the Engineer or his consultants in the use thereof by the Engineer, and there is no warranty or guarantee, either express or

implied, that the conditions indicated by such investigations or records thereof are representative of those existing throughout such areas, or any part thereof, or that unlooked-for developments may not occur, or that materials other than, or in proportions different from, those indicated may not be encountered.

When a log of test borings showing a record of the data obtained by the investigation of subsurface conditions by the District, the Engineer or their consultants is included with the Drawings, it is expressly understood and agreed that said log of test borings does not constitute a part of the Agreement, represents only the opinion of the District or the Engineer or their consultants as to the character of the materials encountered by them in the test borings, is included in the Drawings only for the convenience of the Contractor, and its use is subject to all of the conditions and limitations set forth in this Article.

- 3.17.03 The availability or use of information described in this Article is not to be construed in any way as a waiver of the provisions of Section 3.17.01 and the Contractor is cautioned to make such independent investigations and examination as he deems necessary to satisfy himself as to conditions to be encountered in the performance of the Work.
- 3.17.04 No information derived from such inspection of records or investigations or compilation thereof made by the District, the Engineer, or their consultants will in any way relieve the Contractor from any risk or from properly fulfilling the terms of the Agreement.

WEST VALLEY WATER DISTRICT**SECTION 3.18
OF
GENERAL CONDITIONS****SUSPENSION OF WORK, TERMINATION AND DELAY**

- 3.18.01 The District may suspend the Work or any portion thereof for a period of not more than ninety (90) days or such further time as agreed upon by the Contractor, by Written Notice to the Contractor which notice shall fix the date on which Work shall be resumed. The Contractor shall resume that Work on the date so fixed. The Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension.
- 3.18.02 If the Contractor is adjudged a bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the Contractor or for any of his property, or if he files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he repeatedly fails to make prompt payments to Subcontractors or for labor, materials or equipment, or if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction of the Work, or if he disregards the authority of the Engineer, or if he otherwise violates any provision of the Contract Documents, then the District may, without prejudice to any other right or remedy and after giving the Contractor and his surety a minimum of ten (10) days from delivery of a Written Notice, terminate the services of the Contractor and take possession of the Project and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor, and finish the Work by whatever method it may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Project, including compensation for additional professional services, such excess shall be paid to the Contractor. If such costs exceed such unpaid balance, the Contractor shall pay the difference to the District. Such costs incurred by the District will be determined by the Engineer and incorporated in a Change Order.
- 3.18.03 Where the Contractor's services have been so terminated by the District, said termination shall not affect any right of the District against the Contractor then existing or which may thereafter accrue. Any retention or payment of monies by the District due the Contractor will not release the Contractor from compliance with the Contract Documents.

- 3.18.04 After ten (10) days from delivery of a Written Notice to the Contractor, the District may, without cause and without prejudice to any other right or remedy, elect to abandon the Project and terminate the Agreement. In such case, the Contractor shall be paid for all Work Executed and any expense sustained plus reasonable profit.
- 3.18.05 If, through no act or fault of the Contractor, the Work is suspended for a period of more than ninety (90) days by the District or under an order of court or other public authority, or the District fails to pay the Contractor substantially the sum approved by the Engineer or awarded by arbitrators within thirty (30) days of its approval and presentation, then the Contractor may, after ten (10) days from delivery of a Written Notice to the District, terminate the Agreement and recover from the District payment for all Work executed and all expenses sustained. In addition and in lieu of terminating the Agreement, or if the District has failed to make any payment as aforesaid, the Contractor may upon ten (10) days Written Notice to the District stop the Work until he has been paid all amounts then due, in which event and upon resumption of the Work, Change Orders will be issued for adjusting the Contract Price or extending the Contract Time or both to compensate for the costs and delays attributable to the stoppage of the Work.
- 3.18.06 If the performance of all or any portion of the Work is suspended, delayed or interrupted as a result of a failure of the District to act within the time specified in the Contract Documents, or if no time is specified, within a reasonable time, an adjustment in the Contract Price or an extension of the Contract Time, or both, will be made by Change Order to compensate the Contractor for the costs and delays necessarily caused by the failure of the District.

WEST VALLEY WATER DISTRICT**SECTION 3.19
OF
GENERAL CONDITIONS****PAYMENTS TO CONTRACTOR**

3.19.01 At least ten (10) days before each progress payment falls due (but not more often than once a month), the Contractor shall submit to the Engineer a payment request filled out and signed by the Contractor covering the Work performed during the period covered by the payment request and supported by such data as the Engineer may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the Work, but delivered and suitably stored at the site, the payment request shall also be accompanied by such supporting data, satisfactory to the District, as will establish the District's title to the material and equipment and protect his interest therein, including applicable insurance.

Pursuant to Section 20104.50 of the California Public Contract Code, the Engineer will, within seven (7) days after receipt of each payment request, either indicate in writing his approval of payment and present the payment request to the District, or return the payment request to the Contractor indicating in writing his reasons for why the payment request is not proper. In the latter case, the Contractor may make the necessary corrections and resubmit the payment request.

The District will, within thirty (30) days of Contractors presentation to the Engineer of payment request, pay the Contractor a progress payment on the basis of the approved payment request. The District shall retain ten (10) percent of the amount of each payment until final completion and acceptance of all work covered by the Contract Documents. The District at any time, however, after fifty (50) percent of the Work has been completed, if it finds that satisfactory progress is being made, shall reduce retention to five (5) percent of payments claimed.

Should the District fail to make a progress payment within thirty (30) days after receipt of an undisputed and properly submitted payment request, the District shall pay interest to the Contractor equivalent to the legal rate set forth in subdivision (a) of Section 685.010 of the Code of Civil Procedure.

In addition to the amount which the District may retain under the above article on progress payments, the District may withhold a sufficient amount or amounts from any payments otherwise due to the Contractor as in District's judgment may be necessary to cover.

- a. Payments which may be past due and payable for claims against the Contractor or any Subcontractor for labor or materials furnished in or about the performance of the Work on the project under this Agreement, as determined by the District to be justified.
- b. Estimated or actual costs for correcting defective work not remedied.
- c. Amounts claimed by the District as forfeiture due to delay or other offsets.
- d. Pipeline bid item not complete as specified. Payment per lineal foot shall be based upon the following schedule:
 - 1. Pipe installed and trench backfilled and site cleanup..... 70%
 - 2. Plus approved compaction..... 85%
 - 3. Plus passing leakage testing..... 95%
 - 4. Plus cleanup..... 100%

When the Work is substantially complete (operational or beneficial occupancy), the District may reduce further that withheld amount to below five (5) percent to only that amount necessary to assure completion. The District may reinstate up to ten (10) percent withholding if the District determines, at its discretion, that the Contractor is not making satisfactory progress or there is other specific cause for such withholding.

The Contractor may substitute securities in place of any funds withheld by the District to ensure performance under the Contract, provided he furnishes to the District the Escrow Agreement on the form provided in Section 2.13, as prescribed by Public Contract Code § 22300. The entire cost of this Escrow Agreement shall be borne by the Contractor. At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the District, or with a state or federally chartered bank in this state as the escrow agent, who shall then pay those moneys to the Contractor. Upon satisfactory completion of the Contract, the securities shall be returned to the Contractor.

Alternatively, the Contractor may request and the Owner shall make payment retentions earned directly to the escrow agent at the expense of the Contractor. At the expense of the Contractor, the Contractor may direct the investment of the payments into securities and the Contractor shall receive the interest earned on the investments upon the same terms provided for in this section for securities deposited by the Contractor. Upon satisfactory completion of the Contract, the Contractor shall receive from the escrow agent all securities, interest, and payments received by the escrow agent from the Owner, pursuant to the terms of this section.

Securities eligible for investment shall include those listed in Section 16430 of the Government Code, bank or savings and loan certificates of deposit, interest-bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by the Contractor and the District.

The Contractor shall be the beneficial owner of any securities substituted for moneys withheld and shall receive any interest thereon.

A Contractor who elects to receive interest on moneys withheld in retention by a public agency shall, at the request of any subcontractor, make the option available to the subcontractor regarding any moneys withheld in retention by the Contractor from the subcontractor. If the Contractor elects to receive interest on any moneys withheld in retention by a public agency, then the subcontractor shall receive the identical rate of interest received by the Contractor on any retention moneys withheld from the subcontractor by the Contractor, less any actual pro rata costs associated with administering and calculating that interest. In the event that the interest rate is a fluctuating rate, the rate for the subcontractor shall be determined by calculating the interest rate paid during the time that retentions were withheld from the subcontractor. If the Contractor elects to substitute securities in lieu of retention, then, by mutual consent of the contractor and subcontractor, the subcontractor may substitute securities in exchange for the release of moneys held in retention by the Contractor. However, this paragraph shall only apply to those subcontractors performing more than five percent of the Contractor's total bid. No Contractor shall require any subcontractor to waive any provisions of the paragraph.

- 3.19.02 The request for payment may also include an allowance for the cost of such major materials and equipment which are suitably stored either at the site.
- 3.19.03 Prior to Substantial Completion, the District, with the approval of the Engineer, and with the concurrence of the Contractor, may use any completed or substantially completed portions of the Work. Such use shall not constitute an acceptance of such portions of the Work.
- 3.19.04 The District shall have the right to enter the premises for the purpose of doing work not covered by the Contract Documents. This provision shall not be construed as relieving the contractor of the sole responsibility for the care and protection of the Work, or the restoration of any damaged Work except such as may be caused by agents or employees of the District.
- 3.19.05 Final payment will be made in accordance with Public Contract Code Section 7107. Upon completion and acceptance of the Work, the Engineer shall issue a certificate attached to the final payment request that the Work has been accepted by him under the conditions of the Contract Documents.

The Engineer shall, as soon as practicable after the final acceptance of the Work, make a final estimated of the amount of Work done thereunder and the value thereof. Such final estimate shall be signed by the Engineer, and after approval, the District shall pay or cause

to be paid to the Contractor in the manner provided by law, the entire sum so found to be due hereunder, after deducting therefrom all previous payments and such other lawful retainage amounts as the terms of these Contract Documents prescribe.

- 3.19.06 The Contractor shall indemnify and hold the District or the District's agents harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, materialmen, and furnisher of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the Work. The Contractor shall, at the District's request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged, or waived. If the Contractor fails to do so, the District may, after having notified the Contractor, either pay unpaid bills or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed, in accordance with the terms of the Contract Documents, but in no event shall the provisions of this sentence be construed to impose any obligations upon the District, the Contractor, his surety, or any third party. In paying any unpaid bills of the Contractor, any payment so made by the District shall be considered as a payment made under the Contract Documents by the District to the Contractor, and the District shall not be liable to the Contractor for any such payments made in good faith.

WEST VALLEY WATER DISTRICT**SECTION 3.20
OF
GENERAL CONDITIONS****FINAL PAYMENT CONDITIONAL
UPON RELEASE**

- 3.20.01 Before he shall be entitled to final payment under the Contract, Contractor shall execute and file with the District a release upon the form provided by District, releasing the District from all claims or liability relating to undisputed contract amounts or work performed in relation to said amounts. Any payment, however, final or otherwise, shall not release the Contractor or his sureties from any obligations under the Contract Documents or the Performance Bond and Payment Bond.

WEST VALLEY WATER DISTRICT**SECTION 3.21
OF
GENERAL CONDITIONS****INSURANCE**

- 3.21.01 The Contractor shall not commence any work under the Contract Documents until he obtains, at his own expense, all required insurance. Such insurance must have the approval of the District as to Company, limits, form and amount. The Contractor shall not permit any Subcontractor to commence work on the Project until the Subcontractor has also complied with these insurance requirements. The types of insurance that the Contractor shall secure and maintain for the full Contract Time are Worker's Compensation Insurance, Comprehensive General Liability Insurance, Builder's Risk "All Risk" Insurance, and Earthquake and Tidal Wave Insurance as hereinafter specified. Nothing contained in these insurance requirements is to be construed as limiting the extent of the Contractor's responsibility for payment of damages resulting from his operations under the Contract Documents.
- 3.21.02 Before commencing any work, the Contractor shall submit written evidence that he and all Subcontractors have obtained for the Contract Time full Worker's Compensation Insurance coverage, including occupational disease coverage, for all persons whom they employ or may employ in performing the Agreement. Such insurance shall at all times be maintained in strict accordance with the requirements of the current California Worker's Compensation Insurance laws. In case any employees are to be engaged in hazardous work under the Contract documents and are not protected under the Worker's Compensation Insurance laws, the Contractor and all Subcontractors under him who employ such persons, shall provide adequate insurance for the protection of such employees.
- 3.21.03 Before commencing any work, the Contractor shall procure for the entire Contract Time, full Comprehensive General Liability Insurance and Vehicle Liability Insurance coverage as hereinafter specified. Such insurance shall insure the Contractor and all Subcontractors for all claims for personal injury, including sickness and death, and all claims for destruction of or damage to property, including loss of use, arising out of or in connection with any operations under the Contract Documents, whether such operations be by the Contractor or by any Subcontractor under the Contractor, or by anyone directly or indirectly employed by the Contractor or by any Subcontractor.

Such General Liability Insurance shall be written with a limit of liability of not less than \$2,000,000 for all damages arising out of bodily injury, including sickness and death, at any time resulting therefrom, sustained in any one occurrence. Such General liability insurance shall also be written with a limit of liability of not less than \$1,000,000 for all

damages arising out of injury to or destruction of property of others, arising directly or indirectly out of or in connection with the performance of the Work under the Contract Documents and in any one occurrence, including explosion, collapse and underground exposure.

Such Vehicle Liability Insurance shall be written with a limit of liability of not less than \$500,000 for all damages arising out of bodily injury, including sickness and death, at any time resulting therefrom, sustained by any one person in any one occurrence, and a limit of liability of not less than \$1,000,000 aggregate for any such damages sustained by two or more persons in any one occurrence. Such Vehicle Liability Insurance shall be written with a limit of liability of not less than \$500,000 for all damages arising out of injury to or destruction of property of others, arising directly or indirectly out of or in connection with the performance of the Work under the Contract Documents and in any one occurrence, including explosion, collapse and underground exposure.

The policy for such insurance shall include contractual coverage sufficiently broad to cover the Contractor's Indemnification Agreement contained in Section 2.24 of these General Conditions. Each person and entity indemnified by the Contractor shall be named in such insurance policy as an additional named insured for whose benefit such coverage shall be primary without right of subrogation.

- 3.21.04 Before commencing any work, the Contractor shall procure "All Risk" Builder's Risk Insurance for the Work to be performed. Except for the deductible amount hereinafter allowed or as otherwise specifically authorized by the Owner, the amount of such insurance shall not be less than the Contract Price. The policy for such insurance shall cover, at a minimum, losses due to: fire, explosion, hail, lightning, water, flood coverage, or other direct or indirect water damage of whatever type or nature, or spray from any of the foregoing, all whether or not driven by the wind, vandalism, malicious mischief, wind, collapse, riot, aircraft, and smoke (excluding earthquake and tidal wave) through the Contract Time and until the Work is accepted by the Owner. The policy must specify that coverage is to include all materials and equipment to be incorporated in the Project while at the construction site and while in transit.

Such policy shall name as the insured the Contractor, all Subcontractors, the Owner, the Owner's representative, the Engineer, and their consultants and each of their officers, employees and agents. A deductible amount of \$5,000 on all perils will be allowed.

- 3.21.05 The Owner may require the Contractor to procure, before commencing any work, insurance to indemnify the Owner from any damage to the work caused by earthquake or by tidal wave or by both such occurrences. Such determination by the Owner will be made prior to the award of the Agreement to the Contractor and the Contractor will be notified of such determination concurrently with the Notice of Award.

If the Owner determines not to require the Contract to procure such insurance, the Contract

Price shall be reduced by the amounts set forth in the bid items for the premium for such insurance.

If the District determines to require the Contractor to procure such insurance, such insurance shall include as additional named insureds the District, District's representative, the Engineer and his consultants, and each of their officers, employees, and agents. The policy or policies for such insurance may provide for a deductible amount not to exceed five (5) percent of the Contract Price. As provided in Sections 7105 of the Public Contract Code, the District may require the Contractor to be responsible for the cost of repairing or restoring damage to work which damage is determined to have been proximately caused by an act of God, up to five (5) percent of the Contract amount. Pursuant to Section 7105 (b) (2), "Act of God" include only earthquake in excess of a magnitude of 3.5 on the Richter scale and tidal wave.

- 3.21.06 Prior to commencement of any work under the Contract Documents, the Contractor shall obtain and furnish to the District a Certificate of Insurance as to each type of insurance required by parts 3.21.02 through 3.21.05 of this Section. The forms of Certificate of Insurance provided in Section 2.8 of the Procedural Documents must be used for the insurance required by parts 3.21.02 through 3.21.05, and no substitutions will be accepted by the District.

WEST VALLEY WATER DISTRICT**SECTION 3.22
OF
GENERAL CONDITIONS****CONTRACT SECURITY**

- 3.22.01 The Contractor shall within fifteen (15) days after the receipt of the Notice of Award furnish the District with a Performance Bond and a Payment Bond in penal sums equal to the amount of the Contract Price, conditioned upon the performance by the Contractor of all undertakings, covenants, terms, conditions and agreements of the Contract Documents, and upon the prompt payment by the Contractor to all persons supplying labor and materials in the prosecution of the Work provided by the Contract Documents.
- 3.22.02 Bonds shall be executed by the Contractor and a corporate bonding company licensed to transact such business in the state of California and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these Bonds shall be borne by the Contractor.
- 3.22.03 If at any time a surety on any such Bond is declared a bankrupt or loses its right to do business in the State of California in which the Work is to be performed or is removed from the list of Surety Companies accepted on Federal Bonds, Contractor shall within ten (10) days after notice from the District to do so, substitute an acceptable Bond (or Bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the District. The premiums on such Bond shall be paid by the Contractor. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable Bond to the District.
- 3.22.04 The Performance Bond and the Payment Bond must remain in effect throughout the period for performance of the Work and through the time of final payment by the District. A performance Bond issued to the District must remain in effect for a period of two (2) years thereafter, which is the period of the Contractor's warranty, or as modified under the Supplemental General Conditions.

WEST VALLEY WATER DISTRICT**SECTION 3.23
OF
GENERAL CONDITIONS****ASSIGNMENT AND BANKRUPTCY**

- 3.23.01 The Contractor shall not sell, transfer, assign or otherwise dispose of the Agreement or any portion thereof, or of his right, title or interest therein, or his obligations thereunder, without written consent of the District.
- 3.23.02 In the event of bankruptcy of the Contractor, whether voluntary or involuntary, this Agreement is automatically terminated and the Contractor is entitled to no further payments over and above the reasonable value of the actual work completed at that time.

WEST VALLEY WATER DISTRICT**SECTION 3.24
OF
GENERAL CONDITIONS****INDEMNIFICATION**

- 3.24.01 The Contractor and any Subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall indemnify, defend and hold harmless the District and the Engineer and any of their directors, independent contractors, agents and employees from and against all claims, damages, losses and expenses, including attorney's fees arising out of or resulting from the performance of the Work, provided that any such claims, damage, loss or expense is attributable to personal injury, bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom; and is caused in whole or in part by any act or omission of the Contractor, any Subcontractor, any supplier, anyone directly or indirectly employed by any of them or anyone for whose acts or omissions any of them may be liable, regardless of whether or not it is caused in part by any act or omission (active, passive, or comparative negligence included), of a party indemnified hereunder.
- 3.24.02 In any and all claims against the District or the Engineer, or any of their directors, independent contractors, agents, or employees, by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under Workmen's Compensation Acts, Disability Benefit Acts or other Employee Benefits Acts.
- 3.24.03 The obligation of the Contractor under this paragraph shall not extend to the liability of the Engineer, his agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or Specifications.
- 3.24.04 The Contractors shall indemnify, defend and hold harmless the District, the District's representative, the Engineer, their consultants, and each of their directors, independent contractors, officers, employees and agents, from all costs, losses, expenses, damages, attorney's fees, and other costs, including all costs of defense, which any of them may incur with respect to the failure, neglect, or refusal of Contractor to faithfully perform the Work and all of Contractor's

obligations under the Agreement, including but not limited to, Contractor's failure to complete any portion of the Work by the time specified in the Contract documents.

Such costs, expenses, and damages shall include all costs incurred by the District, the District's representative, the Engineer, and their consultants to defend against any claims, stop notices, or lawsuits based thereon in which any of them is made a party.

- 3.24.05 Each of the indemnified parties named in this section shall be entitled to designate the attorney of their choice and the indemnitor agrees to pay the fee of each such attorney so designated.

WEST VALLEY WATER DISTRICT**SECTION 3.25
OF
GENERAL CONDITIONS****SEPARATE CONTRACTS**

- 3.25.01 The District reserves the right to let other contractors in connection with this Project. The Contractor shall afford other Contractors reasonable opportunity for the introduction and storage of their materials and the execution of their Work, and shall properly connect and coordinate his Work with theirs. If the proper execution or results of any part of the Contractor's Work depends upon the Work of any other Contractor, the Contractor shall inspect and promptly report to the Engineer any defects in such Work that render it unsuitable for such proper execution and results.
- 3.25.02 The District may perform additional Work related to the Project by itself, or it may let other Contractors containing provisions similar to these. The Contractor will afford the other Contractors who are parties to such Contracts (or the District, if it is performing the additional Work itself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of Work, and shall properly connect and coordinate his Work with theirs.
- 3.25.03 If the performance of additional Work by other Contractors or the District is not noted in the Contract Documents prior to the execution of the Contract, Written Notice thereof shall be given to the Contractor prior to starting any such additional Work. If the Contractor believes that the performance of such additional by the District or other contractors involves him in additional expense or entitles him to an extension of the Contract Time, he may make a claim therefore as provided in Sections 3.14, 3.15, and 3.18 herein.

WEST VALLEY WATER DISTRICT**SECTION 3.26
OF
GENERAL CONDITIONS****SUBCONTRACTING**

- 3.26.01 The Contractor may utilize the services of specialty Subcontractors on those parts of the Work which, under normal contracting practices, are performed by specialty Subcontractors.
- 3.26.02 All bids must identify the name and location of business of each subcontractor who will perform work or labor or render service to the Contractor in or about the construction of the work or improvement, or a subcontractor licensed by the State of California who, under subcontract to the Contractor, specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent of the Contractor's total bid. All bids further must specify the portion of the work that will be done by each subcontractor. The Contractor shall list only one subcontractor for each portion as is defined by the Contractor in his or her bid. After submission of his Bid, the Contractor shall not award Work to any unlisted Subcontractor(s) without prior written approval of the District.
- 3.26.03 The Contractor shall be fully responsible to the District for the performance of his Subcontractors, and of persons either directly or indirectly employed by them.
- 3.26.04 The Contractor shall review each condition of this Contract and cause to be inserted in all subcontracts comparable provisions relative to the Work to bind Subcontractors to the Contractor by the terms of the Subcontract Documents insofar as applicable to the Work of Subcontractors in the same manner that Contractor is bound to District (e.g., payment bond, insurance, termination, unauthorized assignment or bankruptcy, etc.), and to give the Contractor the same power as regards terminating any subcontract that the District may exercise over the Contractor under any provision of the Contract Documents. Copies of contracts between the Contractor and any Subcontractors shall be furnished to the District upon request.
- 3.26.05 All payments by Contractor to Subcontractor(s) which involve material made by joint check shall specifically allocate the payment between the supplier involved and the Subcontractor.

3.26.06 Nothing contained in this Contract shall create any contractual relation between any Subcontractor and the District.

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WEST VALLEY WATER DISTRICT**SECTION 3.27
OF
GENERAL CONDITIONS****ENGINEER'S AUTHORITY**

- 3.27.01 The Engineer shall act as the District's or the Developer's representative during the construction period. He shall decide questions which may arise as to quality and acceptability of materials furnished and Work performed. He shall interpret the intent of the Contract Documents in a fair and unbiased manner. The Engineer will make visits to the site and determine if the Work is proceeding in accordance with the Contract Documents.
- 3.27.02 The Contractor shall be held strictly to the intent of the Contract Documents in regard to the quality of materials, workmanship and execution of the Work. Inspections may be at the factory or fabrication plant that is the source of material supply.
- 3.27.03 The Engineer will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.
- 3.27.04 The Engineer shall promptly make decisions relative to interpretation of the Contract Documents.
- 3.27.05 Any plan or method of Work suggested by the Engineer, but not specified or required, if adopted or followed by the Contractor in whole or in part, shall be used at the risk and responsibility of the Contractor, and the Engineer and the District shall assume no responsibility therefor.
- 3.27.06 The Engineer's authority and responsibility with respect to Resident Project Representation are as set forth in Section 3.33 of these General Conditions.

WEST VALLEY WATER DISTRICT**SECTION 3.28
OF
GENERAL CONDITIONS****LAND AND RIGHTS-OF-WAY**

- 3.28.01 Prior to issuance of Notice to Proceed, the District or the Developer shall obtain land and rights-of-way for carrying out the Work to be performed pursuant to the Contract Documents.
- 3.28.02 The District or the Developer shall provide to the Contractor information which delineates and describes the lands owned and rights-of-way acquired.
- 3.28.03 The Contractor shall provide at his own expense and without liability to the District any additional land and access thereto that the Contractor may desire for temporary construction facilities, or for storage of materials.
- 3.28.04 Contractor shall confine his equipment, the storage of materials and equipment and the operations of his workmen to areas permitted by law, ordinances, permits, or the requirements of the Contract Documents, and shall not unreasonably encumber the premises with materials or equipment.

WEST VALLEY WATER DISTRICT**SECTION 3.29
OF
GENERAL CODITIONS****GUARANTY**

- 3.29.01 The Contractor shall guarantee that all materials and equipment furnished shall be new unless otherwise specified.
- 3.29.02 The Contractor shall guarantee all materials and equipment furnished and Work performed for a period of two (2) years from the date the Notice of Completion is recorded. The Contractor warrants and guarantees for a period of two (2) years from that date that the completed system is free from all defects due to faulty materials or workmanship, and the Contractor shall promptly make such corrections as may be necessary by reasons of such defects, including the repairs of any damage to other parts of the system resulting from such defects. The District will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments, or other Work that may be made necessary by such defects, the District may do so and charge the Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect through the guarantee period.

WEST VALLEY WATER DISTRICT

**SECTION 3.30
OF
GENERAL CONDITIONS**

SECTION NOT USED

3.30-1

WEST VALLEY WATER DISTRICT**SECTION 3.31
OF
GENERAL CONDITIONS****TAXES**

- 3.31.01 The Contractor shall pay all sales, consumer, use and other similar taxes required by the law of the place where the Work is performed.
- 3.31.02 The terms of these Contract Documents may result in the creation of a possessory interest. If such a possessory interest is vested in a private party to these Contract Documents, the private party may be subjected to the payment of personal property taxes levied on such interest.

WEST VALLEY WATER DISTRICT**SECTION 3.32
OF
GENERAL CONDITIONS****CONFLICT**

- 3.32.01 If there be a conflict between Contract Drawings and the Specifications, the provisions of the Specifications shall control. An addendum can modify any of the Contract Documents and shall control.
- 3.32.02 In case of conflict between the Special Conditions and the Detailed Technical Provisions, the Special Conditions shall control in each case. If there is a conflict between the General Conditions and the Supplemental General Conditions, the Supplemental General Conditions shall control.
- 3.32.03 If there should be a conflict between Contract Drawings and Standard Drawings, the Standard Drawings shall control.

WEST VALLEY WATER DISTRICT**SECTION 3.33
OF
GENERAL CONDITIONS****RESIDENT PROJECT REPRESENTATIVE**

- 3.33.01 The District will furnish a Resident Project Representative at the project site to witness that the intent of Contract Documents regarding the quality of materials, workmanship and execution of the work, has been properly carried out. The duties, responsibilities, and limitations of authority of any such Resident Project Representative and Assistants are herein set forth.
- 3.33.02 The Resident Project Representative is the District's agent and will act as directed by and under the supervision of the District. He will confer with the Engineer regarding his actions. His dealings in matters pertaining to the on-site Work shall, in general, be only with the Engineer and the Contractor. His dealings with Subcontractors shall only be through or with the full knowledge of the Contractor or his superintendent.
- 3.33.03 The duties and responsibilities of the Resident Project Representative will be as follows:
- a. Schedules – Review the progress schedule, schedule of Shop Drawings submissions, and schedule of values prepared by the Contractor and consult with the Engineer concerning their acceptability.
 - b. Conferences – Attend preconstruction conferences. Arrange a schedule of progress meeting and other job conferences as required in consultation with the Engineer and notify those expected to attend in advance. Attend meetings, and maintain and circulate copies of minutes thereof.
 - c. Liaison
 - 1) Serve as the District's liaison with the Contractor, working principally through the Contractor's superintendent and assist him in understanding the intent of the Contract Documents. Serve as District's liaison with the Contractor when Contractor's operations affect District's on-site operations.
 - 2) Assist in obtaining additional details or information, when required at the job site for proper execution of the work.

- d. Shop Drawings and Samples
 - 1) Receive and record data of receipt of Shop Drawings and samples which have been approved by the Engineer.
 - 2) Receive samples which are furnished at the site by the Contractor for the Engineer's approval, and notify the Engineer of their availability for examination.
 - 3) Advise the Engineer and the Contractor or his superintendent immediately of the commencement of any Work requiring a Shop Drawing or sample submission if the submission has not been approved by the Engineer.
- e. Review of Work, Rejection of Defective Work, Inspections, and Tests.
 - 1) Conduct onsite observations of the Work in progress to determine that the Project is proceeding in accordance with the Contract Documents and that completed Work will conform to the requirements of the Contract Documents.
 - 2) Report to the District or the Engineer whenever he believes that any Work is unsatisfactory, faulty or defective or does not conform to the requirements of the Contract Documents, or does not meet the requirements of any inspections, tests or approval required to be made; and advise the District or the Engineer when he believes the Work should be corrected or rejected or should be uncovered for observation, or requires special testing or inspection.
 - 3) Verify that tests, equipment and systems start-ups and operating and maintenance instructions are conducted as requires by the Contract Documents and in the presence of the required personnel, and that the Contractor maintains adequate records thereof; observe record and report to the District or the Engineer appropriate details relative to the test procedures and start-ups.
 - 4) Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the outcome of these inspections and report to the Engineer.
- f. Interpretation of Contract Documents – Transmit to the Contractor the Engineer's clarifications and interpretations of the Contract Documents.
- g. Modifications – Consider and evaluate the Contractor's suggestions for modifications in Drawings of Specifications and report them with recommendations to the Engineer.

- h. Records
 - 1) Maintain at the job site orderly files for correspondence, reports of job conferences, shop drawings and samples submissions, reproductions of original Contract Documents including all addenda, change orders, field orders, additional Drawings issued subsequent to the execution of the Agreement, the Engineer's clarifications and interpretations of the Contract Documents, progress reports and other Project-related documents.
 - 2) Keep a diary or log book, recording hours on the job site, weather conditions, data relative to questions of extras or deductions, list of visiting officials, daily activities, decisions, observations in general and specific observations as in the case of observing test procedures. Send copies to the Engineer.
 - 3) Record names, addresses and telephone numbers of all the Contractors, Subcontractors, and major Suppliers of equipment and materials.
- i. Reports
 - 1) Furnish Engineer periodic reports as required of progress of the Work and the Contractor's compliance with the approved progress schedule and schedule of Shop Drawing submissions.
 - 2) Consult with the Engineer in advance of scheduled major tests, inspections or start of important phases of the Work.
- j. Payments Requisitions – Review applications for payments with the Contractor for compliance with the established procedure for their submission and forward them with recommendations to the Engineer, noting particularly their relation to the schedule of values, Work completed and materials and equipment delivered at the site.
- k. Guarantees, Certificates, Maintenance and Operation Manuals – During the course of the Work, verify that guarantees, certificates, maintenance and operation manuals and other data required to be assembled and furnished by the Contractor are applicable to the items actually installed; and deliver this material to the Engineer for his review and forwarding to the Owner prior to final acceptance of the Project.
- l. Completion
 - 1) Before the Engineer issues a Certificate of Substantial Completion, submit to the Contractor a list of observed items requiring correction.
 - 2) Conduct final inspection in the company of the Engineer, Owner and Contractor and prepare a final list of items to be corrected.

3) Verify that all items on the final list have been corrected and make recommendations to the Engineer concerning acceptance.

3.33.04 Except upon written instruction of the District or the Engineer, the Resident Project Representative shall not:

- a. Authorize any deviation from the Contract Documents or approve any substitute materials or equipment.
- b. Undertake any of the responsibilities of the Contractor, Subcontractor, or Contractor's Superintendent.
- c. Expedite Work for the Contractor.
- d. Advise on or issue directions relative to any aspect of the means, methods, techniques, sequences or procedures of construction unless such is specifically called for in the Contract Documents.
- e. Advise on or issue directions as to safety precautions and programs in connection with the Work.
- f. Authorize the District to occupy the Project in whole or in part.
- g. Participate in specialized field or laboratory tests.

WEST VALLEY WATER DISTRICT

**SECTION 3.34
OF
GENERAL CONDITIONS**

LEGAL RELATIONS AND RESPONSIBILITY

- 3.34.01 The Contractor shall keep himself fully informed of all existing and future State and Federal laws and all County and City ordinances and regulations which in any manner affect the conduct of the Work, and all of such orders and decrees of bodies or tribunals having any jurisdiction or authority over same. If any discrepancy or inconsistency is discovered in the Contract Documents or Agreement for the Work in relation to any such law, ordinance, regulation, order or decree, he shall forthwith report the same to the District in writing. He shall at all times observe and comply with and shall cause all his agents and employees to observe and comply with all such existing and future laws, ordinances, regulations, orders and decrees, and shall protect, defend and indemnify the District, the Engineer, and all of its and their officers and agents against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by himself or his employees.

The Contractor's attention is directed to Division 2, Part 7, Chapter 1 of the Labor Code of California and especially to Article 2 (Wages); and Article 3 (Working Hours).

- a. The Director of the Department of Industrial Relations has found and determined the general prevailing rates of wages in the locality in which the public work is to be performed, copies of which are maintained at the District's office, and are available to any interested party on request. Contractor shall post a copy of said document at each job site. The Contractor shall forfeit to the District a penalty of Twenty-five (25) dollars for each calendar day, or portion thereof, for each worker paid less than the stipulated prevailing rate, and shall in addition pay to each worker for each such day the difference between the prevailing rate and the actual wage paid.
- b. In accordance with Sections 1773.1 and 1773.8 of the Labor Code the Contractor shall pay travel and subsistence payments to each workman needed to execute the Work as such travel and subsistence payments are defined in the applicable collective bargaining assurances filed with the Department of Industrial Relations.

- c. Pursuant to Labor Code Section 1810 et. seq., it is stipulated hereby that eight (8) hours labor constitutes a legal day's work hereunder.
- d. Pursuant to Labor Code Section 1813, it is stipulated hereby that the Contractor shall, as a penalty to the District, forfeit Twenty-five (25) Dollars for each workman employed in the execution of this Contract by the Contractor, or by any Subcontractor hereunder, for each calendar day during which such workman is required or permitted to work more than eight (8) hours in any one calendar day and forty (40) hours in any one calendar week, unless such worker receives compensation for all hours worked in excess of 8 hours at not less than 1 ½ times the base rate of pay, in violation of the provisions of Article 3 (commencing with Section 1810), Chapter 1, Part 7, Division 2, of the Labor Code.
- e. The Contractor is aware of and shall comply with the provisions of Labor Code Sections 1777.5 and 1777.6, as amended effective January 1, 1997, with respect to the employment of apprentices. Pursuant to Section 1777.5, it is hereby stipulated that the Contractor shall be responsible for obtaining compliance therewith on the part of any and all Subcontractors employed by him in connection with this Contract.
- f. Attention is directed to the provisions in Section 1777.5 and 1777.6 of the Labor Code concerning the employment of apprentices by the Contractor or any Subcontractor under him.

The contractor and any Subcontractor under him shall comply with the requirements of Section 1777.5 and 1777.6 of the Labor Code in the employment of apprentices.

Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, ex officio the Administrator of Apprenticeship, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

Willful violations of Section 1777.5 will result in a forfeiture of \$50.00 for each calendar day of noncompliance which shall be withheld from progress payments by District upon notice from the Department of Industrial Relations. (Labor Code 1777.7).

- 3.34.02 In the event of any legal or equitable proceeding to enforce the terms or conditions of this Agreement, the parties agree that venue shall be in the judicial district in which the office of the District is located.

- 3.34.03 If any provision of this Agreement is held by a Court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions shall nevertheless continue in full force without being impaired or invalidated in any way.

All clauses contained in the Contract Documents shall be interpreted in a manner which renders them valid under applicable provisions of State and Federal law where a consistent interpretation is possible.

- 3.34.04 In the event any arbitration proceeding, administrative proceeding or litigation in law or in equity, including an action for declaratory relief, is brought to enforce or interpret the provisions or performance of this Agreement, the prevailing party shall be entitled to the award of a reasonable attorney's fee and the costs of the proceeding, which shall be determined by the Court or the presiding officer at the proceeding, authorized to make a determination of the issues at the hearing level, or in a separate action brought for that purpose, in addition to any other relief to which the prevailing party may be entitled.

If any party to this agreement becomes a party to any litigation, administrative proceeding or arbitration concerning the enforcement or interpretation of the provisions of this Agreement or the performance of this Agreement by reason of any act or omission of another party or authorized representatives of another party to this Agreement and not by any act or omission of the party that becomes a party to that proceeding or any act or omission of its authorized representatives, the party that causes another party to become involved in the proceeding shall be liable to that party for reasonable attorney fees and costs of the proceeding incurred by that party in the proceeding. The award of reasonable attorney fees and costs shall be determined as provided above.

In the event opposing parties have each prevailed on one or more causes of action actually contested or admitted by pleadings or prehearing documents on file, the presiding officer may offset such fees and costs between prevailing parties after considering the necessity of the proceeding and the importance of the issue of issues upon which a party has prevailed.

- 3.34.05 It shall be the responsibility of the contractor to maintain an accurate payroll record showing the name, address, Social Security Number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each employee in accordance with Labor Code 1776, and to insure that each Subcontractor on the project also complies with all provisions of Labor Code 1776 and this contract provision.

All payroll records shall be certified as accurate by the applicable Contractor or Subcontractor or its agent having authority over such matters.

The contractor shall insure that all payroll records are available for inspection at the contractor's principal office during normal business hours, and shall notify the District, in writing, of the place where all payroll records are located from time to time.

Contractor shall furnish a copy of all payroll records, upon request, to employees or their authorized agents, to the District, to the Division of Labor Standards Enforcement and to the Division of Apprenticeship Standards of the Department of Industrial Relations. Contractor shall also furnish a copy of payroll records to the general public upon request provided the public request is made through the District, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement of the Department of Industrial Relations. In no event shall members of the general public be given access to payroll records at the contractor's principal office.

Records made available to the general public in accordance with the prior paragraph shall be marked or obliterated in such a manner that the name, and address of the contractor and/or subcontractor and the name, address and telephone number of all employees does not appear on the modified records.

Contractor shall file a certified copy of any requested payroll records with the entity that requested such records within ten (10) days of the date a written request for payroll records has been received.

Failure of contractor to comply with any provision of this Section or Labor Code 1776 within ten (10) days of the date a written request for compliance is received shall result in a forfeiture of \$25.00 per calendar day or portion thereof, for each worker, until strict compliance is obtained. Upon notification by the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement of the Department of Industrial Relations, the District shall withhold penalties under this Section or Labor Code 1776 from the contractor's progress payments then due.

- 3.34.06 By entering into this contract or any subcontract pursuant to this contract, the Contractor and each Subcontractor who performs work or supplies goods, services or materials hereby offers and agrees to assign to the District all rights, title, and interest in and to all causes of action it may have under Federal or State Antitrust Law, including, but not limited to, any antitrust action that any of them may have under Section 4 of the Clayton Act (15 U.S.C. Sec 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Profession Code), arising from the purchases of goods, services or materials pursuant to this contract or any related subcontract.

This assignment is made and becomes effective at the time the awarding body tenders final payment to the Contractor, without further acknowledgment of the parties. Contractor shall insure that a comparable provision is included in all subcontracts at all tier levels which are executed pursuant to this prime contract. Contractor shall have the rights set forth in Section 4553 and 4554 of the Government Code.

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WEST VALLEY WATER DISTRICT**SECTION 3.35
OF
GENERAL CONDITIONS****REMOVAL, RELOCATION OR PROTECTION
OF EXISTING UTILITIES**

- 3.35.01 Pursuant to Section 4215 of the California Government Code, the Owner will be responsible for the timely removal, relocation or protection of existing main or trunk line utility facilities located on the site of the Project, if such utilities are not identified by the Owner in the Drawings and Specifications.
- 3.35.02 The Owner shall compensate the Contractor for the costs of locating and repairing damage not due to the failure of the Contractor to exercise reasonable care, and removing or relocating such utility facilities not indicated in the Drawings and Specifications with reasonable accuracy, and for equipment on the Project necessarily idled during such work at a standby equipment rate available from Caltrans and current at the time of bidding.
- 3.35.03 The Contractor shall not be assessed liquidated damages for delay in completion of the Project, when such delay was caused by the failure of the Owner or the owner of the utility to provide for removal or relocation of such utility facilities.
- 3.35.04 Nothing herein shall be deemed to require the Owner to indicate the presence of existing service laterals or appurtenances whenever the presence of such utilities on the site of the Project can be inferred from the presence of other visible facilities, such as buildings, meter and junction boxes, on or adjacent to the site or the construction; provided, however, nothing herein shall relieve the Owner from identifying main or trunk lines in the Drawings and Specifications.
- 3.35.05 If the Contractor while performing the Work discovers utility facilities not identified by the Owner in the Drawings or Specifications, the Contractor shall immediately notify the Owner and the utility in writing.

WEST VALLEY WATER DISTRICT**SECTION 3.36
OF
GENERAL CONDITIONS****ANTITRUST CLAIMS**

- 3.36.01 Contractor and each Subcontractor offers and agrees to assign to the District all rights, title and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Chapter 2 of Part 2 of Division 7 of the Business and Professions Code) arising from purchases of goods, services, or materials pursuant to the public works contract or any subcontract. This assignment shall be made and become effective at the time the District tenders final payment to the Contractor, without further acknowledgment by the parties.

WEST VALLEY WATER DISTRICT**SECTION 3.37
OF
GENERAL CONDITIONS****CONSTRUCTION CLAIMS**

3.37.01 If the Contractor feels that they have a claim against the Owner and definition in Section 3.1.01, the Contractor shall submit a written claim and all documents necessary to substantiate a claim. Claims shall be filed on or before the date of final payment (Public Contracts Code § 20104.2 (a)).

Pending the outcome of claims or disputes, the Contractor shall maintain compliance with the construction contract.

The Owner shall strictly enforce the time limits as spelled out in procedures of claim.

The claims procedure shall not apply where the Owner has elected to resolve any disputes pursuant to the arbitration process set forth in Section 10240, et. seq. (Public Contracts Code § 20104 (a) (2)).

All parties, including Owner, engineers, and consultants shall be subject to the same procedures for cross-claims and otherwise getting involved in any claim or dispute.

3.37.02 Procedures for claims under \$50,000.00 (Public Contracts Code § 20104.2 (b) (1)), are as follows:

- a. Owner shall respond to any written claim within forty-five (45) days of its receipt of the claim.
- b. The Owner may request in writing within thirty (30) days of receipt of the claim, any additional documentation supporting the claim or relating to defenses or claims the owner may have against the contractor.
- c. If additional information is thereafter required, it shall be requested and provided pursuant to these specific procedures and Public Contract Code, Section 20104 et. seq., upon mutual agreement of the Owner and Contractor.

- d. The Owner's written response to the claim, as further documented, shall be submitted to the claimant within fifteen (15) days after receipt of the further documentation or within a period of time no greater than that taken by the claimant in producing the additional documentation, whichever is greater.

3.37.03 Procedures for claims over \$50,000.00 but less than \$375,000.00 (Public Contracts Code § 20104.2 (c) (1)) are as follows:

- a. The Owner shall respond in writing to all written claims within sixty (60) days of receipt of the claim.
- b. The Owner may request in writing within thirty (30) days of the receipt of the claim any additional documentation supporting the claim or relating to defenses or claims the Owner may have against the Contractor.
- c. If additional information is thereafter required, it shall be requested and provided pursuant to these procedures and Public Contract Code Section 20104 et. seq., upon mutual agreement of the Owner and the Contractor
- d. The Owner's written response to the claim as further documented shall be submitted to the Contractor within thirty (30) days after receipt of the further documentation or within the same time period used by the Contractor in producing the additional documentation, whichever is greater.

3.37.04 If a dispute still exists after the Owner responds to the claim or if the Owner fails to respond within the prescribed time, the following procedures must be followed:

- a. The Contractor may demand within fifteen (15) days of receipt of the Owner's response, or within fifteen (15) days of the Owner's failure to respond within time prescribed an informal "meet and confer" conference. (Public Contracts Code § 20104.2 (d)) This "meet and confer" conference shall be held within thirty (30) days of the Contractor's request.
- b. Following the meet and confer conference, if the claim or any portion remains in dispute, the Contractor may file a claim pursuant to Government Code Section 900 et. seq. The running of the period of time within which a claim must be filed shall be tolled from the time the Contractor submits his or her written claim, as provided in the proceeding subsections, until the time that claim is denied as a result of the meet and confer process, including any period of time utilized by the meet and confer process.

- c. When the claim has been denied, a lawsuit on the claim can then be filed in the appropriate state court.

WEST VALLEY WATER DISTRICT**SECTION 3.38
OF
GENERAL CONDITIONS****RESPONSIBILITY OF JOB SITE CONDITIONS**

- 3.38.01 Contractor agrees that he shall assume sole and complete responsibility for job site conditions during the course of construction of this project, including safety of all persons and property. This requirement shall apply continuously and not be limited to normal working hours. The Contractor shall defend, indemnify and hold the Owner and the Engineer harmless from any and all liability, real or alleged, in connection with the performance of work on this project, excepting for liability arising from the sole negligence of the Owner or the Engineer.

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WEST VALLEY WATER DISTRICT

**SECTION 3.39
OF
GENERAL CONDITIONS**

**SPECIAL CONSTRUCTION CONDITIONS
AND PROCEDURES**

3.39.01 Use of Completed Portions

The District shall have the right to take possession of and use any completed or partially completed portions of the work, and such taking possession and use shall not be deemed an acceptance of the work and shall not be deemed completed in accordance with the Contract Documents.

3.39.02 Sanitary Arrangements

The Contractor shall be responsible for providing sanitation facilities for his employees and the rules and regulations of the State Board of Health and/or other bodies having jurisdiction shall be fully complied with.

The Contractor shall, at all times, provide for his employees abundant supply of safe drinking water and shall give orders against the use for drinking purpose of any water in the vicinity of the work known to be unsafe.

The Contractor shall provide suitable and conveniently located temporary toilets for use by his forces. These shall be maintained in a sanitary condition at all times and shall be left at the site until the final inspection has been made.

3.39.03 Saturday, Sunday, Holiday, and Night Work

No work shall be done between the hours of 6 p.m. and 7 a.m., nor on Saturdays, Sundays or legal holidays except as is necessary for the proper care and protection of the work already performed, or in case of emergency and, in all cases, only with the written notice of the Engineer.

The District will provide inspection during normal hours of work on an as-needed basis.

Normal hours of work shall be defined as hours between 8:00 a.m. and 5:00 p.m., Monday through Friday of any week, provided, that the following holidays shall be excepted: New Years Eve and New Years Day, Martin Luther King Jr. Birthday, Lincoln's/Washington's Birthday, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, Day after Thanksgiving, Christmas Eve and Christmas Day.

If the Contractor elects to perform work at any time on the aforesaid holidays, at any time on a Saturday or a Sunday, after 5:00 p.m. or before 8:00 a.m. of any day Monday through Friday of any week, such inspectors will be provided by the District at the expense of the Contractor. The amount to be charged to the Contractor for such inspectors will be the actual cost to the District.

3.39.04 Mitigation Measures

The Contractor shall not operate noisy or otherwise irritating construction equipment, including starting and warm-up of equipment, except during normal working hours, 8 a.m. through 5 p.m., Monday through Friday.

The Contractor shall employ dust control measures to the satisfaction of the Engineer throughout the duration of the project.

3.39.05 Sequence of Work and Work Schedule

Prior to starting construction, the Contractor shall submit to the District for its approval, a work schedule which shall show the estimated dates that he plans to be working on interfacing with existing system. The District reserves the right to alter this schedule where he feels the intent of the contract could be better carried out to suit the District's system operation.

3.39.06 Temporary Construction, Power and Light

The Contractor shall, at his own expense, furnish, install, maintain and remove all temporary light and power necessary for the work.

3.39.07 Construction Water

Water for construction, dust control, testing and disinfection and other phases of the work requiring water shall be provided by the Contractor. The District will make water available for construction at existing fire hydrants or other existing facilities near the site. The Contractor shall apply and obtain a hydrant meter from the District in accordance with District's regulation and shall provide his own connection and transportation of water from the District's water sources.

For District funded projects, the construction water will be provided at no cost to the contractor. For developer projects, the construction water used shall be paid by the developer in accordance with District's water service regulation.

3.39.08 Water Pollution Control

The Contractor shall exercise every reasonable precaution to protect storm drains, the street and road from pollution and shall conduct and schedule his operations so as to minimize or avoid muddying and silting of storm drains.

The Contractor shall, at no extra cost to the District, perform water pollution control work consisting of constructing those facilities which may be required to provide prevention, control and abatement of water pollution. Discharge of fuel and lubricants and other material used by construction equipment is prohibited.

WEST VALLEY WATER DISTRICT

PART IV

DETAILED TECHNICAL SPECIFICATIONS

WEST VALLEY WATER DISTRICT

SECTION 4.1

OF

DETAILED TECHNICAL PROVISIONS

EARTHWORK

4.1.01 General

The Contractor shall furnish all, labor, equipment, appliances and materials as required or necessary to clear, grub, excavate, trench, fill, backfill and grade for the construction of all structures, pipelines, service laterals, ditches, embankments and graded areas as shown and specified.

4.1.02 Obstructions

When the proper completion of the work requires their temporary or permanent removal, the Contractor shall, at his own expense, remove, and without unreasonable delay, temporarily or permanently replace or relocate to the satisfaction of the Owner and of any other person or agency having jurisdiction, all water pipes, gas pipes, drainage lines, irrigation lines, sewer lines, pipelines, conduits, culverts, roads, driveways, fences, bridges, railroad tracks, wires, poles, towers, retaining walls, buildings, curbs, gutters, concrete walks, trees, shrubs, lawns, and all other improvements of whatsoever character not required by law to be removed by the Owner thereof; and all such improvements temporarily removed shall be maintained until permanently replaced, all at the Contractor's expense.

Where the work is to be constructed in or adjacent to areas which have been improve by lawns, trees, shrubs, or gardens, the Contractor shall remove such trees or plants as may be necessary for the prosecution of the work and give them proper care and attention until the work has been satisfactorily completed, after which the Contractor shall replace them in as nearly the original condition and location as is reasonably possible. Where it is necessary to deposit the excavated materials on lawns during the process of construction, the Contractor shall first lay burlap or canvas on the lawn to prevent contact between the excavated material and the lawn.

Unless otherwise indicated on the Drawings, General or Special Conditions, or unless otherwise cared for by the owner of a public utility or franchise, all water, gas, oil, or irrigation lines, lighting, power, or telephone conduits or wires, or sewer lines, or TV cables, structures, house connections in place, and all other surface or subsurface structures or lines shall be maintained by the Contractor and shall not be disturbed, disconnected, damaged by him during the progress of the work; provided, that should the Contractor in the performance of the work disturb, disconnect, or damage any of the above, all expenses, of whatever

nature, arising from such disturbance, or in the replacement of repair thereof, shall be borne by the Contractor.

All shrubs and brush, including stumps and roots, fences, rock, stones, debris, and all obstructions of whatsoever kind or character, whether natural or artificial, encountered in the construction of the work shall be removed unless otherwise specified on the construction plans.

In the installation of pipelines outside of public rights-of-way or in easements, trees shall not be removed unless otherwise authorized in writing by the Engineer, and all fences, structures and landscaping which are removed or damaged by the Contractor shall be restored to their original condition and/or repaired to the to the satisfaction of the Engineer as soon as that portion of the work is installed, at the Contractor's expense without any compensation therefor. Any damage done to private property by reason of work on easements shall be the responsibility of the Contractor.

Tunneling of trees will be required unless otherwise authorized in writing by the Engineer. All trees along the work which are not to be removed, shall be protected from injury. The trunks of trees shall be covered with burlap or stakes shall be driven around them for complete protection.

The contractor shall restore all areas and objects that were damaged or disrupted due to construction activities to a condition as good as existing prior to construction. Said restoration shall be completed by the Contractor as a continuing follow-up of any portion of pipeline installation.

Material that is removed as hereinabove specified, and is not to be incorporated in the improvement being constructed, shall be disposed of away from the construction site at the Contractor's expense. If burning is anticipated, the Contractor shall obtain all necessary permits and shall give ample and proper notice to the local fire warden.

The Contractor's attention is directed to the possible existence of pipe and other underground improvements which may or may not be shown on the plans. All reasonable precautions shall be taken to preserve and protect any such improvements whether shown on the plans or not. Pursuant to Section 4215 of the California Government Code, the Owner will be responsible for the timely removal, relocation or protection of existing main or trunk line utility facilities located on the site of the Project, if such utilities are not identified by the Owner in the Drawing and Specifications.

A diligent search of known utility records has been made in the endeavor to indicated on the drawings the nature and location of all utilities which exist within the limits of the Work. However, the accuracy of completeness of the utilities indicated on the drawings is not guaranteed. Utility structures and/or service connections to adjacent property may or may not be shown on the drawings. The Contractor shall contact "Underground Service Alert" (USA) and inform them of the Proposed Project and work schedule. Provide them with information required for notification at known utilities in the area.

The contractor shall cooperate with the utility companies' representative in the field in order to ascertain the location of the utility lines ahead of trenching operations. The Contractor shall excavate and expose the utility, at least 500 feet, ahead of trenching operations in order that the inspector representing the Engineer may adjust the alignment of the pipeline to provide the least amount of interference with the utility as determined by the inspector.

Contractor acknowledges his responsibility as set forth herein and specifically waives the provisions of California Government Code Section 4215 which designates such responsibility to certain public agencies.

4.1.03 Earthwork in City, County, State and Railroad Rights-of-Way

Earthwork within the rights-of-way of the State of California, Department of Transportation, County Road Department, City, and/or Railroad or other governmental agency having jurisdiction, shall be done in accordance with the requirements and the provisions of the permits issued by those agencies for the construction within their respective rights-of-way. Such requirements and provisions, where applicable, shall take precedence and supersede the provisions of these specifications. The requirements of these Detailed Technical Provisions shall be the minimum requirement.

4.1.04 Safety Precautions

All excavations shall be performed, protected and supported as required for safety and in the manner set forth in the operating rules, orders and regulations prescribed by the Division of Industrial Safety of the Departments of Industrial Relations of the State of California. Barriers shall be placed at each end of all excavations and at such places as may be necessary along excavations to prevent accidents. Lights shall also be placed along excavations from sunset each day to sunrise of the next day until such excavation is entirely refilled.

The Contractor shall furnish such watchmen, guards, fences, warning signs, walks, and lights as shall be necessary and shall take all other necessary precautions to prevent damage or injury to persons and property.

4.1.05 Excavated Material

Arrangement for disposing of excess excavated material shall be made by the Contractor. Excavated material suitable for backfill shall be stored temporarily in such a manner as will facilitate work under the contract.

4.1.06 Shoring, Sheet piling and Bracing

Where sheet piling, shoring, sheeting, bracing, or other supports are necessary, they shall be furnished, placed, maintained and removed by the Contractor. Sheet piling and other supports shall be withdrawn in such a manner as to prevent additional backfill on

pipelines which might cause overloading. At all times the rules of the Division of Industrial Safety of the Department of Industrial Relations of the State of California with respect to excavation and construction shall be strictly observed.

In advance of any excavation of any trench or trenches five (5) feet or more in depth, the Contractor shall submit for acceptance of the District, or by a registered civil or structural engineer employed by the District to whom the authority to accept has been delegated, a detailed plan showing the design or shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches. If such plan varies from the shoring system standards established by the Construction Safety Orders, the plan shall be prepared by a registered civil or structural engineer. Nothing herein contained shall be deemed to allow the use of shoring, sloping, or protective system less effective than that required by the Construction Safety Orders of the State Division of Industrial Safety. Shoring shall be in compliance with Section 6707 of Chapter 9, Part 1, and Division 5 of the Labor Code of the State of California.

Nothing contained in this Specification shall be construed to impose tort liability on the District, Engineer, or any of their employees.

Section 6424 of the Labor Code requires a permit for trenches five (5) feet or more in depth. The District will not issue a permit for trenching operations under this Contract. The Contractor, prior to beginning construction, shall obtain from the State Division of Industrial Safety a permit authorizing said construction.

4.1.07 Clearing and Grubbing

Areas where construction is to be performed shall be cleared of all trees, shrubs, brush, rubbish, and other objectionable material of any kind which, if left in place, would interfere with the proper performance or completion of the contemplated work, impair its subsequent use, or form obstruction therein. Trees and other natural growths outside the actual lines of construction operation shall not be destroyed and such measures as are necessary shall be taken by the Contractor for the protection thereof.

Organic material from clearing and grubbing operations will not be permitted for use as excavation backfill.

It shall be the Contractor's responsibility to remove and dispose of all excess material resulting from clearing and grubbing operations at his own expense. The Contractor shall make his own arrangements for disposal sites at his own expense, at which said material may be wasted.

4.1.08 Control of Water

The Contractor shall provide and maintain at all times during construction ample means and devices with which to promptly remove and dispose of all water entering the excavations or other parts of the work. No concrete footings or floors shall be laid in

water nor shall water be allowed to rise over them until the concrete or mortar has set as least eight (8) hours. Water shall not be allowed to rise unequally against walls for a period of 28 days. Ground water shall not be allowed to rise around pipe installations until jointing compound in the joints has set.

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

Dewatering for structures and pipelines shall commence when ground water is first encountered, and shall be continuous until such times as water may be allowed to rise in accordance with the provisions of this Section.

The cost of complying with the provisions of this section of specification shall be considered included as bid Item and no additional compensation will be allowed.

4.1.09 Pipeline Excavation

- a. Excavation – Excavation for pipelines, fittings, valves and appurtenances shall be open trench to the depth and in the direction necessary for the proper installation of the same as shown on the plans or as otherwise directed by the Engineer, except where another method is specifically called for on the plans or in these specifications.
- b. Limit of Excavation – Except with specific approval of the Engineer, no more than 400 feet of open trench shall be excavated in advance of laying of pipe. All operations shall be carried out in an orderly fashion. Backfilling and cleanup work shall be accomplished as sections of the pipe installation are approved. Public travel through the work shall be impeded or obstructed as little as possible. At the end of each working day, there shall be a maximum of 10 feet of open trench, excluding manhole excavations, for each operation. The remainder of the trench excavated that day shall be backfilled, compacted and the roadway opened to the public.

At the end of each week, all trenches, including manhole excavations, shall be backfilled, compacted and the roadway opened to the public on Saturday, Sunday, and holidays.

The Contractor shall make the necessary arrangements for, and shall remove and dispose of, all excess of waste material from the site of the work as portions of the pipeline and appurtenances are installed.

- c. Tunneling – Tunneling will be permitted only when contractor has applied and obtained a permit form the regulatory agency

- d. Trench Width – Banks of cut trenches shall be kept as nearly vertical as possible. Where necessary in order to maintain the banks nearly vertical, the trench shall be properly sheeted and braced. The overall trench width shall not be more than 16-inches or less than 12-inches wider than the largest outside diameter of the pipe to be laid therein, measured at a point 12-inches above the top of the pipe exclusive of branches. Excavation and trenching shall be true to line so that a clear space of not more than 8-inches or less than 6-inches in width is provided on each side of the largest outside diameter of the pipe in place. For the purpose of this article, the largest outside diameter shall be the outside diameter of the coupling.
- e. Correction of Faulty Grades – Should the excavation for the pipeline be carried below grade without instruction from the Engineer, it shall be refilled to proper grade with pipe zone material compacted to 90 percent or crushed rock, at the expense of the Contractor. If the compaction tests are required, they shall be at the expense of the Contractor.

4.1.10 Pipe Foundation and/or Pipe Bedding

In areas where the pipe trench is in granular material suitable for bedding, the bottom shall be excavated and trimmed so that the pipe will be uniformly bedded on the required grade. In all other materials, the pipe trench shall be over-excavated below the established grad line of the outside bottom of the pipe.

In areas where the pipe trench is in clay or similar non-granular material, the depth of over-excavation shall be 3-inches.

In areas where the pipe trench excavation is in rock, hardpan, shale or other similar hard and unyielding materials, the trench shall be excavated to a depth of at least 4-inches below the established grade line of the outside bottom of the pipe.

The over-excavation shall be filled with loose granular bedding material. The Contractor shall prepare a firm but unyielding subgrade which will provide uniform support of the pipe along the full length of each section. In the event the bottom of the excavation is soft, spongy, or unstable, the Contractor shall over-excavate to undisturbed and/or firm ground, to refill to approximately 3-inches below grade with tamped crushed rock, refill to grade with sand and shape the bottom of the trench to the required section. The contractor will be reimbursed for all the expenses that are incurred for the over-excavation and backfill that exceed 2 feet. Crushed rock for backfill of over-excavation shall consist of clean, hard, durable gravel or crushed rock of such a size that 100 percent will pass a sieve having two-inch square openings. The backfill shall be compacted to 90 percent relative compaction. Instability due to inadequate dewatering shall be corrected at the Contractor's own expense.

For the purpose of this paragraph, granular bedding material is defined as a non-cohesive granular material containing no rocks or other hard materials detrimental to good bedding of the pipe. It shall be free from appreciable amounts of clay or silt and shall be free from stones larger than one inch in diameter. Not more than 15 percent shall pass a No. 100 mesh screen and it shall be reasonable uniform graded.

4.1.11 Trench Backfill

- a. General – All trenches for main line water line and service laterals shall be backfilled after pipe fittings, service lateral, valves and appurtenances have been installed.

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

- b. Procedure in Pipe Zone – The pipe zone shall be from pipe invert to 12 inches above top of pipe. Backfill material for pipe zone shall be granular material, clean washed sand or crusher run rock or gravel and shall be placed in the trench simultaneously on each side of the pipe for the full width of the trench in layers of about six inches in depth. No stone, gravel or crush rock larger than one inch in diameter or largest dimension shall be allowed in pipe zone. Granular backfill with a minimum sand equivalent of 30, when tested in accordance with the California Department of Transportation, Test Method No. California 217 shall be required in the pipe zone when the water densification method is used to densify the material in the pipe zone. When the excavated material is not granular as mentioned above, the Contractor shall import, at his own expense, and place a suitable backfill material. Particular attention is to be given to the underside of the pipe and fittings to provide a firm bedding support along the full length of the pipe. Care shall be exercised in backfilling to avoid damage to the pipe. Care shall be taken so that the pipe is not floated or displaced. Trench backfill above the pipe zone shall not be place until conformance with specified compaction requirements has been confirmed for the pipe zone.

Pipe zone material shall be compacted to not less than 90 percent of maximum density ASTM D 1557.

When the crusher run rock or gravel is used for pipe zone backfill, the following method of placing the bedding and pipe zone backfill may be used:

The trench shall be over-excavated a depth of 2-inches and backfilled to grade with crusher run rock. The pipe shall be bedded on this base. The pipe shall then be backfilled to a depth of 3-inches over the top of the pipe with the crusher run rock. No further compaction will then be required. The crusher run rock shall be unwashed crushed rock conforming to the following graduation:

<u>Sieve Size</u>	<u>Percent Passing</u>
½ - inch	100
3/8 – inch	85-100
No. 4	15-40
No. 8	0-10
No. 16	0-5

- c. Procedure above Pipe Zone – From the top of the pipe zone backfill to ground surface, the material for backfill may contain stones ranging in size up to 3 – inches in diameter, in quantity not exceeding 40 percent of the volume when said coarse materials are well distributed throughout the finer materials and the specified compaction may be attained. If the native materials contain large rocks and boulders, it shall be contractor’s responsibility to remove and dispose all rocks larger than 6-inches in diameter off project area prior to trench backfill operation.
- d. Compaction Above Pipe Zone – The Contractor shall not permit hauling or rolling equipment to operate above the pipe zone until sufficient backfill is in place to prohibit damage to the pipe. Unless otherwise required by these contract documents or by permit requirements of any agencies having jurisdiction, compaction shall conform to the following requirements.
 - 1) Under areas which will be subject to vehicular traffic or support for surfacing or structures, the backfill shall be compacted to a not less than 90% of maximum density ASTM D1557.
 - 2) In easements and open terrain where the degree of compaction is less important, the backfill, if sufficiently granular in nature (sand equivalent of 20 or greater), may be consolidated by a water densification method. If the backfill is not sufficiently granular in nature, the backfill shall be consolidated by a method approved by the Engineer. Backfill in easements and open terrain shall be consolidated to such an extent so as to preclude potential damages due to erosion, settling, or other lack of structural stability in the opinion of the Engineer. Although lesser degrees of consolidation may be allowed by the Engineer, a relative compaction of 85 percent is to be deemed satisfactory in these areas.
- e. Mechanically Compacted Backfill – Mechanically compacted backfill shall be placed in horizontal layers of such depths compatible to the material being placed and the type of equipment being used. All such equipment shall be of a size and type approved by the Engineer. Each layer shall be evenly spread, moistened (or dried, if necessary), and then tamped or rolled until the specified relative compaction has been attained. Permission to use specific compaction equipment shall not be construed as guarantying or implying that the use of such equipment will not result in damage to adjacent ground, existing improvements or improvements installed under the contract. The Contractor shall make his own determination in this regard. Any damage which results shall be the responsibility of the Contractor and repaired or replaced at the Contractor’s expense.
- f. Water Densified Backfill – As used in these specifications, flooding shall mean the inundation of backfill with water, puddles with poles or bars to insure saturation of the backfill material for its full depth. Jetting shall be accomplished by the use of a jet pipe to which a hose is attached carrying a continuous supply of water under pressure.

- g. Requirements for Densification by Jetting – Densification by jetting shall be subject to all of the following requirements:
- 1) Application of Water – The Contractor shall apply water in a quantity and at a rate sufficient to thoroughly saturate the entire thickness of the lift being densified. Water for jetting shall be from a continuous supply of water under pressure.
 - 2) Use of Vibration – Where densities are required which cannot be attained by jetting alone, the Engineer may direct the Contractor to supplement the jetting process with the application of vibrating compacting equipment to the backfill.
 - 3) Lift Thickness – The lift of backfill shall not exceed that which can be readily densified by the jetting procedure, but in no case shall the undensified lift exceed 10 feet for jetting.
 - 4) Character of Material – The material being used with the water settling methods to backfill the trenches in street rights-of-way shall have a sand equivalent of at least 30 when tested in accordance with the State of California Department of Transportation Test Method No. California 217. Where the nature of the material excavated from the trench is generally unsuitable for densification with water, the Contractor may, at no cost to the District, import suitable material for jetting, or densify the excavated material by other methods. If water densification methods are employed, the Contractor shall, at his expense, provide a sump and pump to remove the accumulated water from the downstream end of the construction.
 - 5) Damage to Adjacent Improvements – The Contractor shall make their own determination that the use of flooding or jetting methods will not result in damage to existing improvements. Permission to use such methods in densifying backfill shall not be construed as guarantying or implying that adjacent ground and improvements will be unaffected.
- h. Compaction Test – Compaction shall be tested in accordance with the methods specified by the State of California Department of Transportation Method No. California 216, or ASTM D1557.

Compaction test of the backfill will be required approximately every 300 feet, at interval of 2 feet depth, or more often if tests indicate the need, along the alignment on the main pipeline and, in addition, approximately 20 percent of all laterals within the street rights-of-way. The tests shall be made at varying depths.

The Contractor at his expense shall excavate the holes for all of the tests, backfill the holes and compact this backfill, and pave the surface, if required, after the test.

Compaction tests of the backfill shall be at the Contractor's expense except where otherwise specified in the contract document. All compaction tests which do not meet the specified requirements shall be at the Contractor's expense without any compensation therefore. These latter costs will be paid by the Owner and deducted from the progress payments to the Contractor.

- i. Excess Excavated Material – The Contractor shall make the necessary arrangements for and shall remove and dispose of all excess or waste material. All costs for the disposal of excess or waste material shall be borne by the Contractor.

It is the intent of these specification that all surplus material not required for backfill shall be disposed of by the Contractor outside the limits of the public rights-of-way and in accordance with the requirement of the County grading Ordinance or ordinance of any other agencies having jurisdiction at no cost to the District.

Excavated material shall not be deposited on private property unless written permission from the owner thereof is secured by the Contractor. Copies of said written permission, duly signed by the owner of the private property involved, shall be furnished to the Engineer by the Contractor before such material is placed on private property.

- j. Imported Backfill Material – Whenever the excavated material is unsuitable for backfill, the Contractor shall arrange for the furnishing of imported backfill material (per Sections 4.1.11 b. and 4.1.11 g4) at his own expense. He shall dispose of the excess trench excavation as specified in the preceding paragraph. The backfilling with imported material shall be done in accordance with the methods described.
- k. Completion of Cleanup – The Contractor shall restore all areas and objects that were damaged or disrupted due to construction activities to a condition equal to that prior to construction. All fences, walls, shrubs, sprinkler systems, substructures or any other improvement removed or disturbed by the Contractor during construction shall be replaced and/or repaired to the satisfaction of the Engineer immediately as that portion of the pipeline is installed at the Contractor's expense. Said restoration shall be completed by the Contractor as an immediate follow-up of any portion of the pipeline installation.

4.1.12 Structural Earthwork

- a. Structural Excavation – The site shall be cleared of all natural obstructions, pavements, utilities and other items which will interfere with construction. Any method of excavation may be employed which, in the opinion of the Contractor, is considered best. Ground shall not be dug by machinery nearer than 3-inches from any finished subgrade without the express approval of the Engineer. The last 3 inches shall be removed without disturbing the subgrade. Should the excavation be carried below the lines and grades indicated on the plans, the Contractor shall, at his own expense, refill such excavated space to the proper elevation in accordance with the

procedures specified for backfill, or, if under footings, the space shall be filled with concrete.

Excavation shall extend a sufficient distance from walls and footing to allow for placing and removal of forms, installation of services, and for inspection, except where concrete is authorized to be deposited directly against excavated surfaces.

- b. After completion of foundation footings and walls, and of other construction below the elevation of the final grade, and prior to backfilling, all forms shall be removed and the excavation shall be cleaned of all debris. Unless otherwise shown, material for backfilling shall consist of excavated material, or imported sand, gravel or other material approved by the Engineer and shall be free of lumps, hard material exceeding 6-inches in greatest dimension, trash, lumber or other debris. Backfill shall be placed in horizontal layers not exceeding 9 inches in thickness, and shall have a moisture content such that the required degree of compaction may be obtained. Each layer shall be compacted by hand or machine tampers or by other suitable equipment or means to a relative compaction of a least 90 percent. Dewatering shall be maintained during the placement of compacted clayey backfill.
- c. Stripping – All vegetation, such as roots, brush, heavy sods, heavy growths of grass and all decayed vegetable matter, rubbish, and other unsuitable material within the area of the work, shall be stripped or otherwise removed before fill is started.
- d. Grading – After stripping has been done, excavation of every description and of whatever substance encountered within the grading limits of the work shall be performed to the lines and grades indicated on the drawings. All suitable excavated material shall be transported to and placed in the fill area within the limits of the work. All excavated materials which are considered unsuitable by the Engineer, and any surplus of excavated material which is not required for fill shall be known as waste and shall be disposed of as directed in Section 3.1.11 i. During construction and excavation filling shall be performed in a manner and sequence that will provide drainage at all times.

Ditches shall be cut accurately to the cross-sections and grade indicated. Any excessive ditch excavation shall be backfilled to grade either with suitable, thoroughly compacted material, or with suitable stone or cobble to form and adequate paving.

Surfaces under paved areas, dikes and elsewhere as directed by the Engineer shall be wetted and compacted prior to placing fill.

- e. Fills or embankments shall be constructed at the locations and to the lines and grades indicated on the plans. Suitable material from excavations may be used for fill. Material shall be placed in horizontal layers of from 8 to 12-inches in loose depth for the full width of the cross section and compacted as specified.

For general fill areas, the fill shall be compacted to 90 percent relative compactions.

For roadways and all areas to be paved, the fill shall be compacted, by means of a tamping roller or three-wheel power roller, to at least 90 percent relative compaction.

Dikes and embankments shall be compacted by the use of compaction rollers or three-wheel power rollers to 90 percent relative compaction.

Relative compaction shall be as determined in accordance with the State of California Department of Transportation, Test Method No. California 216, or ASTM D1557.

- f. Finish Grading – All areas covered by the work, including excavated and filled section and transition areas, shall be graded uniformly to the elevations shown on the plans. The finished surface shall be reasonably smooth, compacted, and free from any irregular surface changes. The degree of finish shall be that ordinarily obtainable from either blade-grader or scraper operations. The finished surface shall be not more than 0.2 foot above or below the established grade. Ditches shall be paved to drain readily. The surface of areas to be paved, on which a surface course is to be placed, shall not vary more than 0.05 foot from established grade and approved cross-section.
- g. County and City Grading Ordinances – In addition to the requirements herein set forth for structural earthwork, all work shall be in accordance with the requirements of the County grading ordinance or ordinance of any other agencies having jurisdiction.

4.1.13 Drilling and Blasting

- a. Use of Explosives – All operations, storage and handling of explosives shall be according to provisions of Division II, Part I, of the Health and Safety Code, State of California, and shall comply with all State, County and local laws.
- b. Skilled Workmen – Drilling and blasting are to be done only by personnel skilled in these techniques.
- c. Safety – All necessary precautions shall be taken for protection of life and property. Warnings shall be given to nearby property owners that blasting is in progress. Safety mats shall be used to restrict flying particles. The Contractor shall size each “shot” to minimize nuisance and reduce the possibility of damage to local structures.
- d. Blasting shall have prior approval from the District.

4.1.14 Final Cleanup

After all earthwork operations have been completed, the right-of-way and all other areas shall be dressed smooth and left in a neat and presentable condition to the satisfaction of the Engineer and Owner.

4.1.15 Shop Drawings

The Contractor shall submit six (6) copies of shop drawings for shoring and bracing system for review and approval.

WEST VALLEY WATER DISTRICT
SECTION 4.2
OF
DETAILED TECHNICAL SPECIFICATIONS

CONCRETE CONSTRUCTION

4.2.01 Scope

The Contractor shall furnish all labor, equipment, materials and appliances necessary to complete construction of Portland cement concrete as shown on the plans and as specified herein.

4.2.02 Composition

Concrete shall be composed of Portland cement, sand, coarse aggregate, water, and admixtures as specified or approved, all well mixed and brought to the proper consistency suitable for the specific conditions of placement and in accordance with the requirements of this specification.

4.2.03 Classes of Concrete

All Portland cement used on the work shall be one of the classes described below. Unless otherwise stated, each class shall be used in the locations as listed:

a. Class I

Compressive Strength – 3,000 psi min. at 28-day

Mix – 6 sack minimum, test required

7 sack, test not required.

Use – walls, beams, slabs, footings.

Equivalent California State Highway Designation

- Class D (for 7 sack mix).

Maximum water – cement (w/c) ratio: 0.54

b. Class IV

Compressive Strength – 2,500 psi min. at 28-day

Mix – 6 sack, test not required.

Use – Paving, cradles, curbs, gutters, sidewalks thrust blocks,
manhole bases, pipe encasement, or where specified.

Equivalent California State Highway Designation Class B.

Maximum water – cement (w/c) ratio: 0.54

4.2.04 Portland Cement

Unless otherwise specified, Portland Cement, shall be Type II, complying with ASTM Designation C-150, and shall have a total alkali content not exceeding 0.6 percent when calculated as sodium oxide as determined by methods given in ASTM Designation C-114. Reference Part II, Section 2.7.09 for quality control testing.

4.2.05 Sand

Sand shall be a washed natural sand having hard, strong and durable particles and which does not contain more than 2 percent by weight of such deleterious substances as clay lumps, shale, schist, alkali, mica, coated grains, or soft and flaky particles. Sand shall be graded uniformly from fin to coarse such that the combined grading of coarse aggregate and sand set forth in paragraph 3.2.06 will be met. Not more than 3 percent shall pass the No. 200 screen as determined by ASTM Designation C-117.

4.2.06 Coarse Aggregate

Coarse aggregate shall be a clean, hard, fine-grained, uncoated sound crushed rock, or washed gravel or combination of both. It shall be free from oil, organic matter or other deleterious substances and shall not contain more than 2 percent by weight of shale or cherty material; and shall show a loss of not more than ten (10) percent when tested for soundness in sodium sulfated solution in accordance with ASTM Designation C-88. Coarse aggregate shall be graded uniformly from one-quarter inch size to maximum size. The combined grading of coarse and fine aggregate shall fall within the following percentage by weight:

<u>Sieve Size</u>	<u>Percentage Passing Sieves</u>		
	1-1/2" Max	1" Max.	3/4" Max
2"	100		
1-1/2"	90-100	100	
1"	50-86	90-100	100
3/4"	45-75	55-100	90-100
3/8"	38-55	45-75	60-80
No. 4	30-45	35-50	40-60
No. 8	23-38	27-45	30-45
No. 16	17-33	20-35	20-35
No. 30	10-17	12-20	13-23
No. 50	4-9	5-10	5-15
No. 100	1-3	1-4	1-5
No. 200	0-2	0-2	0-2

4.2.07 Mixing Water

Mixing water shall be clean and free from deleterious amounts of acids, alkalis, salts or organic materials.

4.2.08 Admixtures

No admixtures shall be used without the owner or Engineer's approval and any ready-mix concrete with admixtures indicated found on the job site will be rejected.

4.2.09 Reinforcing Steel

Reinforcing steel shall consist of deformed bars of the size called for on the plans. Steel shall conform to ASTM A615; longitudinal reinforcing steel for columns shall be hard grade; all other reinforcing steel shall be either intermediate or hard grade. Deformations shall conform to ASTM A615, A616, A617. If specified, mill certificates showing conformity with these requirements shall be furnished to the Engineer for each melt if so requested. Wire reinforcement shall conform to ASTM A82.

4.2.10 Mixing

Job mixing of structural concrete shall not be permitted.

Transit mix concrete shall be batched, mixed and delivered in accordance with ASTM Designation C-94, except that truck agitators may not be used. All concrete shall be deposited in place not more than 45 minutes after water is added when the temperature of the concrete exceeds 85° F, and not more than 1-1/2 hours after water is added when the temperature of the concrete is less than 85°F. Certified public weighmaster tickets shall be delivered to the Engineer or his representative in the field prior to placing the concrete to which the ticket applies.

4.2.11 Retempering

Retempering of concrete which has partially hardened, that is mixing with or without additional cement, aggregate, or water, will not be permitted.

4.2.12 Compacting

Concrete, during and immediately after depositing, shall be thoroughly worked around the reinforcement and embedded fixtures and into corners of the forms. Internal vibrators shall be used for all walls, and self-supporting beams or slabs. Vibrators shall be handled by experienced workmen and care shall be taken to avoid separation of aggregate due to over vibration. At least one vibrator shall be used for each 15 cu. yd. Per hour of concrete placed. Standby vibrators shall be kept on hand.

4.2.13 Curing

All concrete and grout shall receive a curing compound, or other approved method, as soon as the concrete or grout has sufficiently set.

Curing compound shall be of a nature and composition not deleterious to concrete, and thinned to a working consistency either with a volatile solvent or by emulsification with water. The curing compound shall be of a standard and uniform quality ready for use as shipped by the manufacturer. Curing compound shall form a continuous, unbroken membrane which shall adhere to moist concrete and which will not disintegrate, check, peel from the surface, nor show signs of such deterioration within thirty (30) days after application under actual working conditions. The compound shall be sufficiently transparent and free from color that there will be no permanent change in the color of the concrete. The compound shall contain, however, a temporary dye of sufficient color to make the membrane clearly visible for a period of at least four (4) hours after application. If the Contractor applies a deleterious compound to paint, plaster, gunite, or other surface treatment, he shall thoroughly sandblast the surface to remove all vestiges of the compound. This sandblasting shall be at the Contractor's expense.

4.2.14 Cold Weather Requirements

Adequate equipment shall be provided for heating the concrete during freezing or near freezing weather. No frozen materials or materials containing ice shall be used.

All concrete materials and reinforcement, forms, fillers and ground which the concrete is to come in contact with shall be free from ice and frost. Whenever the temperature of the surrounding air is below 40°F, all concrete placed shall have a temperature of between 70°F and 80°F and an adequate means shall be provided for maintaining a temperature of between 50°F and 80° F during the curing period.

The housing, covering or other protection used in connection with curing, shall remain in place and intact at least twenty-four (24) hours after the artificial heating is discontinued. The use of salt or chemicals for the prevention of freezing is prohibited.

When heating of concrete materials is required, the mixing of water and aggregate shall be heated to not more than 90°F prior to being placed in the mixer, so that the temperature of the mixed concrete shall not be less than 70°F nor more than 80°F. Aggregates shall be heated either by steam or by dry heat, and the heating apparatus shall be of a type which will heat the mass uniformly and in such a manner as to preclude the possible occurrence of overheated areas, or hot spots, which will burn the material. Flame throwers, or others, similar direct heating devices will not be allowed.

4.2.15 Hot weather requirements

Concrete shall not be deposited when the atmospheric temperature is above 85°F unless the Contractor follows the requirements as specified in this section of the specifications.

- 1) Use Cool Materials – Coarse aggregates shall be sprayed with water at least 2 hours before mixing.
- 2) Subgrade and forms shall be thoroughly soaked the night before, then sprinkled again shortly before placement. There should be no standing water when concrete is deposited.
- 3) Protection Against Evaporation – Freshly poured concrete surfaces and exposed wall form shall be covered or screened. Spray shall be provided upwind of concrete.
- 4) Start the curing process as soon as possible. The Contractor shall refer to Section 4.2.13 for curing method.

WEST VALLEY WATER DISTRICT
SECTION 4.3
OF
DETAILED TECHNICAL SPECIFICATION

CONDUCTOR PIPE

4.3.01 Steel Conductor Tube

- a. Materials – Steel conductor tube shall be butt welded of sheets conforming to ASTM A283. Conductor tube used shall not have a thickness of less than one-fourth (1/4) inch with a minimum diameter of 24-inches. All field joints shall be butt welded in full circumference, District Standard Drawing No. W-23.
- b. Installation – Steel conductor tube of the size and thickness specified on the plans shall be installed in place by jacking methods without the use of water or air, at the locations shown on the plans and to grades required to install the pipelines. Should voids or loss of ground occur during jacking operations, said voids shall be filled with grout consisting of a lean mixture of cement and sand.
- c. Pipelines shall be installed within the conductor tube to the lines and grades shown on the Plans. The pipe shall be supported on wood skids in such a manner as to relieve the pipe joints from all load and bearing. The annular space between the conductor tube and pipe shall be filled with washed sand.

WEST VALLEY WATER DISTRICT
SECTION 4.4
OF
DETAILED TECHNICAL SPECIFICATIONS

EROSION CONTROL

4.4.01 General

The Contractor shall provide erosion control measures as defined herewith on all areas where the natural vegetation has been disturbed by the installation of water facilities. If a ground cover other than natural vegetation has been disturbed, this section does not apply and the Contractor shall replace said ground cover in kind.

4.4.02 Preparation

After the backfill has been compacted and the pipeline tested, the Contractor shall remove and dispose of rocks and debris from the area to be reseeded. No seeding shall be performed during windy weather or when the ground is too wet or in an untillable condition. The fertilizer and seed shall be spread before the straw cover material is applied. Commercial fertilizer shall not be applied until after the seed has been sown.

4.4.03 Material

Materials shall consist of the following:

- a. Seed – The seed shall consist of the following mixture:
Crested Wheatgrass, forty-seven percent (47%); Intermediate Wheatgrass, twenty-seven percent (27%); Wimmera Ryegrass, thirteen percent (13%); Blando Ryegrass, thirteen percent (13%). The seed shall be spread at the rate of one hundred (100) pounds per acre and shall be applied by the use of a “Cyclone Seed Sower” or equal.
- b. Fertilizer – The fertilizer shall be Ammonium Phosphate (16-20-0) spread at the rate of three hundred (300) pounds per acre and shall be applied by the use of a “Cyclone Seed Sower” or equal.
- c. Mulch – After the application of the seed and fertilizer, new straw (stable bedding straw shall not be used) shall be uniformly spread at the approximate rate of four (4) tons per acre. The straw shall then be “mulched” into the ground by the use of a “wire” roller or other approved equipment.

4.4.04 Protection for Steep Slopes

In cases where the grade over the pipe line exceeds twenty-five percent (25%) slope, the Contractor shall provide additional erosion control measures to stabilize the backfill material. The contractor shall submit to the District for its approval, special engineering details of the method to be used.

WEST VALLEY WATER DISTRICT
SECTION 4.5
OF
DETAILED TECHNICAL SPECIFICATION

REMOVAL AND REPLACEMENT OF PAVED SURFACES

4.5.01 General

Street pavement and surfaces shall be removed and replaced in all areas of construction excavation in conformance with the various encroachment permits or where not covered by an encroachment permit as specified herein. Resurfacing of existing pavement and surfaces damaged or removed in connection with construction of the improvements, including all appurtenances, shall conform to the provisions of permits issued by the State of California Department of Transportation or the County Transportation Department or City Street Department under whose jurisdiction the road falls, for the work within the rights-of-way of these respective agencies.

4.5.02 Excavation and Backfill

The Contractor is directed to Section 4.1, "Earthwork," of these specifications, for all items pertaining to excavation and backfilling.

4.5.03 Pavement Removal

- a. General – Street pavement, existing road surfacing or other surfaced areas shall be removed within the limits of all construction excavations prior to proceeding with excavation operations of any nature. Surplus material shall be removed as provided in Section 4.1 "Earthwork," of these specifications. Prior to removal of existing surfacing, pavement cuts shall be made as specified here. All pavement cuts shall be neat and straight along both sides of the trench, and approximately parallel to the alignment of the pipe, to provide an unfractured and level pavement replacement. Where large irregular surfaces are removed, such trimming or cutting as hereinafter provided shall be parallel with roadway centerline or at right angles to the same. All cut edges shall provide clean, solid, vertical faces, free from all loose material.
- b. Plant-Mix Surfacing (Asphalt-Concrete Pavement) – Street surfaced with asphalt-concrete pavement shall be cut at the limits of the trench and/or excavation prior to removal of existing surfacing. Cuts shall be made by sawing, disk or other approved equipment.

4.5.04 Replacement

- a. In all streets or areas in which the surface is removed, broken or damaged by equipment, or in which the ground has caved in or settled due to the installation of the improvements, the surface shall be restored to the original grade and crown section by the Contractor. In the absence of specific designation on the plans, and where the street has been improved with roadway surface, base course, curb, sidewalk or gutter, trenches or damaged sections shall be restored with the type of improvement conforming to that which existed at the time the Contractor entered upon the work.

Prior to resurfacing, the existing surfacing shall be removed as provided above. All work shall match the appearance of the existing improvements and finished pavement shall not deviate from existing grade by more than one-eighth (1/8) inch in ten (10) feet and shall be free from ruts, depressions and irregularities.

- b. State Highway Right-of-Way – Construction of water lines within State Highway rights-of-way shall be subject to Department of Transportation utility encroachment permit. All work done within highway rights-of-way shall conform to the “Terms and Conditions Relating to Utility Encroachments,” as issued by the State Department of Transportation, and as to details as indicated on the plans.
- c. County and City Roads – The Contractor’s attention is directed to the requirements of the County or City Transportation Department regarding resurfacing of excavations in County or City roads. The specifications, policies and procedures of said County or City Transportation Department shall supersede all other provisions of this section within the jurisdiction of the County or City Road Department, but only if such specifications exceed the requirements of these specifications.
- d. Base Material – Base material shall be furnished, placed and compacted in the trench excavation when required by the agency having jurisdiction or to replace existing base course.
- e. Plant – Mix Surfacing (Asphalt-Concrete Pavement) – All asphalt concrete surfaces, including but not limited to pavements, curbs, driveways, and sidewalks, which are removed, damaged or broken by the Contractor’s installation or improvements under this contract, shall be replaced and/or reconstructed. All asphalt concrete shall be placed on compacted fills or base material as hereinbefore specified, and replacement and/or reconstruction shall be to the same dimensions as existing surfaces unless otherwise stated herein or required by the agency having jurisdiction over the road.

Materials and workmanship for asphalt-concrete replacement and/or reconstruction shall conform to the requirements of Section 39 of the latest edition of the State of California Departments of Transportation Standard Specifications.

Plant-mix surfacing shall be Type B asphalt concrete conforming to the above-mentioned specifications.

Mineral aggregate for Type B asphalt concrete shall be steam refined asphalt and shall conform to the provisions in Section 92 in the above named specifications, with the viscosity range of AR 1,000, 2,000 or 4,000 as specified by the Engineer.

- f. Road – Mix Surfacing – Not permitted without prior approval of the District.
- g. Temporary Resurfacing – The Contractor shall furnish, place, and maintain temporary resurfacing as herein specified, over backfill in paved streets or driveways.

Temporary resurfacing shall be place at the locations and of the thickness required by the permit and/or by the Engineer and shall consist of a cold-mix asphalt concrete. Binder shall be liquid, grade SC-800 or approved equal.

Temporary resurfacing shall be place to the grade of existing surfaces and rolled and compacted no later than five (5) calendar days after the pipe has been laid. The Contractor shall maintain all temporary resurfacing in proper, usable condition until the permanent resurfacing operations are to be commenced. Temporary resurfacing shall be removed and disposed of by the Contractor before permanent resurfacing is placed in conformance with the plans and specifications.

WEST VALLEY WATER DISTRICT

SECTION 4.6

OF

DETAILED TECHNICAL SPECIFICATIONS

CRITERIA FOR THE SPERATION OF

WATER MAINS AND SANITARY SEWERS

4.6.01 General

The community is vulnerable as stated in the public health considerations of this section. Water mains in close proximity to sanitary sewers are vulnerable to contamination. It is the Contractor's responsibility to maintain proper separation of water mains and sanitary sewers. The following criteria must be followed:

There shall be no deviation from this criteria except upon written approval from the State Health Department.

4.6.02 Public Health Considerations

Waterborne disease outbreaks attributed to the entry of sewage contaminated ground water into the distribution systems of public water supplies continue to be a problem in the United States. A community with its buried water mains in close proximity to sanitary sewers is vulnerable to waterborne disease outbreaks.

Sanitary sewers frequently leak and saturate the surrounding soil with sewage. This is caused primarily by structural failure of the sewer line, improperly constructed joints, and subsidence or upheaval of the soil encasing the conduit. A serious public health hazard exists when the water mains are depressurized and no pressure or negative pressures occur. The hazard is further compounded when, in the course of installing or repairing a water main, existing sewer lines are broken. Sewage spills into the excavation and, hence, enters into the water main itself. Additionally, if a water main fails in close proximity to a sewer line, the resultant failure may disturb the bearing of the sewer line and cause it to fail. In the event of an earthquake or manmade disaster, simultaneous failure of both conduits often occurs.

The water supplier is responsible for the quality of the water delivered to consumers and must take all practical steps to minimize the hazard of sewage contamination to the public water supply. Protection of the quality of the water in the public water system is best achieved by the barrier provided by the physical separation of the water mains and sewer lines.

This document sets forth the construction criteria for the installation of water mains and sewer lines to prevent contamination of the public water supplies by nearby sanitary sewers.

4.6.03 Basic Separation Standards

The “California Waterworks Standards” sets forth the minimum separation requirements for water mains and sewer lines. These standards, contained in Section 64630, Title 22, California Administrative Code, specify.

- a. **Parallel Construction:** The horizontal distance between pressure water mains and sewer lines shall be at least 10 feet.
- b. **Perpendicular Construction (Crossing):** Pressure water mains shall be at least one foot above sanitary sewer lines where these lines must cross.
- c. Separation distances specified in (b) shall be measured from the nearest edges of the facilities.
- d. **Common Trench:** Water mains and sewer lines must not be installed in the same trench.

When water mains and sanitary sewers are not adequately separated the potential for contamination of the water supply increases. Therefore, when adequate physical separation cannot be attained an increase in the factor of safety should be provided by increasing the structural integrity of both the pipe materials and joints.

4.6.04 Exceptions to Basic Separation Standards

Local conditions, such as available space, limited slope, existing structures, etc. may create a situation where there is no alternative but to install water mains or sewer lines at a distance less than that required by the Basic Separation Standards. In such cases, alternative construction criteria as specified in Section 4.6.06 should be followed, subject to the special provisions in Section 4.6.05.

Water mains and sewers of 24 inches diameter or greater may create special hazards because of the large volumes of flow. Therefore, installations of water mains and sewer lines 24 inches diameter or larger should be reviewed and approved by the health agency prior to construction.

4.6.05 Special Provisions

- a. The Basic Separation Standards are applicable under normal conditions for sewage collection lines and water distribution mains. More stringent requirements may be necessary if conditions, such as, high ground water exist.

- b. Sewer lines shall not be installed within 25 feet horizontally of a low head (5 psi or less pressure) water main.
- c. New water mains and sewers shall be pressure tested where the conduits are located ten feet apart or less.
- d. In the installation of water mains or sewer lines, measures should be taken to prevent or minimize disturbances of the existing line. Disturbance of its supporting base could eventually result in failure of the existing pipeline.
- e. Special consideration shall be given to the selection of pipe materials if corrosive conditions are likely to exist. These conditions may be due to soil type and/or the nature of the fluid conveyed in the conduit, such as a septic sewage which produces corrosive hydrogen sulfide.

4.6.06 Sewer Force Mains

- a. Sewer force mains shall not be installed within ten feet (horizontally) of water main.
- b. When a sewer force main must cross a water line, the crossing should be as close as practical to the perpendicular. The sewer force main should be at least one foot below the water line.
- c. When a new sewer force main crosses under an existing water main, all portions of the sewer force main within ten feet (horizontally) of the water main shall be enclosed in a continuous sleeve.
- d. When a new water main crosses over an existing sewer force main, the water main shall be constructed of pipe materials with a minimum rated working pressure of 200 psi or equivalent pressure rating.

4.6.07 Alternate Criteria for Construction

The construction criteria for sewer lines or water mains where the Basic Separation Standards cannot be attained are shown in Figures 1 and 2. There are two situations encountered:

Case 1 - - New Sewer Line – new or existing water main.

Case 2 - - New water main – existing sewer line.

For Case 1, the alternate construction criteria apply to the sewer line.

For Case 2, the alternate construction criteria may apply to either or both the water main and sewer line.

The construction criteria should apply to the house laterals that cross above a pressure water main but not to those house laterals that cross below a pressure water main.

Case 1: New Sewer Being Installed (Figures 1 and 2)

Zone Special Construction Required for Sewer Pipe

- A. Sewer lines parallel to water mains shall not be permitted in this zone without approval from the responsible health agency and water supplier.
- B. A sewer line placed parallel to a water line shall be constructed of:
 - 1. Extra strength vitrified clay pipe with compression joints.
 - 2. Class 4000 Type II, asbestos-cement pipe with rubber gasket joints.
 - 3. Plastic sewer pipe with rubber ring joints (per ASTM D3034) or equivalent.
 - 4. Cast or ductile iron pipe with compression joints.
 - 5. Reinforced concrete pressure pipe with compression joints (per AWWA C302-74).
- C. A sewer line crossing a water main shall be constructed of:
 - 1. Ductile iron pipe with hot dip bituminous coating and mechanical joints.
 - 2. A continuous section of Class 200 (DR 14 per AWWA C900) plastic pipe or equivalent, centered over the pipe being crossed.
 - 3. A continuous section of reinforced concrete pressure pipe (per AWWA C302-74) centered over the pipe being crossed.
 - 4. Any sewer pipe within a continuous sleeve.
- D. A sewer line crossing a water main shall be constructed of:
 - 1. A continuous section of ductile iron pipe with hot dip bituminous coating.
 - 2. A continuous section of Class 200 (DR 14 per AWWA C900) plastic pipe or equivalent, centered on the pipe being crossed.
 - 3. A continuous section of reinforced concrete pressure pipe (per AWWA C302) centered on the pipe being crossed.

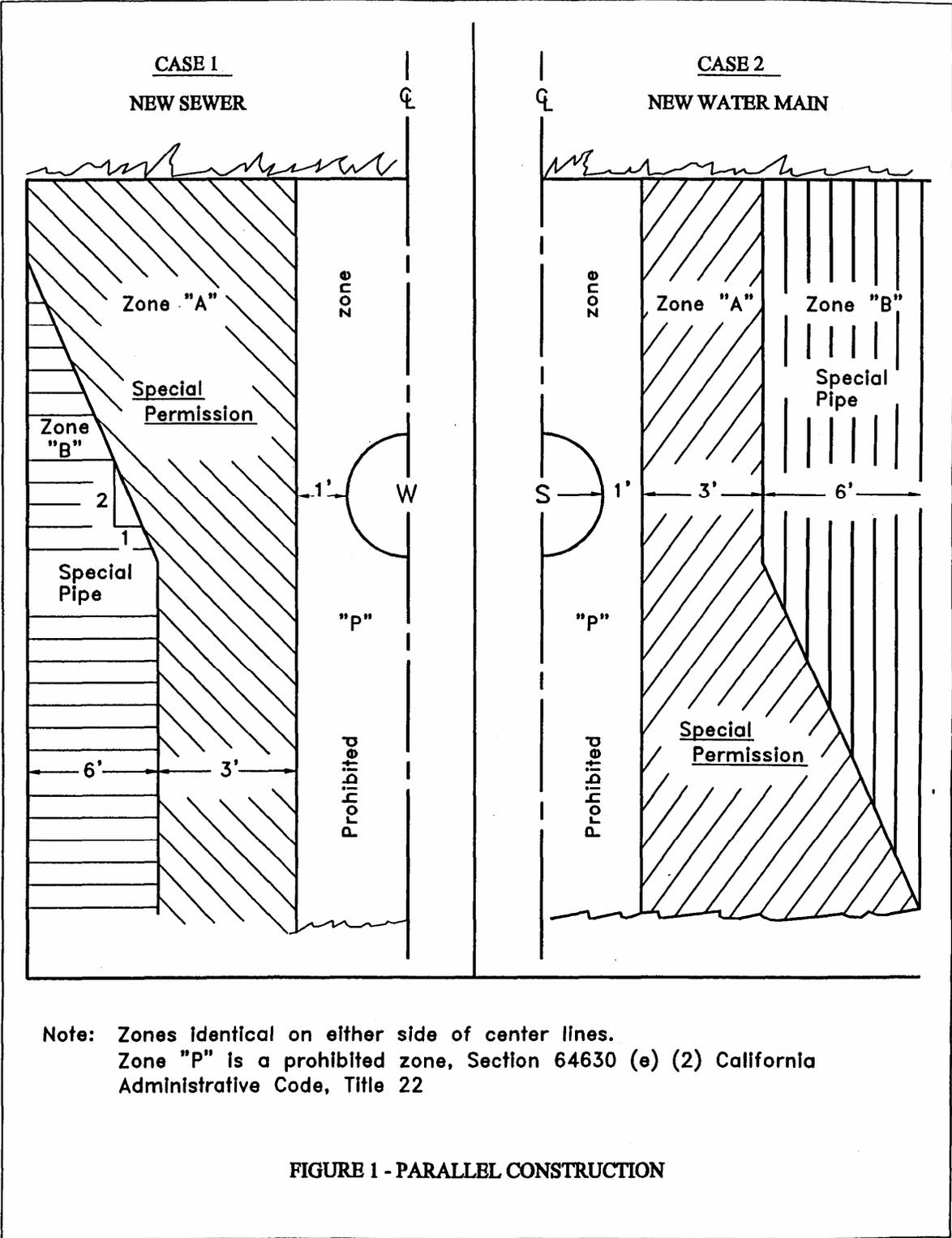
4. Any sewer pipe within a continuous sleeve.
5. Any sewer pipe separated by a ten-foot by ten-foot, four-inch thick reinforced concrete slab.

Case 2: New Water Mains Being Installed (Figures 1 and 2)

Zone Special Construction Required for Water Line

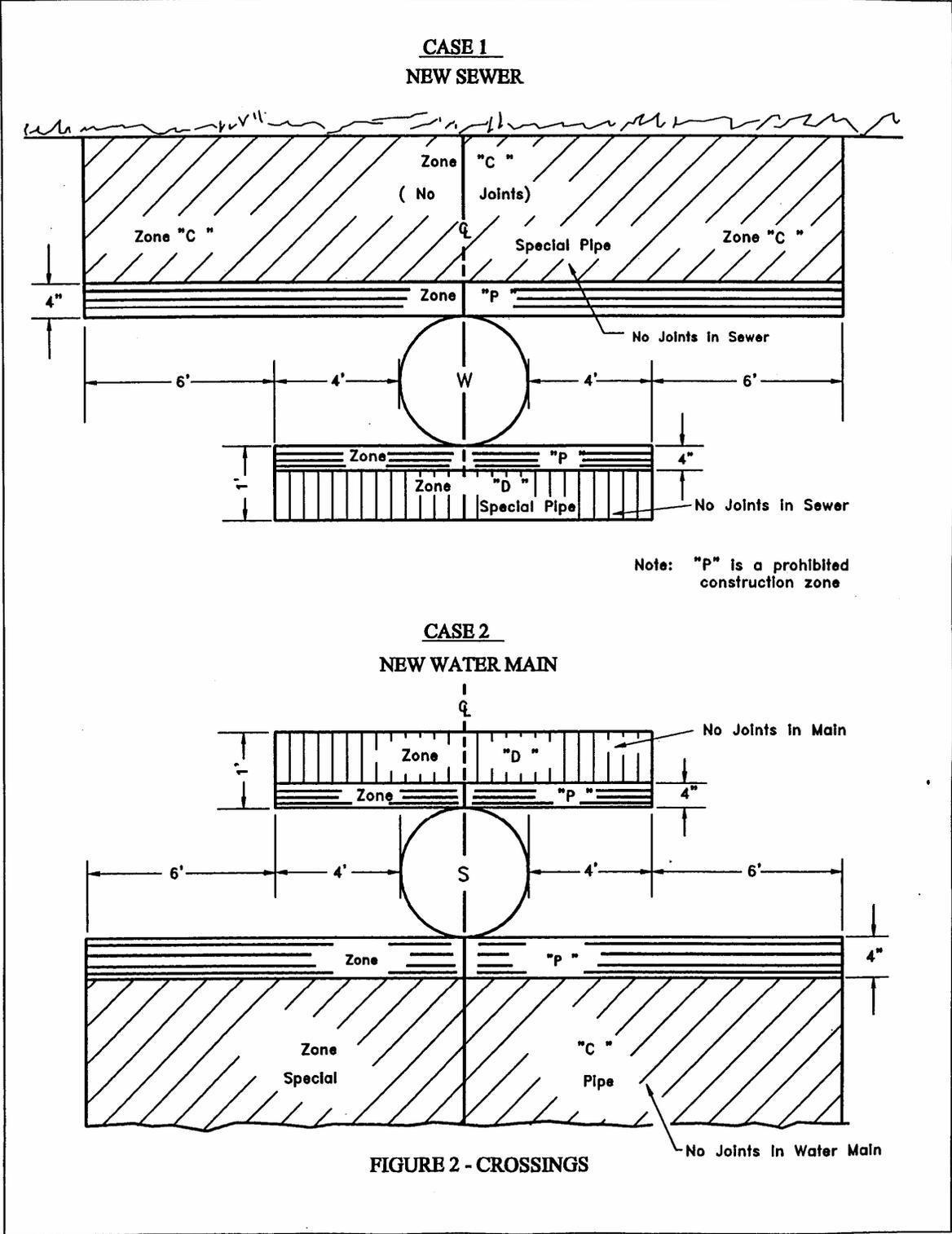
- A. No water mains parallel to sewers shall be constructed with out approval from the health agency.
- B. If the sewer paralleling the water main does not meet the Case 1, Zone B, requirements, the water main shall be constructed of:
 1. Ductile iron pipe with hot dip bituminous coating.
 2. Dipped and wrapped one-fourth-inch-thick welded steel pipe.
 3. Class 200, Type II, asbestos-cement pressure pipe.
 4. Class 200 pressure rated plastic water pipe (DR 14 per AWWA C900) or equivalent.
 5. Reinforced concrete pressure pipe, steel cylinder type, per AWWA (C300 or C301 or C303).
- C. If the sewer crossing the water main does not meet the Case 1, Zone C, requirements, the water main shall have no joints in Zone C and 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 (DR 14 per AWWA C900) or equivalent.
 4. Reinforced concrete pressure pipe, steel cylinder type, per AWWA (C300 or C301 or C303).
- D. If the sewer crossing the water main does not meet the requirements for Zone D, Case 1, the water main shall have no joints within four feet from either side of the sewer 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 (DR 14 per AWWA C900) or equivalent.
4. Reinforced concrete pressure pipe, steel cylinder type, per AWWA (C300 or C301 or C303).



Note: Zones identical on either side of center lines.
Zone "P" is a prohibited zone, Section 64630 (e) (2) California Administrative Code, Title 22

FIGURE 1 - PARALLEL CONSTRUCTION



4.6-8

WEST VALLEY WATER DISTRICT
SECTION 4.7
OF
DETAILED TECHNICAL PROVISIONS

WATER QUALITY SAMPLE STATION

4.7.01 General

Water quality sample station shall be installed as called for on the drawings and in accordance with the standard drawing No. W-21, and as specified hereon. Service lateral shall be installed in accordance with standard drawing No. W-4.

4.7.02 Materials

Water quality sample station shall include a 1" brass water flow pipe, a ½" brass drain pipe, a 1" brass flushing valve and elbow, a brass sampling bib and shall be enclosed in a lockable, non-removable, 24" high aluminum-cast housing. When opened, the station shall require no key for operation, and the water will flow in an all brass waterway. All working parts shall be of brass and shall be removed from above ground with no digging. A copper vent tube shall enable each sample station to be pumped free of standing water to prevent freezing and to minimize bacteria growth. The water quality station shall be Eclipse No88-WC for warm climate as manufactured by Kupfertie Foundry, or approved equal.

4.7.03 Earthwork

The contractor shall refer to section 4.1 "Earthwork" of the detailed technical specification of these specifications for all requirements relating trench excavation and backfill.

4.7.04 Service Lateral

Each water quality sample station shall be connected to the water main with 1" water service lateral per standard drawing W-4. The corporation stop, copper tubing, angle meter stop and valve box shall be furnished and installed in accordance with the applicable specification as specified on section 4.8.

4.7.05 Field Painting

All water quality sample station shall be surface prepared to receive field paint by solvent cleaned in accordance with SSPC-SP-1 and shall be painted with one (1) coat of surface primer and two (2) coats of finish paint.

The primer shall be 1 mils of TNEMEC 32-1200, Koppers 40 or equal. Two (2) finish coats shall be TNEMEC Series 2, Kopper Glamortex 501 enamel or equals to a thickness of three (3) mils. The color shall be green.

WEST VALLEY WATER DISTRICT
SECTION 4.8
OF
DETAILED TECHNICAL SPECIFICATIONS

WATER SERVICE

4.8.01 General

Water services shall be installed at the locations shown on the Plans and shall be at right angles to the centerline of the water main. Service lateral shall be installed a minimum of five (5) feet away horizontally and 1 foot above sewer lateral. No service laterals and meters shall be permitted in driveway areas.

All pipes, valves, service saddles, service laterals and fittings, corporation stops, angle meter valves and ball valves shall have a minimum working pressure rating of 160 pounds per square inch.

Water service connections shall be installed in conformance with Standard Drawings No. W-4, W-4A and W-5, and other applicable Standard Drawings.

4.8.02 Earthwork

The Contractor is referred to Section 4.1, "Earthwork," of the Detailed Technical Specifications of these specifications. Service laterals shall be installed with sand bedding 3 inches minimum underneath pipe and 12 inches minimum above the service line

4.8.03 Service Laterals

- a. Materials – 1-inch service laterals shall be of seamless copper tubing, Type K, soft temper per ASTM B88. Service laterals, 1 ½ inches and 2 inches, shall be either Type K copper tubing or scheduled 40 galvanized steel pipe per ASTM A53. Service laterals, 3 inches and larger shall be scheduled 40 steel pipe painted with primer and wrapped with tape.
- b. All copper tubing shall be of single length between corporation valves and angle meter valve. Pipe ends shall be suitable for pack joint fittings.
- c. Schedule 40 steel pipe and/or galvanized steel pipe shall be wrapped with two (2) layers of 10 mils thickness PVC pipe wrap and shall be Wonder No. 413 or equal.

4.8.04 Angle Meter Valves (Inverted Key Type)

Angle meter valves 1" and smaller, shall be of brass construction with lockable wing, pack joint inlet and meter swivel nut outlet suitable for copper tubing and shall be Ford KV43, Muller P-14258 or approved equal. Angle meter valves, 1 1/2" and 2", shall be of brass construction with lockable wing, female iron pipe or pack joint inlet and meter flange outlet and shall be Ford FV13 or FV43, Muller P-14277 or approved equal.

4.8.05 Corporation Stops (Ball Valve Type)

Corporation stops shall be of brass construction with I.P.T. inlet and pack joint outlet suitable for copper tubing and shall be Ford FB1100, Muller P-25028 or approved equal.

4.8.06 Service Saddles

Service saddles shall be of iron construction with painted surface. Service saddles installed on AWWA C-900 PVC pipe line shall be equipped with double stainless steel straps, and shall be Ford FS202, Muller DB25, Romac Style 202S, Smith-Blair 317 or approved equal. Service saddles installed on ductile iron pipe and steel pipe water line shall have double alloy steel strap and shall be Ford Style F202, Muller DB2A, Romac Style 202, Smith Blair 313 or approved equal.

4.8.07 Meter Box

Meter box for 3/4" and 1" meter shall be a Carson #3 Plastic or #37S Brooks Concrete Box. For 1-1/2" and 2" meters, a Carson #6 Plastic Box or #66 Brooks Concrete Box shall be furnished. Meter box for meters larger than 2 1/2" shall be of precast concrete vault and shall be specified on plans. Concrete box shall be used in traffic area.

4.8.08 Ball Valves on Customers Line

Ball Valves shall be of brass construction with either meter swivel nut or meter flange inlet and female iron pipe thread outlet and shall be Ford B13 or BF-13 or approved equal. All ball valves shall be supplied with high level handle, similar to either Ford HH-34, HH-67 or approved equal.

4.8.09 Water Service Surface Markers

It is the District's Policy that the Contractor installs the water service and meter boxes at the time of construction unless otherwise approved by the District. If other procedures are approved, the Contractor shall reference each water service connection in the field with a surface marker. The surface marker shall be a No. 4 re-bar hooked on both ends from the angle meter stop to 12-inches minimum above grade. The upper portion of the re-bar shall be painted blue. The Contractor shall also chisel a "W" mark on top of the concrete curb.

WEST VALLEY WATER DISTRICT

SECTION 4.9

OF

DETAILED TECHNICAL PROVISIONS

PIPE, FITTINGS AND INSTALLATION

4.9.01 General

The Contractor shall furnish all labor, materials and equipment and perform all the work to furnish, install and test all pipe, pipe supports, valves, fittings, pipe thrust restraints and all required appurtenances as shown on the Drawings and as required to make the entire piping system operable. Piping runs shown on the Drawings shall be followed as closely as possible, except for minor adjustments to avoid architectural and structural features. If major relocations are required they shall be approved by the District. Piping around all equipment shall be arranged to permit ready access to and removal of equipment or parts. Parallel runs of pipe shall be grouped and kept uniformly parallel.

Ductile iron pipe (DIP), polyvinyl chloride pipe (PVC) or cement mortar lined and coated steel pipe (CML&C STL) shall be used for 12-inch diameter and smaller pipe.

DIP or CML&C STL pipe shall be used for 14-inch diameter and larger pipe.

The Contractor shall submit shop drawings showing the pipe material specifications, dimension, joint detail, piping laying diagram to the District for approval prior to the manufacturing of any piping.

The appropriate AWWA Standards and Specifications shall be used as minimum standards or specifications for the manufacture, installation or construction of all District's water transmission and distribution pipelines.

4.9.02 Cast Iron (CI) or Ductile (DI) Pipe and Fitting

- a. Where cast iron pipe is called for on the plans, it shall be the Contractor's option to use either cast iron or ductile iron pipe.
- b. All cast iron pipe shall be manufactured in accordance with ANSI A21.8 and AWWA C106 and shall be rated for minimum 150 psi internal working pressure.
- c. All ductile iron pipe shall be manufactured in accordance with ANSI A21.51 and AWWA C151 and shall be Class 51 thickness for pipe up to 12" in diameter, and Class 52 for pipe larger than 14" in diameter.

- d. All cast iron or ductile iron pipe fittings shall be manufactured in accordance with ANSI A21.10 and AWWA C110 or ANSI A21.53 and AWWA C153.
- e. All cast iron or ductile iron pipe and fittings shall have cement-mortar lining per ANSI A21.4 and AWWA C104 cement shall be of Type II Cement.
- f. Bolts, nuts and washers for flanged joints shall conform to the recommendations of the pipe manufacturer and shall be uniformly tightened. Ring gaskets shall be lubricated and installed in accordance with the manufacturer's recommendations.
- g. Ductile iron pipe may, at the Contractor's option (if not noted on the plans), have push-on, mechanical or 125 lb. flange joints. Where flexibility of joints is a factor, such as where piping enters or exits a structure a flexible coupling shall be used. Pipe with flange joint shall not be used for underground installation.
- h. Mechanical joints shall consist of a stuffing box into which an endless rubber ring is compressed by a follower gland. The gasket must be fully confined and under constant compression. Mechanical joint pipe shall be installed in accordance with manufacturer's recommendations.
- i. Ductile iron fitting adjacent to a valve shall have flanged ends. Flanged coupling adapter shall be provided with the pipe and fittings furnished.
- j. All ductile iron pipe and fitting shall be installed with a eight (8) mils thick polyethylene tube for all underground installation.

4.9.03 Cement-Mortar Lined and Coated Steel Pipe (CML & C Stl)

Cement mortar lined and coated or painted steel pipe and fittings shall be manufactured in accordance with AWWA C-200 except as further noted in these specifications. Minimum thickness of steel plate shall be 10 gauge, or as determined the formula specified in AWWA C-200. The pipe shall be rated for the minimum 150 psi working pressure or class as indicated on the drawing.

- a. Pipe – Pipe shall consist of the following component parts:
A welded sheet steel or plate steel cylinder with joints formed integrally with the steel cylinder or with steel joints rings welded to the ends; a dense cement-mortar lining; a dense, concentric, steel reinforced exterior mortar coating or shop primed, as specified; a self centering bell and spigot joint with a circular pre-formed rubber gasket, so designed that the joint will be watertight under all conditions of service or welded lap joints, or plain end as required.
- b. Steel for Cylinders – The steel for cylinders shall be hotrolled low carbon steel sheets conforming to ASTM A283, Class B or C, or A570, Class C. The minimum

acceptable yield strength of the steel shall be 33,000 psi. Design stress shall not exceed 15,000 psi in any case.

- c. Exterior of Pipe – The exterior of pipe shall be either cement mortar coated or shop primed and in accordance with the following:
 - 1. Cement mortar coating shall be applied in accordance with AWWA C205. All buried pipe shall be cement mortar coated. Type II cement shall be used for all mortar coating.
 - 2. Shop coating for exterior of pipe above ground or in structure shall conform to Painting Specifications.
 - 3. Marking - The following information shall be clearly stenciled on each section of pipe; pressure class; inside diameter in inches; name of manufacture; date of manufacture.
- d. Interior of Pipe – The interior of pipe shall be cement mortar lining. Lining may be placed by the centrifugal, pneumatic, or hand method, in order, whichever is applicable as determined by the pipe manufacturer. Cement shall be Type II.
- e. Bell and Spigot Joints – Bell and spigot joints shall be made with rubber gaskets restrained or confined to an annular space in such manner that movement of the pipe or hydrostatic pressure cannot displace the gasket. Spigot and bell ends shall be formed by cold rolling or swaging or hot die and mandrel process. The deformation of the gasket in the joints of the installed pipe shall not exceed 45 percent nor be less than 20 percent of the stretched gasket diameter.
- f. Welded Field Joints – Welded field joints shall meet the requirements of AWWA C206.
- g. Flange Joints – Flanged joints shall meet the requirements of AWWA C207.
- h. Diameters – Diameters shown for steel pipe larger than 12-inches indicate required inside diameter after lining. Steel pipe 12-inches in diameter and smaller shall be standard mill diameters.
- i. Special Fitting
 - 1. Wherever a bend exceeds the allowable deflection, a special fitting is required and shall be fabricated in accordance with this Section. Specials shall extend a minimum distance back from the last weld equal to $\frac{1}{2}$ the diameter of the pipe, but not less than 12 inches. The Contractor shall furnish and install specially fabricated specials and bends for closures, curves, bends, reducer, and connections to valves. The specials and bends shall have a minimum design equal

to the adjoining pipe. Steel plates used in the fabrication shall conform to ASTM A283, Grad B or C, and shall not be stressed more than 13,500 psi at the design pressure.

Fitting shall conform to applicable sections of AWWA C208 and C206. Fittings adjacent to a valve or a blind flange shall be of flange ends.

2. The minimum wall thickness of all specials shall be 0.1875 inches unless otherwise noted.
 3. All piping specials shall have a minimum wall thickness of the largest class pipe which it joins. Wire reinforcement, either Spiral Wire Reinforcement or Wire Fabric Reinforcement shall conform to either ASTM A82 or A185. Fabric shall be sufficiently lapped to secure the full strength of the mesh.
 4. Cast Iron Fittings (Alternate) – In lieu of fabricated fittings the Contractor may choose to use cast iron fittings in the installation of welded steel pipe. In this case the cast iron fittings shall be the mechanical joint type with cement linings conforming to AWWA Specification C110 (ASA A21.10). The class of each fitting shall conform to the class of welded pipe to be used. Only one (1) field cut of the welded steel pipe will be permitted at each cast iron fitting location. Protection of all inside joint recesses and outside joints shall be as hereafter specified.
- j. Testing – Testing of fittings shall be by a hydrostatic test equal to 150 percent of the design working pressure.
 - k. Bends – Unless otherwise indicated, bends shall have minimum centerline radius of 2-1/3 times its diameter. The maximum deflection at a mitered girth seam shall be 22-1/2 degrees.
 - l. Outlets – Collars and wrappers on outlets shall have a minimum thickness determined by the following:

$$T = \frac{P \times D_p \times D_o}{36,000 \times W}$$

T = Thickness of the collar or wrapper, in inches.

P = Design pressure, in pounds per square inch.

D_p = Inside diameter of pipe cylinder, in inches.

D_o = Diameter of opening (major axis in ellipse), in inches.

W = Width of collar or wrapper in inches.

The width of the collars or wrappers shall be not less than 1/3 or more than 1/2 the inside diameter of the outlet, measured on the surface of the cylinder. Outlets 3 inches in diameter or less may be installed without collars. Where specifically called for in lieu of collars or wrappers, crotch plates may be used on outlets larger than 12 inches in diameter. The design of crotch plates shall be based on AWWA Manual No. 11.

- m. Long Radius Curves – Horizontal and vertical long radius curves may be formed of straight pipe by taking small angular deflections at the bell and spigot joints, not exceeding the published allowable deflections.
- n. Rubber Gaskets – The gaskets for joints shall be circular, free from imperfections, dense, and consist of first grade natural rubber or synthetic rubber, or a suitable combination of both. Gaskets shall conform to the following physical requirements when tested in accordance with Federal Test Methods Standard No. 601.

Tensile Strength, Natural Rubber	2,700 psi
Tensile Strength, Synthetic Rubber	2,300 psi
Elongation at Rapture, Minimum	4.75%
Specific Gravity	1.15 to 1.25
Compression Set Test, Maximum	15%
Shore Durometer, Type A	50 – 60
Tensile Strength After Aging, Minimum of Original	80%

- o. Bond Clip – bond clip or jumpers shall be furnished and installed as recommended by the pipe manufacture and shall be installed in accordance with Standard Drawing No. W-27. Minimum three (3) clips per joint.
- p. Drawings – Prior to the manufacture of any pipe, the Contractor shall submit for approval detailed drawings of the pipe layout, including the required pull at each pipe joint which may be necessary to construct the pipeline in accordance with the Drawings.

4.9.04 Polyvinyl Chloride (PVC) Water Pipe

This specification covers the furnishing of PVC pressure pipe in nominal diameters 4 inches through 12 inches for potable water distribution projects as designated on project drawings.

- a. Pipe – The pipe shall be fabricated in accordance with AWWA Standard C900 for “Polyvinyl Chloride (PVC) Pressure Pipe, 4 Inch through 12 Inch for Water” and shall be rated for 200 psi operating pressure (class 200) except as noted on the plans.

- b. Joints – Shall be gasket, push-on type conforming to AWWA C900. Since each pipe manufacturer has a different design for push-on joints, gaskets shall be part of a complete pipe section and purchased as such. Lubricant shall be as recommended by the pipe manufacturer and shall not adversely affect the potable qualities of the water to be transported.
- c. Markings – All PVC pipe shall be clearly marked in accordance with AWWA C900. Intervals shall not exceed 5 feet.
- d. Approvals – PVC water pipe shall be approved by the Underwriters Laboratory (UL) and by Factory Mutual (FM).
- e. Tests and Reports – The Contractor shall provide test reports duly certified by the manufacturer’s testing facility or an approved testing laboratory of full compliance with AWWA Standard C900. Pipe shall be rejected for failure to comply with any requirement of this specification.
- f. Fittings – All elbows, tees, crosses, reducers, and other special fittings in PVC pipeline shall be either cast iron or ductile iron pipe fitting per Section 4.9.02 with AWWA C104 Type II cement mortar lining. All fittings adjacent to a valve shall have flanged ends. Flanged coupling adaptor shall be provided with pipe and fitting supplied.
- g. Deflection – Deflections shall not exceed the pipe manufacturer’s printed recommendations. On factory installed couplings no deflection shall be allowed for the factory joint unless the coupling is “broken loose” by the Contractor prior to installing.
- h. End Separation – Ends of pipe sections shall be so manufactured that in conjunction with couplings and rings they shall provide, when assembled, automatic separation of pipe ends.
- i. Pipe Ends – PVC pipe shall be of a design for which there is available, from local stock, cast iron fittings and gate valves having bells with sealing ring grooves of the same design as the ring groove of the couplings with which the pipe sections are joined.
- j. Cooper Wire – In continuous runs of PVC pipeline, a 12 gauge TW cooper wire shall be laid 12-inches above the pipeline. The wire shall be attached to all gate valves. Cooper wire shall be continuous. Purpose of this wire to aid in locating the pipe.
- k. Shop Drawings – Shop drawings of all pipe and fittings shall be submitted to the Engineer and shall be approved by him prior to fabrication of the pipe and fittings.

4.9.05 Galvanized Iron Pipe and Fittings (GIP)

Galvanized iron pipe shall conform to ASTM Specification A53 or ANSI B36.10 welded schedule 40 galvanized. The fittings shall be ANSI B16.3 screwed, banded and galvanized for a working pressure of 150 psi.

4.9.06 Tapping Outlet

Tapping outlet for PVC pipe and ductile iron pipe lines shall be Mueller catalog No. H-615, Class 150 mechanical joint tapping sleeve or approved equal. Tapping out for steel pipe shall be of weld-on outlet per Standard Drawing W-18 and W-19.

4.9.07 Flanges, Gaskets, and Bolts

Flanges shall conform to dimensions and drilling of ANSI B16.1, Class 125, or as called for on the Drawings. Flange gaskets shall be ring type, Johns-Manville Style 60S, Granite, or equal. Thickness shall be 1/16-inch for pipe 18-inches and smaller, and 1/8-inch for larger pipe. Flange assembly bolts shall be standard hexagon head machine bolts with heavy hot pressed hexagon nuts. Threads shall conform to ANSI B1.1, coarse thread series, Class 2 fit. Bolt length shall be such that after the joints are made up, the bolts shall protrude through the nut, but not more than 1/2-inch. Flanges on steel pipe shall be welded to the pipe in accordance with AWWA C207.

4.9.08 Flexible Couplings and Flanged Coupling Adaptors

Flexible couplings shall be Romac Style 501, Smith Blair Type 442, long barrel, or equal. Flanged coupling adaptors shall be Smith Blair Type 912, Romac Style FCA501, or equal. Flexible coupling and flanged coupling adaptors for underground use shall be epoxy coated.

4.9.09 Temporary Bulkheads

The Contractor shall furnish and install complete, all the necessary temporary bulkheads or steel boilerheads and appurtenances thereto in the pipeline used for water line pressure and leakage test and for backfilling purpose and shall remove such bulkheads upon completion of the line.

4.9.10 Installation of Underground Pipe

The Contractor shall, after excavating the trench and preparing the proper bedding for the pipe, furnish all necessary facilities for properly lowering and placing sections of the pipe in the trench without damage and shall properly install the pipe. The section of the pipe shall be fitted together correctly and shall be laid true to line and grade in accordance with survey control. The full length of the barrel of the pipe shall have a uniform bearing upon the bedding material, but if the pipe has a projecting bell, suitable excavation shall

be made to receive the bell which shall not bear on the subgrade. The bottom of the pipe shall be closely fitted to the bedding material for the specified width. Pipe shall be laid upgrade. Any pipe which is not in true alignment, both vertical and horizontal, or shows any undue settlement after laying, shall be taken up and re-laid correctly by the Contractor at his own expense, when so ordered by the District. No pipe shall be laid which is damaged, cracked, checked, or spalled or has any other defect deemed by the District to make it unacceptable, and all such sections shall be permanently removed from the work.

4.9.11 Installation, of Ductile and Cast Iron Pipe

- a. Pipe Laying – All pipe shall be carefully inspected for defects before installation. Such inspection shall include light tapping with a hammer while the pipe is suspended in the air. No pipe or fitting which is cracked or which shows defects excluded by the Specifications for such fittings shall be used. Any injuries to the protective coating of the pipe or fittings shall be carefully repaired by the Contractor with coal tar pitch varnish. The pipes, valves, and fittings shall be carefully cleaned immediately before installation. Every open end of a pipe shall be carefully plugged or capped before leaving the work. For bell and spigot pipe, the position or direction of bells, which shall normally face the direction of flow, may be altered from the positions shown on the plans with the permission of the District. Bells and spigots must be thoroughly cleaned and free from oil, grease, blisters, or excess coating before spigots are inserted into bells. The spigot end of the pipe shall be brought to true line and grade and be inserted to the full depth of the socket before the joints are made. The inner surface of the pipe shall conform at the joints, and the annular space for the jointing materials shall be of uniform width and depth. If any pipe does not allow sufficient space for jointing material, it shall be replaced by one of the proper dimensions. The maximum deflection angle in bell and spigot cast iron pipe joints shall be no more than three (3) degrees. Laying of cast iron pipe shall conform to line and grade as shown on the Drawings.
- b. Piping Through Walls – Piping through walls shall be installed in accordance with the drawing and shall be accomplished by the installation of a wall insert of the same size as the pipe penetrating the wall. Care shall be exercised to insure a watertight installation.
- c. Neoprene-Ring Joints – Between lengths of cast iron pipe, neoprene gasket joints can be used. Joints shall be “Tyton” or approved equal. Installation shall be in accordance with the manufacturer’s recommendations. Gasket seats and neoprene gaskets shall be thoroughly cleaned before assembly. The completed joint shall have a uniform contact by the gasket between the outer surface of the spigot and the gasket seat of the bell.
- d. Flanged Joints – Flanged pipe shall be cut true to length. Joints shall be made up square, with even pressure upon the gaskets and shall be perfectly watertight. \

Gaskets shall be full faced and shall fit the inside dimension of the pipe accurately, so that no surplus material projects out into the flow area. The completed joint shall be smooth and properly aligned. Flanged pipe shall not generally be allowed for underground installation.

4.912 Installation – Cement-Mortar Lined and Coated Steel Pipe

While pipe is being transported or handled during construction operations, every reasonable precaution shall be taken to prevent damage thereto. Pipe shall be handled with suitable equipment approved by the manufacturer, such as multiple padded slings, designed to prevent scuffing and denting of the pipe. Pipe sections shall be supported on padded bolsters or cradles and separated so that they do not bear against each other during transporting. The pipe shall not be placed directly on rough ground, but shall be supported in a manner which will protect that pipe against injury, wherever stored.

Any pipe section that is damaged shall be repaired as prescribed by the engineer, if in his opinion, a satisfactory repair can be made; otherwise, the pipe section shall be replaced with the undamaged section at the Contractor's expense.

Immediately in advance of placing any pipe or fittings in the trench, all loose rocks or other material which would interfere with the proper laying of the pipe shall be removed from the trench. The bottom of the trench must be trimmed so that the barrel of the pipe shall be supported throughout its entire length. Bell holes shall be provided at pipe joints of sufficient depth so that each joint can be made as required by the type of pipe being used.

When the trench has been properly prepared, the pipe and fittings shall be lowered therein, singly, without undue jar or strain and assembled piece-by-piece inside the trench. Proper slings shall be used in lowering pipe to prevent damage to pipe surfaces. Before lowering, and while suspended, each joint of pipe shall be inspected for defects. Any damaged, defective or unsound pipe shall be immediately removed. All foreign matter or dirt shall be removed from the inside of the pipe and the outer surface of the spigot ends and the inner surface of the bell before it is lowered into position inside the trench and pipe shall be kept clean during pipe-laying operations. All valves, fittings, and specials shall likewise be cleaned thoroughly before being placed the pipeline.

Each length of pipe shall be accurately adjusted to line and grade and held in position by earth packed on each side. No blocking of any kind shall be used to support the pipe or hold it in position. The pipe shall be installed in accordance with manufacturer's recommendations. Departure from and return to established alignment and grade shall not exceed 1/16-inch per linear foot of pipe and at no point shall the maximum departure from established line and grade be greater than one-inch. Accumulation of departure from the design stationing shall be avoided insofar as practicable.

Where long-radius curves or bends are allowed to be made by deflecting the pipe sections, the deflection shall be limited to that recommended by the manufacturer of the pipe. Deflection in steel pipe may be made by the use of bevel end pipe with a bevel not to exceed five degrees. Where changes in grade or alignment cannot be made by the above means, or where specifically indicated by the drawings, shop fabricated or mitered pipe bends shall be used.

No pipe shall be laid in water nor shall water be permitted to enter the pipe. Pipe ends shall be closed when pipe laying is not in progress. Pipe shall be laid uphill with bells upgrade and with identification marks on top unless otherwise approved by the Engineer.

The joining of pipe sections shall be such as to produce watertight lines for the conveyance of water. When laying pipelines, the pipe shall be carried by multiple padded slings, unless otherwise approved by the Engineer, which should be located around the pipe in such a manner as to prevent vibration and deflection of the pipe. The pipe shall not be dragged on the bottom of the trench, but shall be supported by the slings while being fitted into the adjacent section. Any disbondment of the mortar coating from the steel cylinder will not be allowed. When rubber gasket joint pipe is being laid, ends of the pipe shall be thoroughly cleaned with wire brushes or the equivalent to remove all foreign materials, including sealing compound, if any, from surfaces which are to be incorporated in the joint. The spigot recess, the rubber gasket, and the bell shall be lubricated with a soft, vegetable soap compound.

After lubrication, the gasket shall be thoroughly stretched when placing in the spigot groove so that there is a uniform volume of rubber distributed around the circumference. The gasket shall not be twisted, rolled, cut, crimped or otherwise injured or forced out of position during closure of the joint. After the joint is assembled, a thin metal feeler gauge shall be inserted between the bell and the spigot and the position of the rubber gasket and checked around the complete circumference of the pipe. If the gasket is not in the proper position, the pipe shall be withdrawn, the gasket checked to see that it is not cut or damaged, the pipe re-laid, and the gasket position again checked.

The edge of the lining of the bell end shall be "battered" with cement mortar prior to assembly. The lining in both the bell and spigot ends shall be dampened prior to application of the mortar. The joint shall then be closed and a rubber sewer ball or squeegee shall be pulled through the pipe to remove excess mortar extruded on the inside surface of the pipe. The mortar shall be mixed in proportion of not richer than one part, by weight, of cement to two parts, by weight, of clean, well-graded sand, and just sufficient water to obtain the proper consistency. To improve workability of the mortar, the Contractor, with the Engineer's approval, may replace not more than seven percent, by weight, of cement with approved pozzolan, or may add an approved air-entrained agent in the mortar, or may use any combination of these. Any mortar which has become so stiff that proper placement without retempering cannot be assured shall be wasted. The Contractor shall prepare the mortar in small batches so as to avoid stiffening of the mortar prior to its application. The finished joint shall be smooth and flush with the adjacent pipe surfaces.

For pipe 24 inches in diameter and larger, after the pipe zone bedding and backfill have been densified, the inside joint recess shall first be moistened, then filled and painted with a stiff cement mortar consisting of 1 part cement to 1-1/2 parts of sand. The finished joint shall be smooth and flush with the adjacent pipe surfaces. Interior joint painting operations shall not be conducted within two joints of pipe laying operations.

After laying, the exterior joint recesses shall be filled with grout. Grout used for filling the outside joints by the pouring method shall be mixed in proportions of one part cement, by weight, to not more than two parts, by weight, of sand passing a No. 16 mesh screen and thoroughly mixed with water to the consistency of rich cream. A cloth band 9 inches wide shall be placed around the outside of the pipes and centered over the joint. The joint band shall be bound to each pipe by use of steel box strapping. The band shall completely and snugly encase the joint except for an opening at the top through which to pour the grout. The outside grout space, prior to filling with grout, shall be flushed with water so that the surfaces of the joint to be in contact with the grout filling will be thoroughly moistened when the grout is poured. Fluid grout shall be poured in only one opening in this joint and pouring shall be continuous until grout appears at the other side. The grout shall be rodded on both sides of the pipe, if necessary, to settle the grout and more grout added to fill the joint completely. The bands shall not be removed from about the joint. Exposed portions of the joint, after filling, shall be covered with wet burlap or moist earth. If backfill material is to be hydraulically consolidated, outside joint grout shall be poured and allowed to set before consolidation of the backfill material.

Field joints shall be welded at the locations shown on the drawings and at locations where make-up field joints are required, as approved by the Engineer. The welded joints shall be by means of lap welding with ends shop-formed for lap welding or by means of a 6-inch butt strap. Hand holes shall be provided for the placement of mortar lining, in butt strap connections. All preparations of ends of pipe and all welding of joints shall be in accordance with AWWA Standard C206.

All flanged joints shall be installed complete with bolts in accordance with American Standards Association requirement and with full-face gaskets fabricated from 1/16-inch cloth inserted rubber gasket material. Gasket shall have bolt holes punched. All bolts and nuts and all gaskets shall be lubricated before assembly with Dearborn No-Oxide Grease No. 2 or approved equal.

Flexible couplings shall be sleeve type as manufactured by Dresser, Smith-Blair or approved equal. Prior to installation of sleeve type couplings, the pipe ends shall be thoroughly cleaned of all oil, dust, loose scale, rust and other foreign matter for a distance back from the end of the pipe of at least 8 inches. Middle ring, follower, and gaskets shall be assembled on the pipe ends in accordance with the coupling manufacturer's recommendations. Gaskets, pipe ends, and middle ring flares shall be lubricated with a vegetable soap to facilitate the joining. Middle rings shall be accurately centered over the

pipe ends. Bolts shall be tightened to the torque recommended by the coupling manufacturer.

4.9.01 Installation --Polyvinyl Chloride (PVC) Water Pipe

PVC pipe shall be stored, handled and installed in accordance with manufacturer's instructions.

- a. Embedment Requirements – The embedment requirements for PVC water pipe shall be in accordance with AWWA C900, Appendix A.6 – “Installation” and Section 4.1 “Earth Work” of these specifications.
- b. Service Connections – All service line connections to PVC water pipe shall be made in accordance with the recommendations of AWWA No. M23, “PVC Pipe – Design and Installation,” Chapter 9 and Standard Drawing W-4. There shall be no direct taps made on PVC pipe.

4.9.14 Concrete Thrust Blocks, Cradles, and Pipe Encasements

The contractor is referred to AWWA manual No. M23 and Section 4.15, “Concrete Thrust Block, and Blankets, “ of the Detailed Technical Specifications of these specifications.

4.9.15 Testing and Disinfection of Water Lines

The Contractor is referred to Section 4.10, “Water Pipeline Testing and Disinfection,” of the Detailed Technical Specifications of these specifications.

WEST VALLEY WATER DISTRICT**SECTION 4.10
OF
DETAILED TECHNICAL SPECIFICATIONS****WATER PIPELINE TESTING AND DISINFECTION****4.10.01 General**

All water facilities including water pipes, service laterals, valves, blow-offs, flush-outs, hydrants and any other appurtenances shall be water tight, cleaned and disinfected before they are placed in services. Testing and disinfection, as a minimum, shall meet appropriate AWWA specifications unless otherwise specified.

4.10.02 Testing

Pressure and leakage tests shall be performed in accordance with the American Water Works Association Standard procedure for Pressure and Leakage Test, AWWA C605, Section 7, except as herein modified.

Separate tests shall be performed for pressure test and leakage test.

Upon the completion of the lying, jointing, and backfilling, and the proper curing of the joints, the pipeline or portions thereof shall be hydrostatically tested. For convenience of testing, the pipeline may be divided into sections and each section shall not exceed 4,000 feet. The maximum elevation difference for each test section shall not exceed 50 feet. Bulkheads shall be constructed to safely withstand the hydraulic pressures imposed upon them. No payment will be made expressly for the work and materials required for the bulkheads and any compensation desired by the Contractor for this work shall be included in the price quoted for the installation of pipe. The contractor shall have no claim against the District by reason of required construction due to omission of the installation of any or all main line valves.

- a. Preparation – After the section of pipeline has been bulkheaded and completely filled with water, it shall be allowed to stand under a light pressure a minimum of 24 hours to allow the concrete to obtain a maximum absorption of water and to allow the escape of air from any pockets. Refer to section 4.10.03 for filling and contact requirements.
- b. Pressure Test – After the installed pipeline is properly filled and has been purged of all air, a test pressure equal to the higher of 150% of working pressure, or pressure rating of pipe plus 50 psi, shall be applied by means of an approved pumping

equipment connected to the pipe in a manner satisfactory to the District inspector. The duration of pressure test shall be two (2) hour minimum. The pressure shall be maintained within 5 psi of the test pressure.

- c. Leakage Test – Leakage that shall be conducted immediately following pressure test. Test pressure shall be 150% of working pressure and the duration shall be two (2) hours minimum. Leakage shall be defined as the quantity of water that must be supplied into the pipe section being test to maintain the pressure within 5 psi of the specified test pressure. The allowable leakage shall be smaller than 10.5 gallons per day per miles per inch diameter of the pipe being tested. The Contractor shall determine the points of leakage, make the necessary repairs, and make another test. This procedure shall be continued until the leakage falls below the allowable amount. Leakage shall be determined by metering the water injected into the pipeline while under the required pressure. The Contractor shall submit to the District before and after the test gauge, and the meter used so that the District may test these devices.
- d. Test Equipment – The Contractor shall provide all calibrated meters for measurement of leakage, all bulkheads or boilerheads, piping, calibrated gauges, pumps and other equipment, and all power and labor necessary for the performance of pressure tests satisfactory to the District. The Contractor shall furnish all necessary equipment and labor to fill each section of pipeline tested and for pumping the water from one test section of pipeline tested and for pumping the water from one test section to another as may be necessary for obtaining and maintaining the required water pressure and for filling the entire pipeline with water after the conclusion of the testing, as hereinafter provided.
- e. Corrections – The Contractor at his own expense, shall do any excavation necessary to locate and repair leaks or other defects which may develop under test, including removal of backfill already placed, shall replace such excavated material, and shall make all repairs necessary to meet the required water tightness after which the test shall be repeated until the pipe meets the test requirements. All tests shall be made in the presence of the District. After the pipe has met successfully with the test requirements specified herein, the entire pipeline shall be filled with water and so maintained until the completion of the contract unless otherwise ordered by the District.

4.10.03 Disinfection

- a. General – Prior to connecting to existing water lines or putting into service, all water mains, water services and attached appurtenances shall be disinfected in accordance with AWWA Standard C651, except as specified modified or supplemented herewith. Tablet method may be used.

- b. Tablet Method – The tablet method consists of placing calcium hypochlorite tablets in the water main as it is being installed and then filling the main with potable water when installation is completed. This method may be used only if the pipes and appurtenances are kept clean and dry during construction.

Placing of calcium hypochlorite tablets. During construction, 5-g calcium hypochlorite tablets shall be placed in each section of pipe. Also, one such tablet shall be placed in each hydrant, hydrant branch, and other appurtenance. The number of 5-g tablets required for each pipe section shall be $0.0012 d^2L$ rounded to the next higher integer, where d is the inside pipe diameter, in inches, and L is the length of the pipe section, in feet. Table 1 shows the number of tablets required for commonly used sizes of pipe. The tablets shall be attached by a food-grade adhesive. Such as Permatex Form-A-Gasket No. 2 and Permatex Clear RTV Silicone Adhesive Sealant, which are manufactured by Loctite Corporation, Kansas City, KS 66115. These products have both been approved by the US Drug Administration (USDA) for uses that may involve contact with edible products. There shall be no adhesive on the tablet except on the broadside attached to the surface of the pipe. Attach all the tablets inside and at the top of the main, with approximately equal numbers of tablets at each end of a given pipe length. If the tablets are attached before the pipe section is placed in the trench, their position shall be marked on the section so it can be readily determined that the pipe is installed with the tablets at the top.

Filling and contact. When installation has been completed, the main shall be filled with water at a rate such that water within the main will flow at a velocity no greater than 1 ft/s . Precautions shall be taken to ensure that air pockets are eliminated. This water shall remain in the pipe for at least 24-h. If the water temperature is less than 41°F, the water shall remain in the pipe for at least 48 hours.

Table 1 Number of 5-g calcium hypochlorite tablets required for dose of 25 mg/L*

Pipe Diameter in.	Length of Pipe Section, ft		
	18	20	40
4	1	1	1
6	1	1	2
8	2	2	4
10	3	3	5
12	4	4	7
16	6	7	13

*Based on 3.25-g available chlorine per tablet; any portion of tablet rounded to next higher integer.

- c. Residual Chlorine Test – After 24 hours of retention, the hypochlorite solution shall be tested by the District, and to be acceptable, shall have a minimum of twenty-five (25) parts per million of residual chlorine.
- d. Additional Disinfection – If the test results are not satisfactory, the Contractor shall provide a 2-inch outlet for the connection of injection type chlorination equipment, after which the Contractor shall inject chlorine solution into the main for the necessary additional disinfection.
- e. Final Flushing – Following the period of retention and after testing of residual chlorine by the District, the chlorinated water shall be thoroughly flushed from the line until the replacement water throughout the length of the pipeline is comparable in quality to the water served the public for the existing system.

Care shall be taken that the extremities of the main and the services are free of chlorinated water before being placed in service and that all new service connections are thoroughly flushed out before the meters are installed. When a hypochlorite solution has been used for disinfection of the main, the flushing shall be in a direction opposite to that from which the line was filled.

- f. Bacteriological Test – After final flushing and before the new water main is connected to the distribution system, two consecutive sets of acceptable samples, taken at least 24 hours apart, shall be collected from the new main. At least one set of samples shall be collected from every 1200 ft of the new water main, plus one set from the end of the line and at least one set from each branch. All samples shall be tested for bacteriological quality in accordance with *Standard Methods for the Examination of Water and Wastewater*, and shall show the absence of coliform organisms. The District will take water samples for bacteriological test in accordance with the State Departments of Public Health Standards. If test fails, the contractor shall re-disinfect and flush the water system for additional bacteriological test as necessary.
- g. Find Connection to Existing Mains – The new pipe, fittings, couplings and valve required for the connection shall be spray-disinfected or swabbed with a minimum 1 percent solution of chlorine just prior to being installed. The maximum length of connection from the end of a new main to the existing main shall be 10 ft.

WEST VALLEY WATER DISTRICT
SECTION 4.11
OF
DETAILED TECHNICAL SPECIFICATIONS

FIRE HYDRANT ASSEMBLIES

4.11.01 General

Fire hydrant assemblies shall be installed at the location as shown on the plans and shall be in accordance with Standard Drawing No. W-2, and as specified hereon and the applicable sections of these specifications.

Fire Hydrants shall be of higher strength cast iron body completely lined with fusion bonded epoxy lining with corrosion proof, durable plastic cover and shall be Clow Model F-850 or approved equal. Unless otherwise specified by local Fire District or City Fire Department, each fire hydrant shall have one 4-inch and one 2 ½-inch outlet and shall be installed with eight ¾-inch break off bolts and nuts.

4.11.02 Excavation and Backfill

The Contractor is referred to Section 4.1, "Earthwork," of the Detailed Technical Specifications of these specifications.

4.11.03 Field Painting

All fire hydrants shall be surface prepared to receive paint by scraping and wire brushing, and shall be painted with one (1) coat of surface primer and two (2) coats of finish paint. The paint shall be Chex-Rust Primer and Safety Yellow Speed Tec 313-02 finish, as manufactured by Fuller Paint Company; or 1069 Heavy Duty Rust Inhibitive Red Primer and 9348 Safety Yellow finish coat, as manufactured by Rust-Oleum, or approved equal paint system using compatible primer and finish supplied by one manufacturer.

WEST VALLEY WATER DISTRICT
SECTION 4.12
OF
DETAILED TECHNICAL SPECIFICATIONS
FLUSH-OUT AND BLOW-OFF ASSEMBLIES

4.12.01 Flush-Outs

Flush-out assemblies shall be installed in accordance with Standard Drawing No. W-8, and as specified hereon and the other applicable sections of these specifications.

Flush-outs shall be constructed of the size and at the locations shown on the Plans.

4.12.02 Blow-offs

Blow –off assemblies shall be installed in accordance with Standard Drawing No. W-7, and as specified hereon and the other applicable sections of these specifications.

Blow-offs shall be constructed of either 4-inch or 6-inch size at the locations shown on the Plans.

4.12.03 Excavation and Backfill

The Contractor is referred to Section 3.1, “Earthwork,” of the detailed Technical Specifications of these specifications.

WEST VALLEY WATER DISTRICT
SECTION 4.13
OF
DETAILED TECHNICAL SPECIFICATIONS

VALVES, VALVE BOXES AND COVERS

4.13.01 Scope

The Contractor shall furnish all material, labor, and equipment necessary for the complete installation of all valves as called for on the Drawings, Standard Drawing No. W-11 and as specified herein.

The Contractor shall submit shop drawings showing the dimension, construction and material of valves to the District for approval prior to shipment.

4.13.02 Gate Valves

Gate valves shall be resilient seated (R.S.) valves meeting the requirement of the latest specifications of the American Water Works Association (AWWA), Designation C509.

All gate valves shall be rated for a minimum of 150 pounds working pressure as manufactured by Mueller Co., CLOW Corporation, Stockham Valve and Fitting Co., or equal.

The valves shall have iron body cover and O-ring plate, O-ring pressure seals, high-strength iron wedge with rubber bond that meet ASTM D429, bronze stem. Steel bolts and nuts shall be cadmium-plate, and gland bolts shall have bronze nuts.

Valves 2-1/2-inches and smaller shall have tapped American Standard Pipe Threads and handwheel.

Valves 3-inches and larger for above ground, indoor installation shall be of the rising stem OS&Y type with handwheels. Valves for above-ground, outdoor installation shall be of non-rising stem (NRS) type with handwheels. All above ground gate valves shall be furnished with flanges conforming to the American Standard for Class 125 Cast Iron Pipe Flanges and Flanged Fittings B 16.1.

Valves for underground (buried) installation shall be of non-rising stem (NRS) type with 2-inch operation nut and shall be furnished with flanged joint and flanged coupling adaptors.

The valves shall be furnished in the sizes indicated on the Drawings. Valves with welding ends will not be permitted for use in welded steel lines. All valves interior shall be protected with two-part thermosetting epoxy per AWWA C550.

4.13.03 Butterfly Valves

Butterfly valves shall be Class 150B and shall conform to the latest specifications of the AWWA C504. The valves shall be of the rubber seated, tight closing type, furnished with flanged ends, cast iron body and disc, and a molded rubber seat that is recess mounted, bonded, and mechanically secured to the valve body. All valve interior face shall be protected with two-part thermosetting epoxy per AWWA C550. Tnemel 20, plastic 70, or equal to 8 mils.

Valves shall be manufactured by Pratt, Muller or approved equal. Unless otherwise indicated, all butterfly valves shall be furnished with worm and gear type manual operator.

Manual operators shall be of the worm and gear type and shall be self-locking to prevent the valve disc from creeping or fluttering when in any intermediate position between open and closed. The gear operators shall be permanently lubricated, totally enclosed, with adjustable stops for the open and closed position to prevent the valve disc from overtravel in either direction and except on units for buried or submerged service shall have a valve disc positions indicator. The gear ratio and handwheel diameter shall be designed so that a pull of not more than 80 pounds on a handwheel or chainwheel (or 150 foot pound input on buried applications) will produce an output torque equivalent to 1.5 times of the maximum operating torque specified in AWWA C504.

On buried installations, the gear box shall be fixed to the valve and the stem with 2-inch square operating nut shall be extended through a slip-type valve box, to the surface. A ground level position indicator, Pratt Diviner, shall be included.

4.13.04 Excavation and Backfill

The Contractor is referred to Section 4.1, "Earthwork," of the Detailed Technical Specifications of these specifications.

4.13.05 Opening Direction

Wrench nut shall turn left (counter-clockwise) to open the valve.

4.13.06 Valve Ends

The valve ends shall be of flanged end. Flanged coupling adapters shall be provided with each valve installed below grade. Valves with welding ends will not be permitted for use in welded steel lines.

4.13.07 Valve Boxes and Covers

All valves installed below ground shall be provided with valve box and cover.

Valves boxes and covers shall be as shown on standard drawing No. W-11.

WEST VALLEY WATER DISTRICT
SECTION 4.14
OF
DETAILED TECHNICAL SPECIFICATIONS

AIR VALVES ASSEMBLIES

4.14.01 General

The air valve assembly shall be a combination air valve consisting of an air and vacuum valve and an air release valve and shall include service lateral, shut-off valves, piping, enclosure etc. and other appurtenances and shall be as called for on the drawings and the Standard Drawing No. W-6A, W-6B, W-6C and other applicable Standard Drawings. Installations shall be made at the locations and size as shown on the Plans.

4.14.02 Earthwork

The Contractor is referred to Section 4.1, "Earthwork," of the Detailed Technical Specifications of these specifications.

4.14.03 Corporation Stops

All corporation stops shall be positioned per Standard Drawings No. W-4.

4.14.04 Gate Valves

All gate valves shall be Stockon, American, or approved equal.

4.14.05 Air and Vacuum Valves

All air and vacuum valves shall be APCO (Series 140 for ½-inch thru 3 inches, and Series 150 for 4-inches and larger) Crispen Type S, or approved equal.

4.14.06 Air Release Valves

All air release valves (compound lever) shall be Crispen Type P, APCO Series 200, or approved equal.

4.14.07 Combination Air and Vacuum Valves

All combination air and vacuum valves shall be Crispen "Universal Air Valve," APCO "Heavy Duty Combination Air Release Valve," or approved equal.

4.14.08 Air Valve Enclosure

All air valves shall be installed with air valve enclosure in accordance with Standard Drawings W-6C in accordance with Standard Drawing W-12.

4.14.09 Field Painting

All air valve assembly and enclosure shall be surfaced prepared to receive field paint by solvent cleaned in accordance with SSPC-SP-1 and shall be painted with one (1) coat of surface primer, 2 mils of TNEMEC 32-1200, Kopper 40 or equal and two (2) coats of finish coat, 3 mils of TNEMEC Series 2, Kopper Galmortex 501 enamel or equal to a total dry film thickness of 8 mils. The color shall be green.

WEST VALLEY WATER DISTRICT**SECTION 4.15
OF
DETAILED TECHNICAL SPECIFICATIONS****CONCRETE THRUST BLOCKS AND BLANKETS****4.15.01 Concrete Thrust Blocks**

Concrete thrust blocks shall be installed in accordance with the Standard Drawing No. W-3 and shall be Class IV concrete as specified on Section 4.2 of these Detailed Technical Specification.

4.15.02 Concrete Blanket

- a. General – Concrete blankets shall be constructed at the locations shown on the plans and in accordance with the Standard Drawing No. W-24. Concrete shall be of Class IV, as specified on Section 4.2 of these Detailed Technical Specification.
- b. Blanket Type – Concrete blanket is to be used at locations where the pipe is to be protected from wheel loadings.

4.15.03 Excavation and Backfill

The Contractor is referred to Section 4.1, “Earthwork,” of these specifications.

4.15.04 Concrete Construction

The Contractor is referred to Section 4.2, “Concrete Construction,” of these specifications.

WEST VALLEY WATER DISTRICT
SECTION 4.16
OF
DETAILED TECHNICAL SPECIFICATIONS

BACKFLOW PREVENTERS

4.16.01 General

Water user shall comply with all orders, instructions, regulations, and notices from the State Department of Health with respect to the installation, testing and maintenance of backflow prevention devices.

Water user shall be responsible for all costs associated with the installation, testing and maintenance of backflow prevention devices as authorized in section 11 6800 and section 11 6805 of Health and Safety Code, Chapter 5 Water Equipment and Control, Article 2 Cross-Connection Control by Water User.

4.16.02 Type of Protection

The type of protection shall be approved by the District and shall be in accordance with State Code of Regulations, Title 17, Division 1, Chapter 5, Group 4, Section 7583, 7584, 7585, 7586, 7601, 7602, 7603, 7604 and 7605.

As a minimum, all commercial and irrigation water service shall be protected with a reduced pressure principal type backflow prevention assemble. All fire service lines shall be protected with a double check valve with detector check backflow prevention assembly.

4.16.03 Installation

Installation of backflow prevention shall be in accordance with Standard Drawing W-15 and W-18.

4.16.04 Manufactures

Backflow preventer shall be approved by University of Southern California Foundation for cross connection control and Hydraulic research and shall be FEBCO or approved equal.

WEST VALLEY WATER DISTRICT
SECTION 4.17
OF
DETAILED TECHNICAL SPECIFICATIONS

CHAIN LINK FENCE AND GATE

4.17.01 General

The Contractor shall furnish all equipment, labor and material necessary to do fencing, all as shown on the Drawings and as necessary for a complete job.

The work shall consist of furnishing and constructing a 6-foot high chain-link fence with 12-inch barbwire extension in accordance with Section 206-6 and Section 304-3 of the Standard Specifications for Public Works Construction and at the locations shown on the Drawings. All earth, trees, brush, existing fence designed to be removed, and other obstructions which interfere with the proper construction of the fence shall be removed and disposed of and will be considered as part of the fence construction.

4.17.02 Materials

Chain-link fence shall be complete with fabric, end corner, gate and line posts, gate with lockable devices, extension arms with 3-strands of barbed wire, post anchors, and other necessary appurtenances.

The fence shall have 6 feet 0 inch fabric above ground when erected. The fabric shall consist of 9 gauge 6M galvanized wire woven with 2-inch mesh fulfilling the requirements of ASTM A-392. Barbed wire shall be 4-point pattern, composed of two strands of 12-1/2 gauge galvanized steel wire with barbs spaced 5-inches apart and shall conform to ASTM 121.

The line posts shall be 2-inch nominal diameter, 2.375-inch OD X 3.65 pounds per foot, galvanized steel pipe and spaced not more than 10 feet 0 inches apart. Top rails shall be 1-1/4-inch nominal diameter, 1.90-inch OD X 2.27 pounds per foot galvanized steel pipe. Gate posts and corner posts shall be 3.5-inch nominal diameter, 4.0 inch OD X 9.11 pounds per foot galvanized steel pipe and shall be strongly and durably attached to the line posts according to the best practice. The posts shall be set in the ground to a depth of 3 feet and centered in concrete cylindrical footing 8-inches in diameter.

WEST VALLEY WATER DISTRICT

PART V

STANDARD DRAWINGS

INDEX OF STANDARD DRAWINGS

<u>DRAWINGS NO.</u>	<u>TITLE</u>
W-1	Typical Trench Detail
W-2	Fire Hydrant Assembly
W-3A&B	Concrete Thrust Block Detail
W-4	Water Service Detail – ¾” and 1” Meter
W-5A&B	Water Service Detail – 1 1/2” and 2” Meter
W-6A,B&C	Air Valve Installation (3)
W-7	4” and 6” Blow-Off Assembly
W-8	2” and 4” Dead-End Flush-Out
W-9A&B	Water Service Detail-3” and Larger (Turbine Meter Installation)
W-10A&B	Water Service Detail-3” and Larger (Compound Meter Installation)
W-11	Valve and Valve Box Installation Detail
W-12	Guard Post Installation Detail
W-13	Bonding Clip Detail
W-14	Butt Strap Detail
W-15	Fire Service Installation Detail
W-16	Chain Link Fence Detail
W-17	Chain Link Fence Gate Detail
W-18	Tapping Outlet for Steel Pipe – 1” and 2”
W-19	Tapping Outlet for Steel Pipe – 3” and Larger
W-20	Backflow Preventer (R.P.) Installation Detail
W-21	Sample Station Detail
W-22	Pressure Regulation Station Detail
W-23	Conductor Tube
W-24	Concrete Blanket
W-25	Siphon Detail
W-26	Inverted Siphon Detail

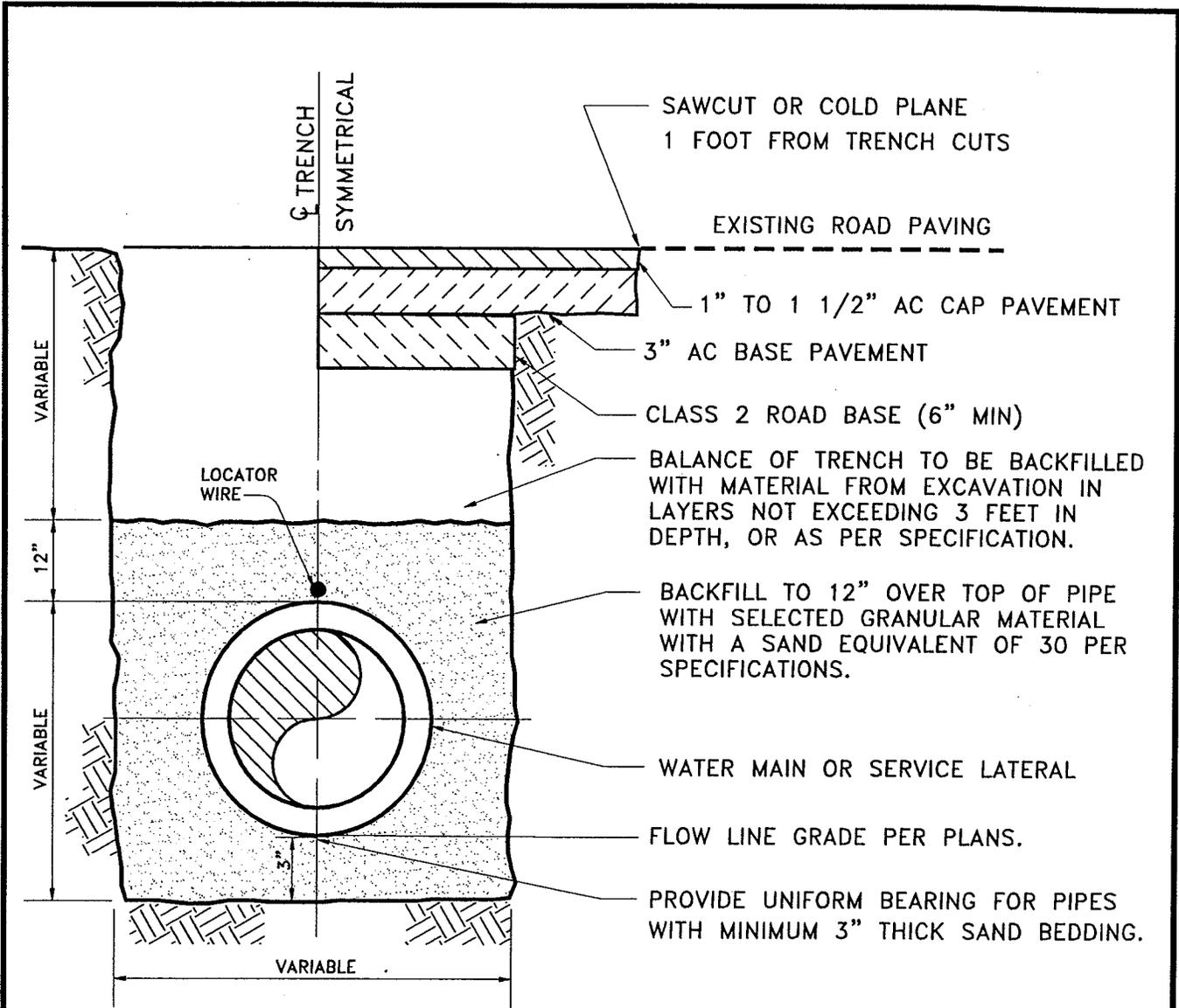
WEST SAN BERNARDINO COUNTY WATER DISTRICT

PART V

STANDARD DRAWINGS

INDEX OF STANDARD DRAWINGS

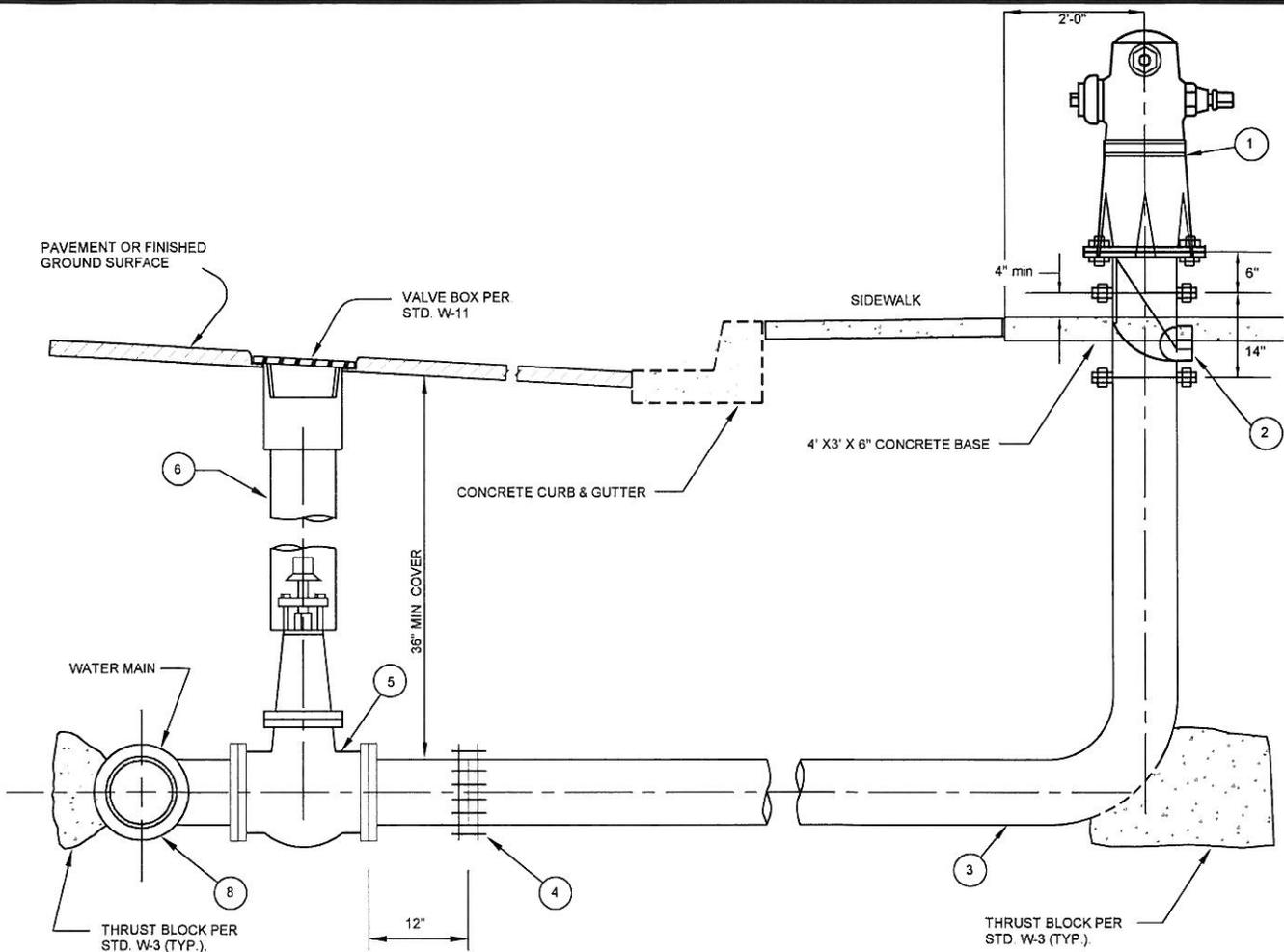
<u>DRAWINGS NO.</u>	<u>TITLE</u>
W-1	Typical Trench Detail
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W-16	Chain Link Fence Detail
W-17	Chain Link Fence Gate Detail
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W-22	Pressure Regulation Station Detail
W-23	Conductor Tube
W-24	Concrete Blanket
W-25	Siphon Detail
W-26	Inverted Siphon Detail



NOTES:

1. WIDTH OF TRENCH
 MIN. = PIPE O.D. + 12"
 MAX. = PIPE O.D. + 16"
2. REPLACE A.C. PAVEMENT AND ROAD BASE IN ACCORDANCE WITH EXCAVATION PERMIT.

WEST SAN BERNARDINO COUNTY WATER DISTRICT	ANTHONY ARAIZA GENERAL MANAGER	TYPICAL TRENCH DETAIL	W-1
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NOTES:

1. NORMAL LOCATION FOR HYDRANT IS 2'-0" BEHIND CURB FACE OR 2'-0" BEHIND SIDEWALK. IF THERE IS NO CURB, LOCATE FIRE HYDRANT 2'-0" FROM PROPERTY LINE.
2. IF THERE IS NO CURB, EACH HYDRANT SHALL HAVE TWO GUARD POSTS PER STANDARD DRAWING W-12. PLACEMENT SHALL BE DETERMINED BY DISTRICT INSPECTOR IN FIELD.
3. PAINT FIRE HYDRANT ASSEMBLY PER SPECIFICATION
4. THE 4" STEAMER OUTLET SHALL PLACED PERPENDICULAR TO CURB AND GUTTER, FACING THE STREET

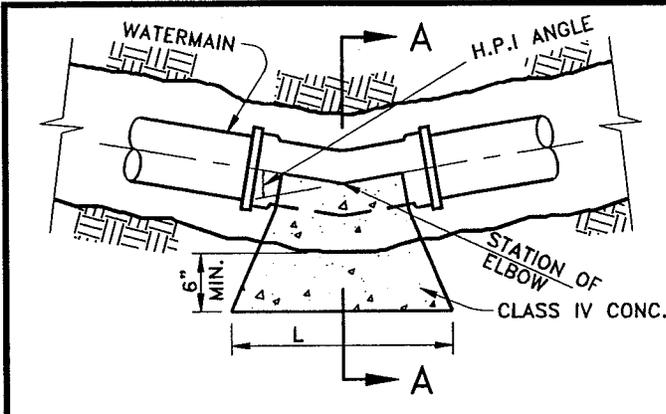
TABLE A

GREEN	OVER 120 P.S.I.	EXTREMELY HIGH PRESSURE (CAUTION!)
ORANGE	50-120 P.S.I.	"NORMAL" PRESSURE RANGE
RED	BELOW 50 P.S.I.	MUST BE "PUMPED"

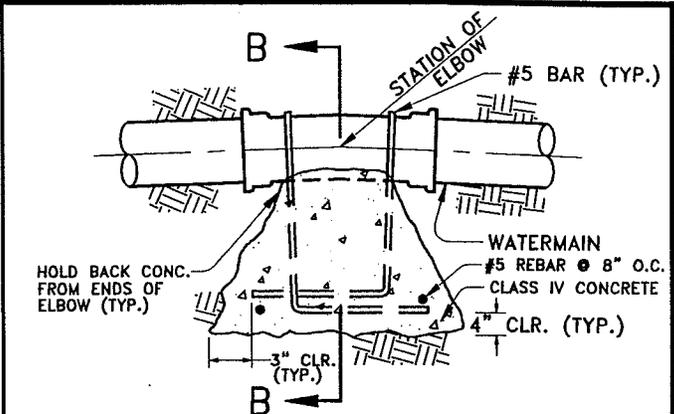
ITEM	DESCRIPTION
1	WET BARREL FIRE HYDRANT. 6" FLANGED INLET WITH ONE 4" HOSE OUTLET & ONE 2 1/2" HOSE OUTLET. INSTALLED WITH 8 HOLES PATTERN BASE FLANGE, CLOW F-850 OR APPROVED EQUAL.
2	CLOW VALVE CO. BREAK OFF CHECK VALVE MODEL LB1 400A (NO SUBSTITUTIONS)
3	SCHEDULE 40 STEEL PIPE, FIELD WRAPPED BELOW GROUND PART WITH TWO LAYERS OF 10 MILS PVC TAPE OR 10 GA. CML&C STEEL PIPE.
4	FLEXIBLE COUPLING AS SHOWN OR FLANGED COUPLING ADAPTOR ATTACH TO VALVE
5	6" Fx F R.S. GATE VALVE WITH PRESSURE RATING TO MATCH MAIN LINE SEE W-11.
6	6" VALVE BOX AND COVER PER STANDARD DRAWING W-11
7	PAINT HYDRANT CAPS ACCORDING TO NFPA STATE PRESSURE STANDARDS. SEE TABLE A.
8	TAPPING OUTLET FOR PVC PIPE AND DUCTILE IRON PIPE LINES SHALL BE MUELLER CATALOG NO. H-615 CLASS 150 MECHANICAL JOINT TAPPING SLEEVE OR APPROVED EQUAL. TAPPING OUTLET FOR STEEL PIPE SHALL BE A WELD-ON OUTLET PER DISTRICT STANDARD DRAWINGS W-18 AND W-19.

APPROVED  DATE 2-3-14
 MATTHEW H. LITCHFIELD, P.E. RCE58097

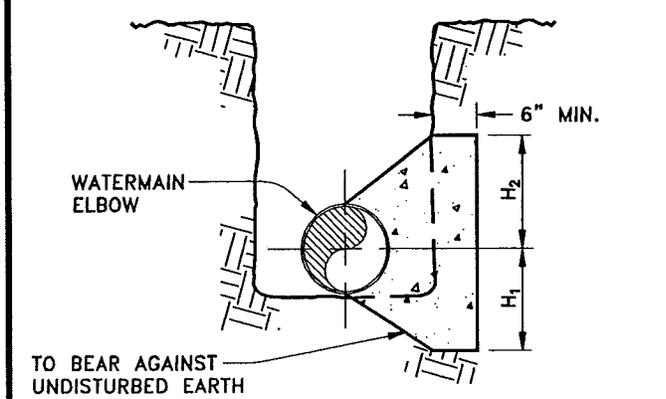
WEST VALLEY WATER DISTRICT		THOMAS J CROWLEY, P.E. GENERAL MANAGER	FIRE HYDRANT ASSEMBLY	W-2
REVISION	DATE			
SCALE: NONE				



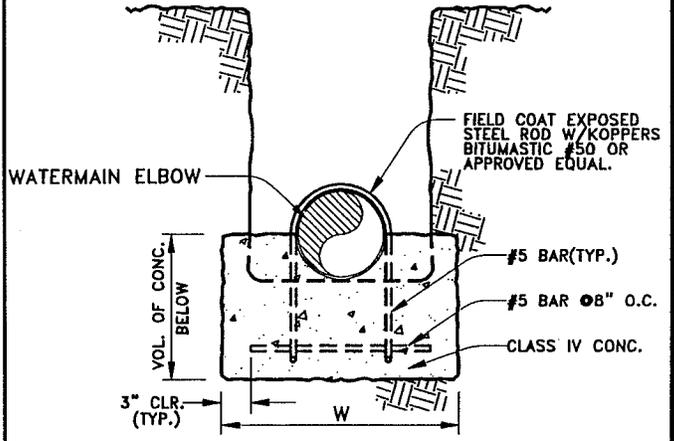
SECTIONAL PLAN



SECTIONAL ELEVATION



SECTION A-A



SECTION B-B

HORIZONTAL THRUST BLOCK

PIPE DIA.	H ₁	H ₂	L	H.P.I. ANGLE
4"	1/2 O.D.	1/2 O.D.	4'-0"	5° TO 41°
4"	4"	4"	4'-0"	42° TO 83°
4"	4"	5"	4'-0"	84° TO 104°
6"	1/2 O.D.	1/2 O.D.	4'-0"	5° TO 27°
6"	6"	6"	4'-0"	28° TO 51°
6"	1'-6"	9"	4'-0"	52° TO 90°
8"	1/2 O.D.	1/2 O.D.	4'-0"	5° TO 20°
8"	8"	8"	4'-0"	21° TO 36°
8"	1'-8"	10"	4'-0"	37° TO 54°
8"	2'-2"	1'-1"	4'-0"	55° TO 78°
8"	2'-8"	1'-4"	4'-0"	79° TO 111°
10"	1/2 O.D.	1/2 O.D.	4'-0"	5° TO 16°
10"	10"	10"	4'-0"	17° TO 28°
10"	1'-10"	11"	4'-0"	29° TO 39°
10"	2'-4"	1'-2"	4'-0"	40° TO 53°
10"	2'-10"	1'-5"	4'-0"	54° TO 70°
10"	2'-10"	1'-5"	6'-0"	71° TO 120°
12"	1/2 O.D.	1/2 O.D.	4'-0"	5° TO 13°
12"	12"	12"	4'-0"	14° TO 22°
12"	2'-0"	12"	4'-0"	23° TO 30°
12"	2'-6"	1'-3"	4'-0"	31° TO 40°
12"	3'-0"	1'-6"	4'-0"	41° TO 52°
12"	3'-0"	1'-6"	6'-0"	53° TO 83°

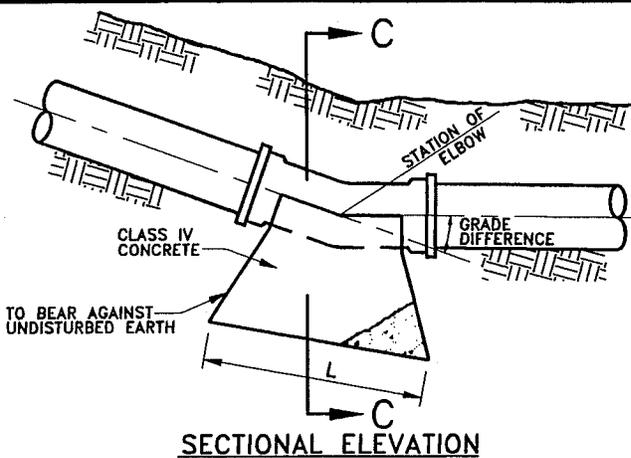
VERTICAL ANCHOR BLOCK

PIPE DIA.	W	VOLUME OF CONC (cu ft)	GRADE % DIFFERENCE
4"	1'-6"	4.3	5 TO 15
4"	1'-6"	6.5	16 TO 25
4"	1'-6"	8.6	26 TO 35
4"	1'-6"	10.8	36 TO 45
4"	1'-6"	13.0	46 TO 55
4"	1'-6"	15.1	56 TO 65
6"	2'-0"	7.6	5 TO 10
6"	2'-0"	11.4	11 TO 25
6"	2'-0"	15.2	26 TO 40
6"	2'-0"	22.8	41 TO 55
8"	2'-0"	10.3	5 TO 10
8"	2'-0"	15.5	11 TO 20
8"	2'-0"	20.6	21 TO 30
8"	2'-0"	31.0	31 TO 40
8"	2'-0"	41.3	41 TO 55
10"	2'-6"	20.9	5 TO 15
10"	2'-6"	27.8	16 TO 25
10"	2'-6"	41.7	26 TO 35
10"	2'-6"	55.6	36 TO 45
10"	2'-6"	69.5	46 TO 55
12"	2'-6"	27.6	5 TO 15
12"	2'-6"	36.8	16 TO 25
12"	2'-6"	55.3	26 TO 35
12"	2'-6"	73.7	36 TO 45
12"	2'-6"	92.1	46 TO 55

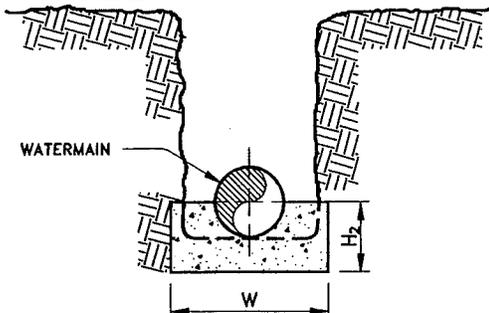
WEST SAN BERNARDINO COUNTY WATER DISTRICT
 ANTHONY ARAIZA
 GENERAL MANAGER

CONCRETE THRUST BLOCKS FOR PIPELINES, CLASS 200 P.S.I. MAX.

W-3A



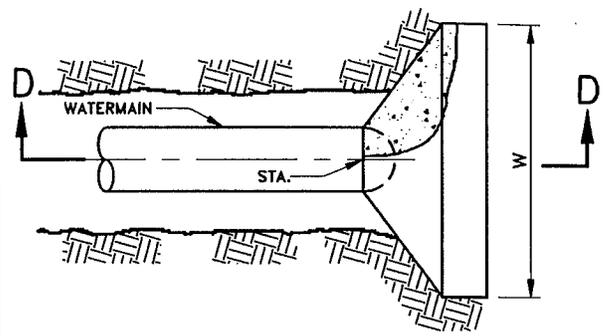
SECTIONAL ELEVATION



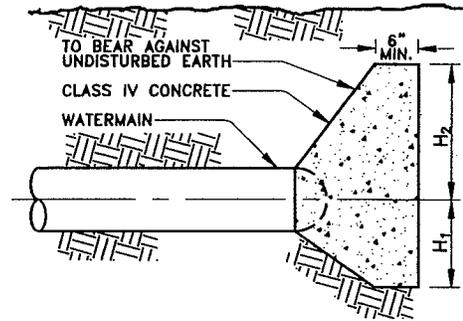
SECTION C-C

VERTICAL BEARER BLOCK

PIPE DIA.	W	H ₂	L	GRADE % DIFF.
4"	1'-6"	8"	1'-0"	5 TO 60
6"	2'-0"	9"	1'-0"	5 TO 40
6"	2'-0"	9"	1'-6"	41 TO 55
8"	2'-0"	10"	1'-0"	5 TO 25
8"	2'-0"	10"	1'-6"	16 TO 40
8"	2'-0"	10"	2'-0"	41 TO 55
10"	2'-6"	1'-2"	1'-0"	5 TO 10
10"	2'-6"	1'-2"	2'-0"	11 TO 40
10"	2'-6"	1'-2"	3'-0"	41 TO 60
12"	2'-6"	1'-3"	2'-0"	5 TO 25
12"	2'-6"	1'-3"	3'-0"	26 TO 45
12"	2'-6"	1'-3"	4'-0"	46 TO 60



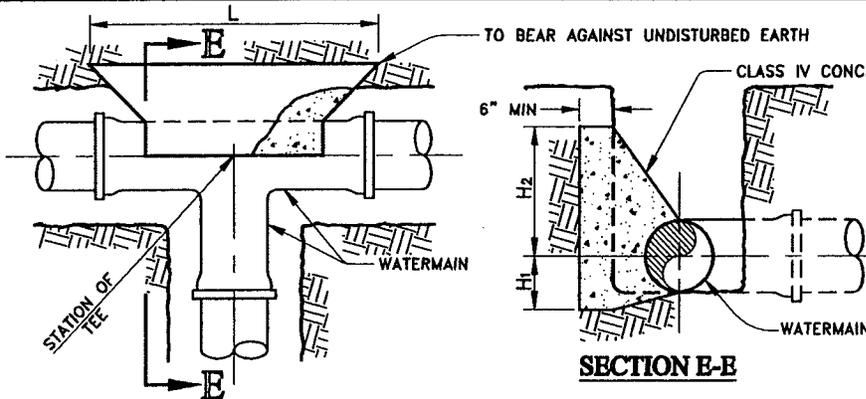
SECTIONAL PLAN



SECTION D-D

END THRUST BLOCK

*PIPE DIA.	H ₁	H ₂	L
4"	9"	6"	3'-6"
6"	1'-6"	9"	4'-0"
8"	2'-2"	1'-1"	4'-0"
10"	2'-10"	1'-5"	4'-0"
12"	3'-0"	1'-6"	5'-0"



SECTIONAL PLAN

TEE THRUST BLOCK

*PIPE DIA.	H ₁	H ₂	L
4"	9"	6"	3'-6"
6"	1'-6"	9"	4'-0"
8"	2'-2"	1'-1"	4'-0"
10"	2'-10"	1'-5"	4'-0"
12"	3'-0"	1'-6"	5'-0"

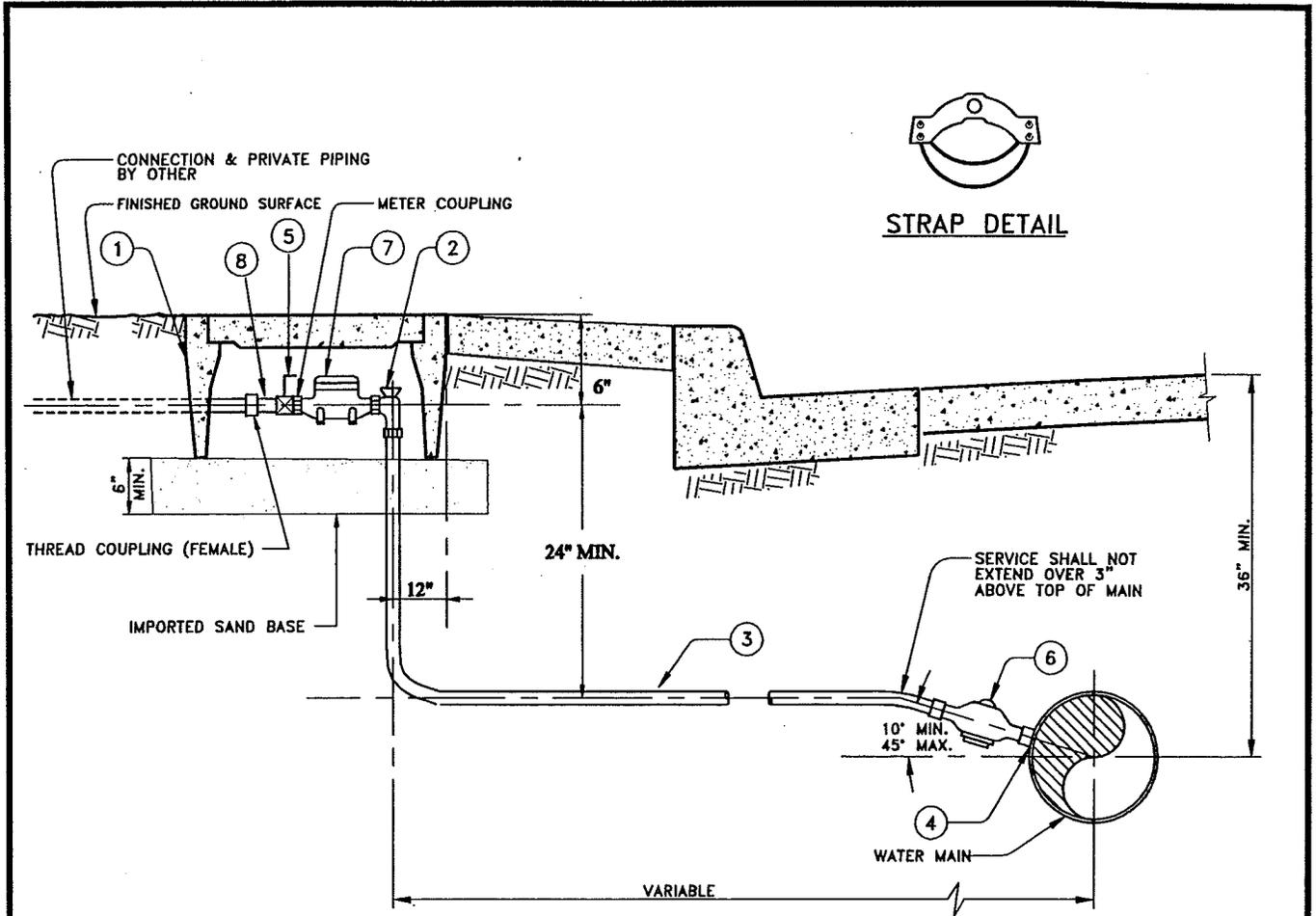
* USE OUTLET PIPE DIAMETER

WEST SAN BERNARDINO WATER COUNTY DISTRICT

ANTHONY ARAIZA
GENERAL MANAGER

CONCRETE THRUST BLOCKS FOR
PIPELINES, 200 P.S.I. MAX.

W-3B

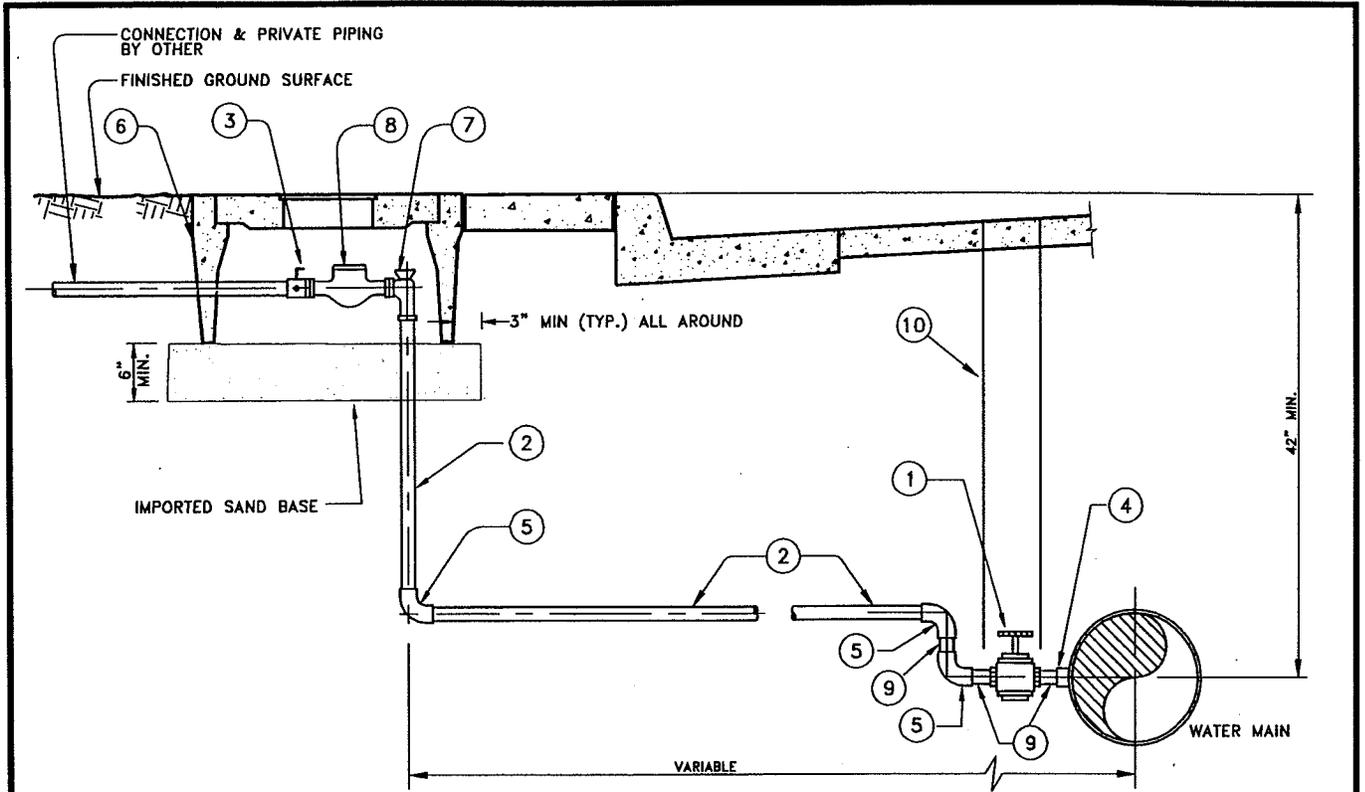


DESCRIPTION	
①	METER BOX AND COVER TO BE FURNISHED BY THE DISTRICT.
②	1" X 1" OR 1" X 3/4" INVERTED KEY ANGLE METER VALVE, PACK JOINT INLET X METER SWIVEL NUT OUTLET, FORD KV43, MULLER P-14258 OR APPROVED EQUAL.
③	1" COPPER WATER SERVICE, TYPE "K", SOFT TEMPER, PER ASTM B-88.
④	1" I.P.T. PAINTED DUCTILE IRON SERVICE SADDLE WITH DOUBLE STAINLESS STEEL STRAPS, FORD FS202, MULLER DB2S, ROMAC 202S, SMITH-BLAIR 317 OR APPROVED EQUAL
⑤	1" OR 3/4" BRASS BALL VALVE TO BE FURNISHED BY THE DISTRICT, FORD B-13 WITH HH-34 HIGH LEVEL HANDLE OR APPROVED EQUAL
⑥	1" # BALL CORP. STOP, I.P.T. INLET X PACK JOINT OUTLET, FORD FB1100, MULLER P-25028 OR APPROVED EQUAL.
⑦	METER TO BE FURNISHED BY THE DISTRICT. 3/4" OR 1"
⑧	THREADED PIPE NIPPLE, 3/4" OR 1"

NOTES:

1. CHISEL 1" HIGH " W " ON TOP OF CURB DIRECTLY OVER WATER SERVICE LATERAL

WEST SAN BERNARDINO COUNTY WATER DISTRICT	ANTHONY ARAIZA GENERAL MANAGER	WATER SERVICE DETAIL 3/4" & 1" METER	W-4



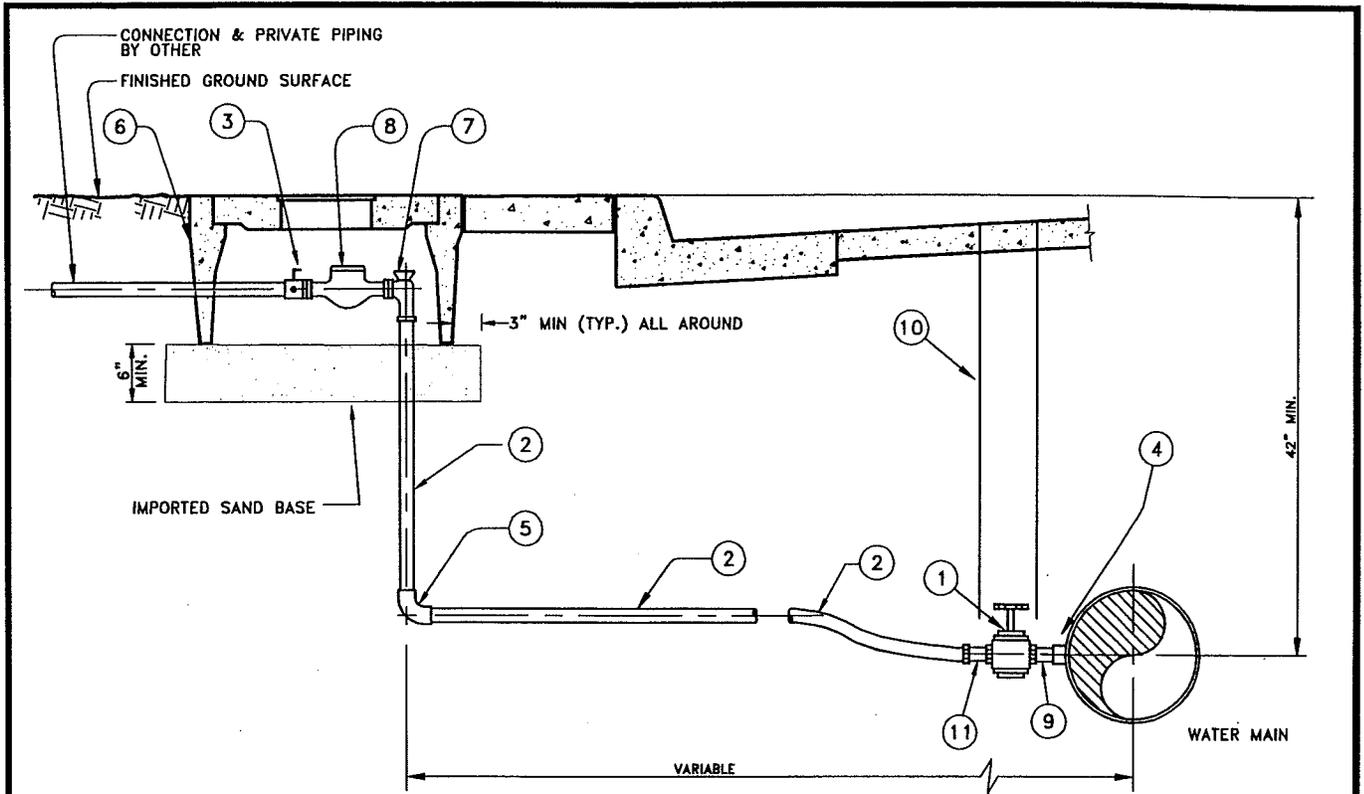
DESCRIPTION	
①	2" RESILIENT SEATED GATE VALVE, FEMALE X FEMALE IRON PIPE THREAD WITH 2" OPERATING NUT MUELLER A-2360 OR APPROVED EQUAL
②	2" SCHEDULE 40 GALVANIZED STEEL PIPE
③	1 1/2" OR 2" BRASS BALL METER VALVE TO BE FURNISHED BY THE DISTRICT, FORD BF-13 OR APPROVED EQUAL.
④	PAINTED IRON SERVICE SADDLE WITH DOUBLE STAINLESS STEEL STRAPS, FORD FS 202, MULLERDB2S, ROMAC 202S, SMITH-BLAIR 317 OR APPROVED EQUAL.
⑤	2" DIAMETER 90 ° GALVANIZED IRON ELBOW.
⑥	METER BOX AND COVER TO BE FURNISHED BY THE DISTRICT
⑦	2" INVERTED KEY ANGLE METER VALVE W/ I.P.T. INLET, METER FLANGE OUTLET AND LOCK WING, FORD FV-13 AND/OR FV-43, MULLER P-14277 OR APPROVED EQUAL.
⑧	1 1/2" OR 2" METER TO BE FURNISHED BY THE DISTRICT.
⑨	2" THREAD GALVANIZED IRON PIPE NIPPLE
⑩	VALVE BOX AND COVER PER STANDARD DRAWING NO. 11

NOTES:

1. CHISEL 1" HIGH " W " ON TOP OF CURB DIRECTLY OVER WATER SERVICE LATERAL
2. WRAP G.I.P. WITH 2 LAYERS OF 10 MILS PVC TAPE

FOR G.I.P. SERVICE LATERAL

WEST SAN BERNARDINO COUNTY WATER DISTRICT	ANTHONY ARAIZA GENERAL MANAGER	WATER SERVICE DETAIL 1 1/2" & 2" METER	W-5A



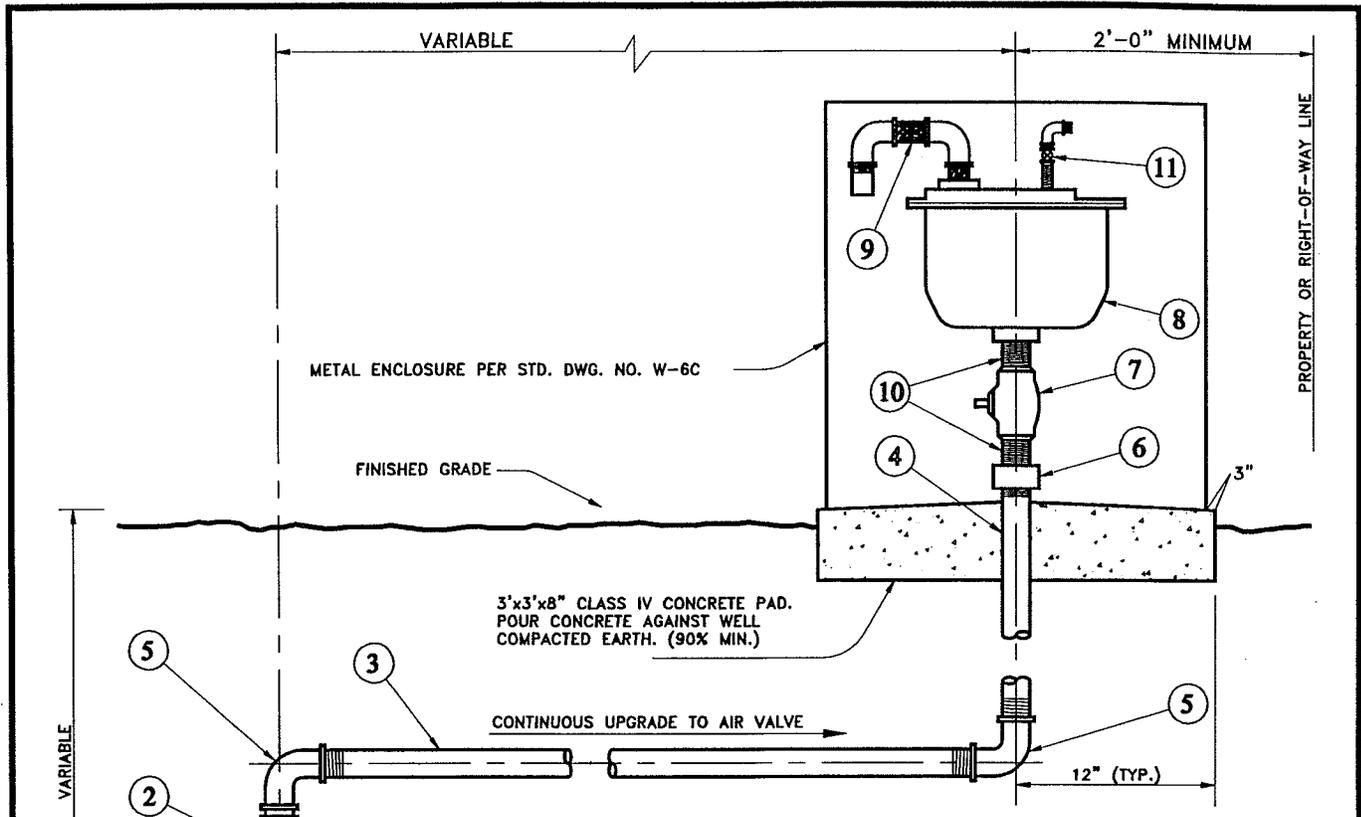
DESCRIPTION	
①	2" RESILIENT SEATED GATE VALVE, FEMALE X FEMALE IRON PIPE THREAD WITH 2" OPERATING NUT MUELLER A-2360 OR APPROVED EQUAL
②	2" TYPE K COPPER TUBING
③	1 1/2" OR 2" BRASS BALL METER VALVE, METER FLANGE X FEMALE IRON PIPE THREAD, FORD BF-13 OR APPROVED EQUAL.
④	PAINTED IRON SERVICE SADDLE WITH DOUBLE STAINLESS STEEL STRAPS, FORD FS 202, ROMAC 202S OR SMITH-BLAIR 317.
⑤	2" DIAMETER 90 ° SILVER SOLDERED ELBOW.
⑥	METER BOX AND COVER.
⑦	2" ANGLE METER VALVE W/ PACK JOINT INLET, METER FLANGE OUTLET AND LOCK WING, FORD FV-13 AND/OR FV-43, MULLER P-14277 OR APPROVED EQUAL.
⑧	1 1/2" OR 2" METER TO BE FURNISHED BY THE DISTRICT.
⑨	2" THREADED GALVANIZED PIPE NIPPLE
⑩	VALVE BOX AND COVER PER STANDARD DRAWING NO. 11
⑪	BRASS COUPLING, MALE IRON PIPE THREAD X PACK JOINT, FORD C-84 OR APPROVED EQUAL

NOTES:

1. CHISEL 1" HIGH " W " ON TOP OF CURB DIRECTLY OVER WATER SERVICE LATERAL
2. WRAP GIP PIPE WITH 2 LAYERS OF 10 MILS PVC TAPE

FOR COPPER TUBING SERVICE LATERAL

WEST SAN BERNARDINO COUNTY WATER DISTRICT		WATER SERVICE DETAIL 1 1/2" & 2" METER	W-5B
	ANTHONY ARAIZA GENERAL MANAGER		



ITEM	DESCRIPTION
①	SERVICE SADDLE PER STD. DWG. NO. W-4 OR 4A.
②	CORP. STOP PER STD. DWG. NO. 4 OR 4A.
③	TYPE K SOFT COPPER PIPE (1").
④	BRASS PIPE (1").
⑤	SILVER SOLDERED 90° ELBOWS OR COMPRESSION JOINT WITH LOCKING WINGS.
⑥	BRASS COUPLING AT SURFACE ON CONC.
⑦	BRASS OR BRONZE GLOBE VALVE (1").
⑧	"APCO" HEAVY DUTY COMB. AIR RELEASE VALVE.
⑨	STD. GALV. 90° ST. ELBOW; 3" LONG STD BLK NIPPLE T-2E; STD. BLK, 90° ELBOW; & 3" LONG STD GALV. NIPPLE T-1E. ORIENTED TO CLEAR AIR VALVE BODY. PROVIDE EXHAUST SCREEN.
⑩	BRASS PIPE NIPPLE, THREADED BOTH ENDS.
⑪	1/2" BRASS GATE VALVE, (NO HANDLE); 1/2" X 2" BRASS NIPPLE; 1/2" BRASS ST. EL..

ALL PIPE FITTINGS AND VALVES SHALL BE SAME DIAMETER AS AIR VALVE INLET.

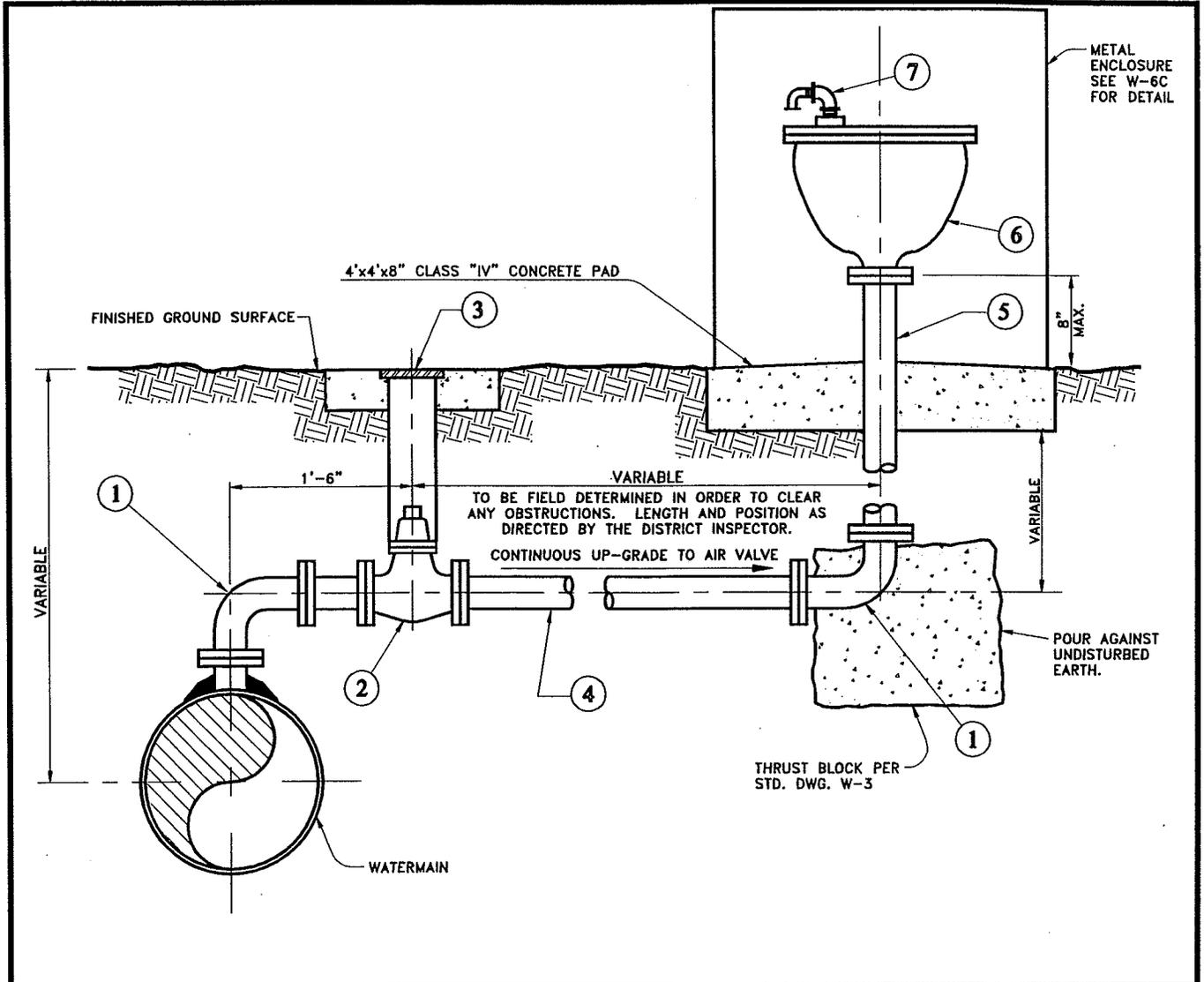
PIPE THREADS SHALL BE CLEAN AND SHARP AND SEALED WITH AN APPROVED JOINT COMPOUND.

WEST SAN BERNARDINO COUNTY WATER DISTRICT

 ANTHONY ARAIZA
 GENERAL MANAGER

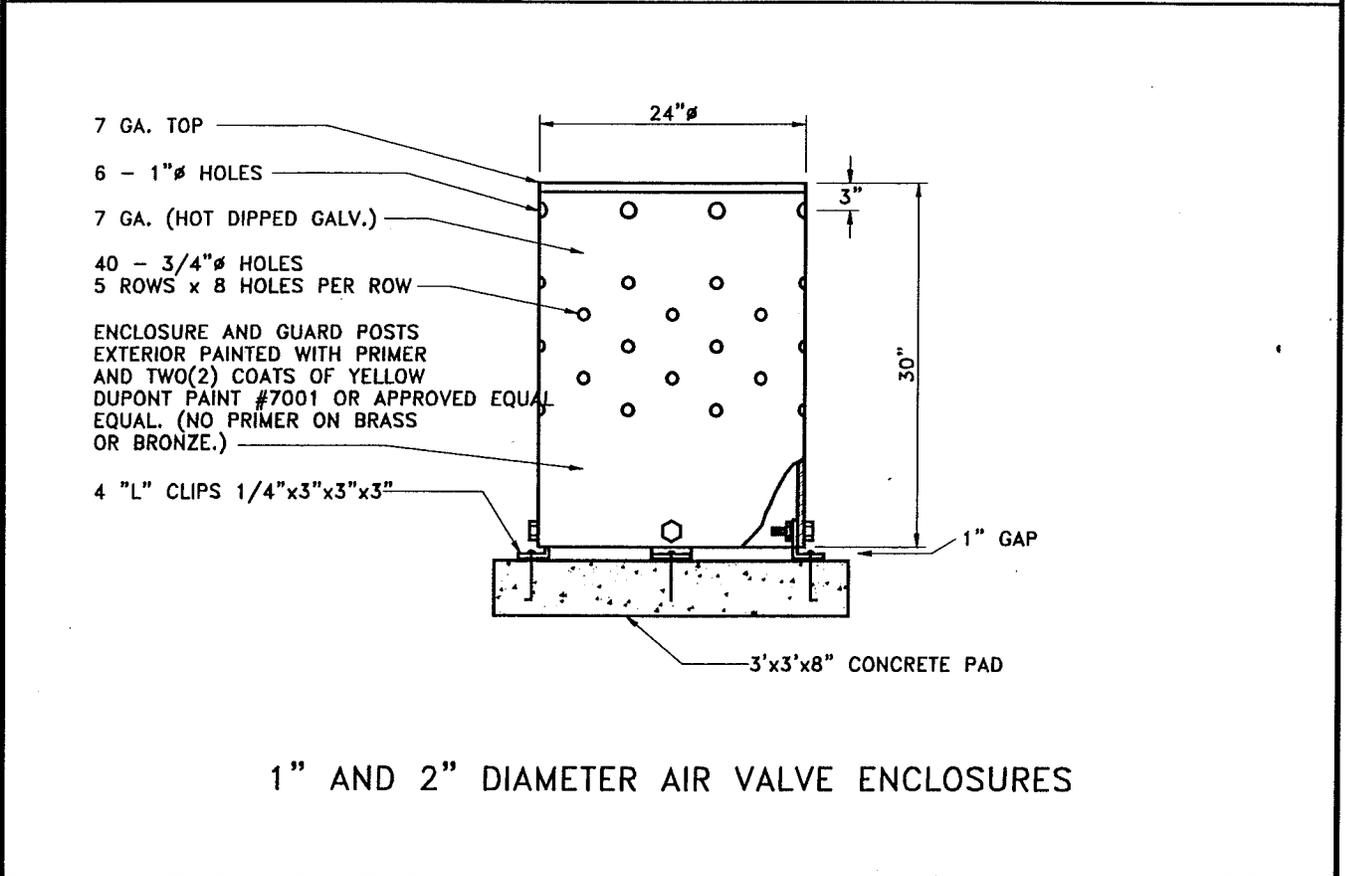
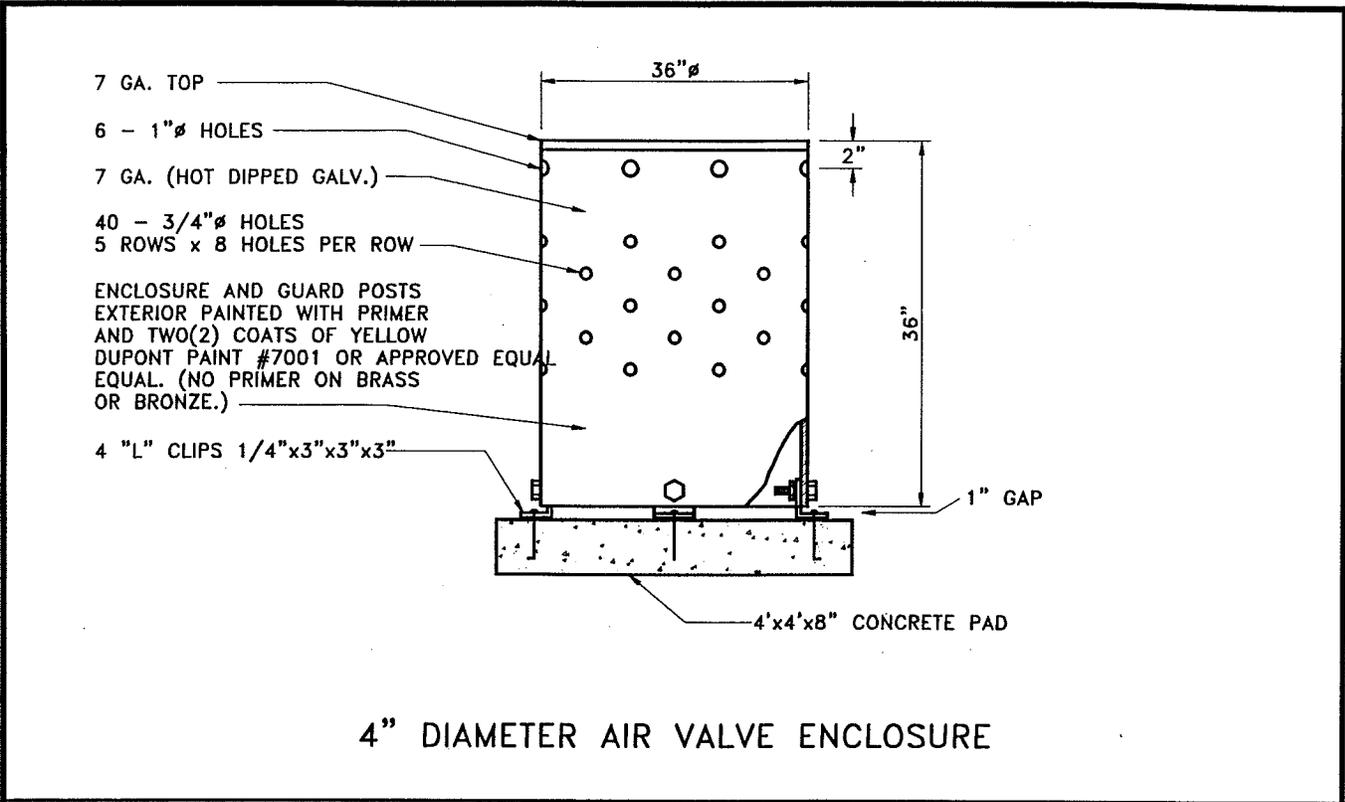
**AIR VALVE INSTALLATION
 FOR 1" DIAMETER ONLY**

W-6A

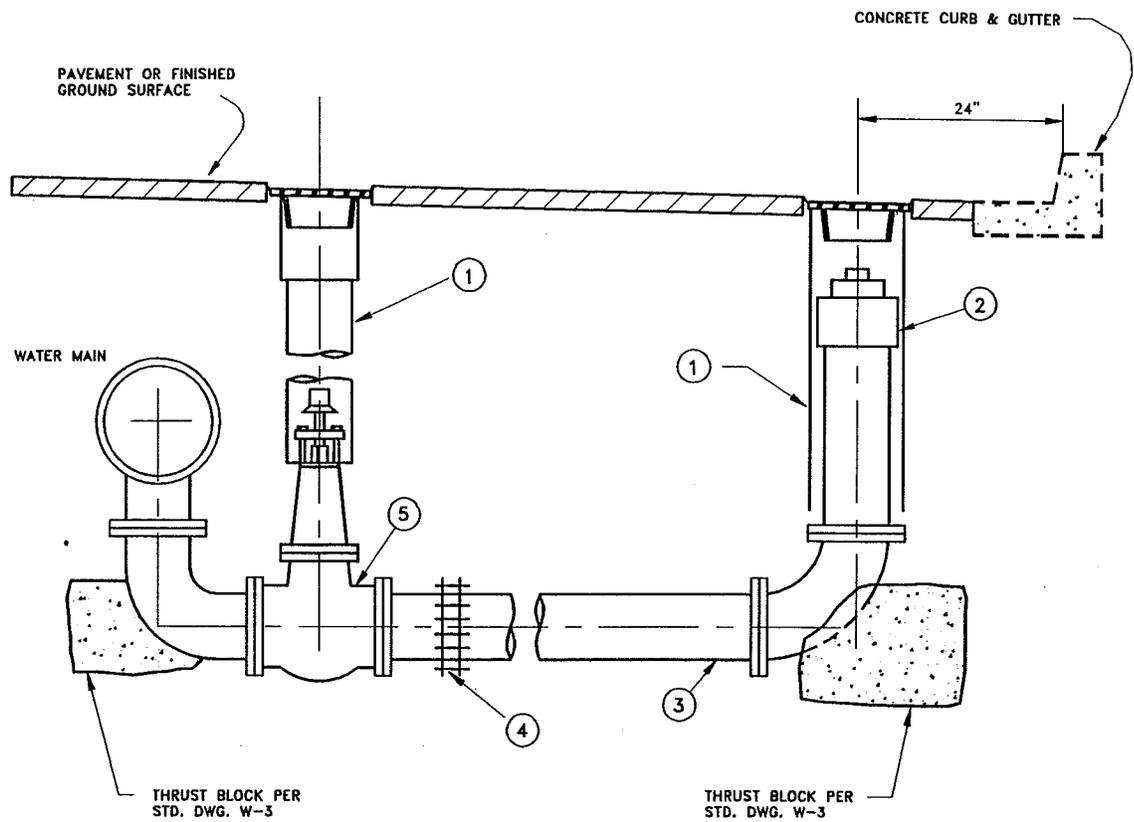


ITEM	DESCRIPTION
①	FL X FL 90° ELBOW, SIZE TO MATCH AIR VALVE
②	A.W.W.A. C-509 FLANGED RESILENT SEAT GATE VALVE, CLASS AS NOTED ON PLAN, 2" SQ. OPERATING NUT, MUELLER OR APPROVED EQUAL. SEE STD DWG W-11. SIZE TO MATCH AIR VALVE
③	8" VALVE BOX AND COVER PER STANDARD DWG. W-11.
④	SCH 40 STEEL PIPE, WRAPPED W/TWO LAYERS OF 10 MILS PVC TAPE FOR BELOW GROUND PORTION. SIZE TO MATCH AIR VALVE
⑤	SCH 40 FLG. SPOOL
⑥	"APCO" HEAVY DUTY COMBINATION AIR RELEASE VALVE, OR APPROVED EQUAL, CAST IRON BODY, STAINLESS STEEL AND BRONZE INTERNAL WORKING PARTS, STANDARD SCREWED OUTLET TOP AND FLANGED BOTTOM, 300 W.O.G. MODEL 149C. SIZE AS CALLED FOR ON PLAN
⑦	STANDARD WEIGHT GALV. 90° ELBOW W/EXHAUST SCREEN.

WEST SAN BERNARDINO COUNTY WATER DISTRICT	AIR VALVE INSTALLATION FOR 2" OR LARGER	W-6B
<i>ANTHONY ARAIZA</i> GENERAL MANAGER		



WEST SAN BERNARDINO COUNTY WATER DISTRICT	ANTHONY ARAIZA GENERAL MANAGER	AIR VALVE ENCLOSURES	W-6C
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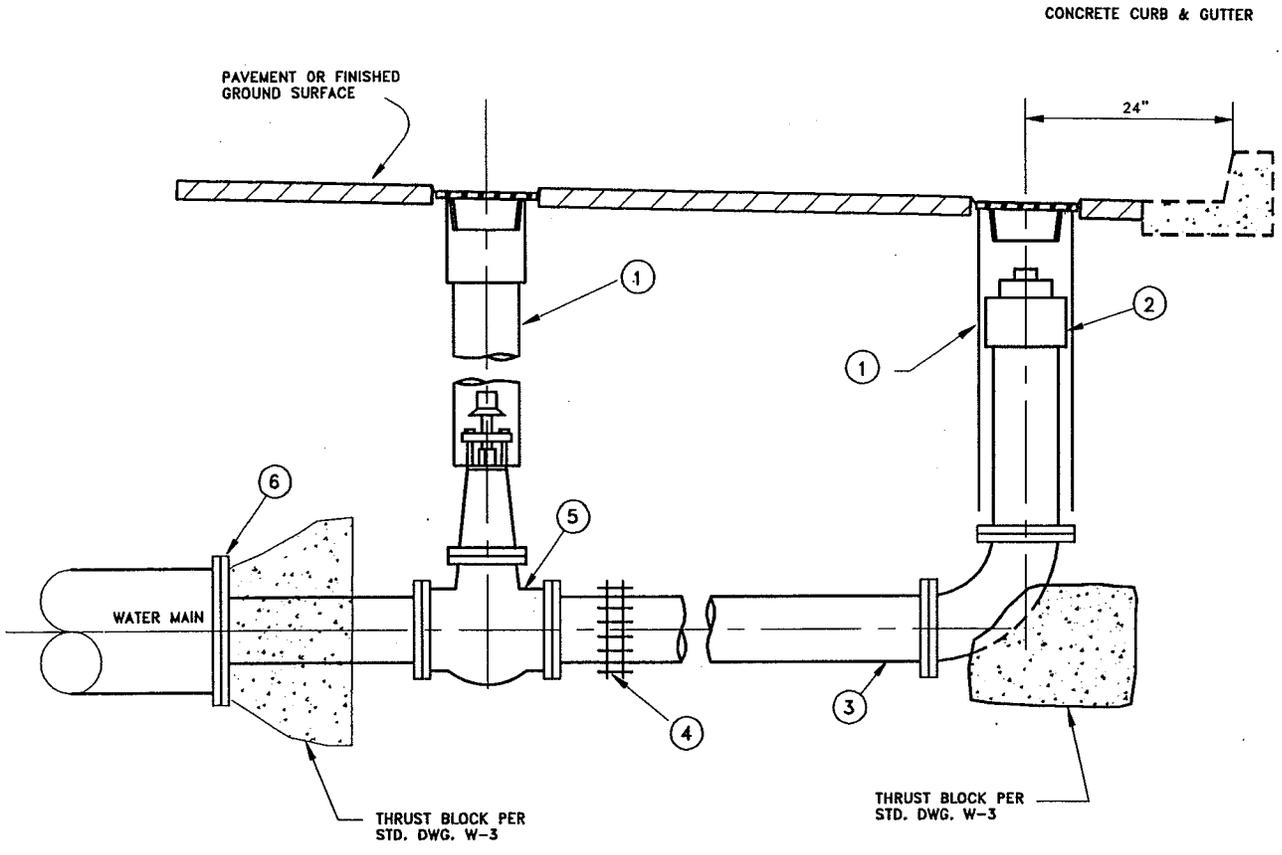


NOTES:

1. LOCATE BLOW-OFF VALVE CAN 2'-0" IN FRONT OF FACE CURB
2. 4" BLOW-OFF WILL BE REQUIRED FOR 6" - 12" WATER MAIN;
6" BLOW-OFF WILL BE REQUIRED FOR 14" AND LARGER WATER MAIN.
3. SIZE OF PIPE, VALVE AND FITTINGS SHALL CONFORM TO THE SIZE OF BLOW-OFF REQUIRED.

ITEM	DESCRIPTION
①	8" VALVE BOX AND COVER PER STANDARD DRAWING NO. 11
②	4" OR 6" THREAD GALVANIZED IRON PIPE COUPLING WITH SLOTTED PLUG
③	4" OR 6" SCHEDULE 40 STEEL PIPE, FIELD WRAPPED BELOW GROUND PART WITH TWO LAYERS OF 10 MILS PVC TAPE.
④	4" OR 6" FLEXIBLE COUPLING
⑤	4" OR 6" FxF R.S. GATE VALVE WITH PRESSURE RATING TO MATCH MAIN LINE. SEE W-11.

WEST SAN BERNARDINO COUNTY WATER DISTRICT	ANTHONY ARAIZA GENERAL MANAGER	4" & 6" BLOW-OFF ASSEMBLY	W-7
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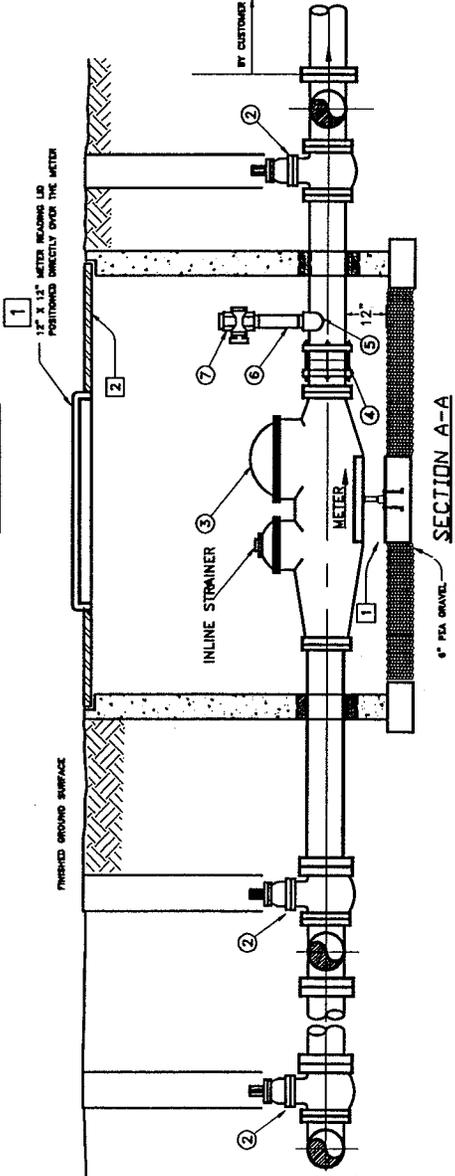
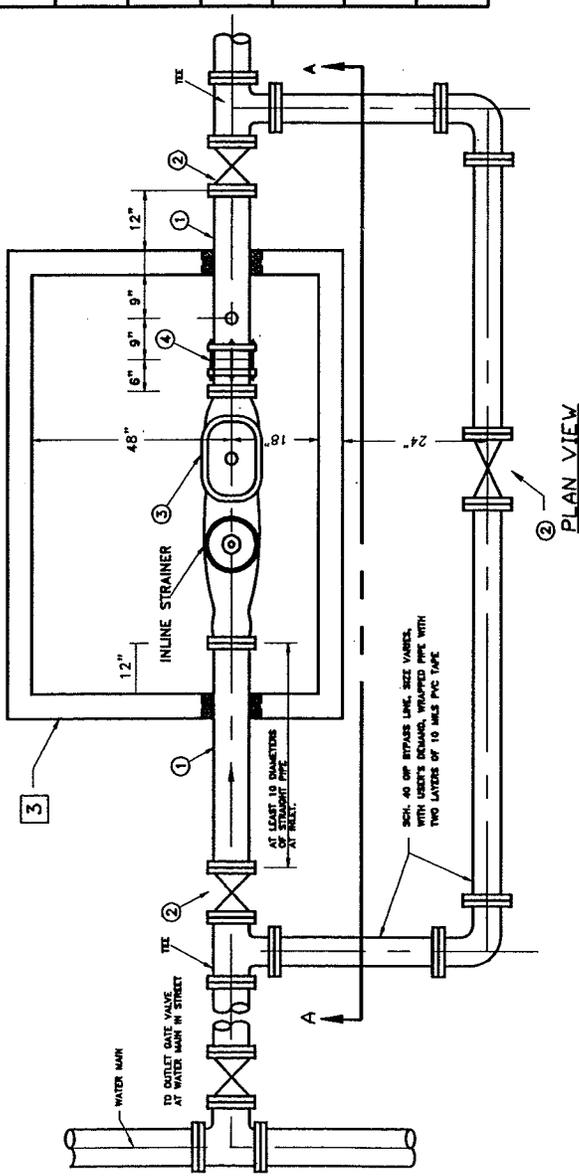
NOTES:

1. LOCATE DEAD-END FLUSH-OUT VALVE CAN 2'-0" IN FRONT OF FACE CURB
2. A 2" FLUSH-OUT SHALL BE REQUIRED FOR 6" AND SMALLER WATER MAIN.
A 4" FLUSH-OUT SHALL BE REQUIRED FOR 8" AND LARGER WATER MAIN.
3. SIZE OF PIPE, VALVE AND FITTINGS SHALL CONFORM TO THE SIZE OF FLUSH-OUT REQUIRED.

ITEM	DESCRIPTION
①	8" VALVE BOX AND COVER PER STANDARD DRAWING NO. 11
②	2" OR 4" THREAD GALVANIZED IRON PIPE COUPLING WITH SLOTTED PLUG
③	2" OR 4" SCHEDULE 40 GALVANIZED STEEL PIPE WRAPPED WITH TWO LAYERS OF 10 MILS PVC TAPE.
④	2" OR 4" FLEXIBLE COUPLING
⑤	2" OR 4" FxF R.S. GATE VALVE WITH PRESSURE RATING TO MATCH MAIN LINE. SEE W-11.
⑥	DUCTILE IRON PLUG OR CAP WITH 2" OR 4" THREADED OUTLET.

WEST SAN BERNARDINO COUNTY WATER DISTRICT	ANTHONY ARAIZA GENERAL MANAGER	2" & 4" DEAD-END FLUSH-OUT	W-8
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ITEM	QTY	DESCRIPTION
①	--	SCH. 40 STEEL PIPE, SAME SIZE AS METER, SEE PLAN FOR SIZE. WRAPPED WITH 2 LAYERS 10 MILS THICKNESS PVC TAPE
②	3	RESILIENT SEATED GATE VALVE AND VALVE BOX PER W-11, SAME SIZE AS METER.
③	1	METER TO BE PROVIDED BY THE DISTRICT.
④	1	FLEXIBLE COUPLING PER SPEC.
⑤	1	2" SCH. 40 GALVANIZED STEEL COUPLING WELDED TO PIPE.
⑥	1	2" Ø X 6" LONG SCH. 40 GALV. IRON PIPE THREADED BOTH ENDS.
⑦	1	2" Ø CURB STOP INSIDE I.P.T. X INSIDE I.P.T. OR APPROVED EQUAL.

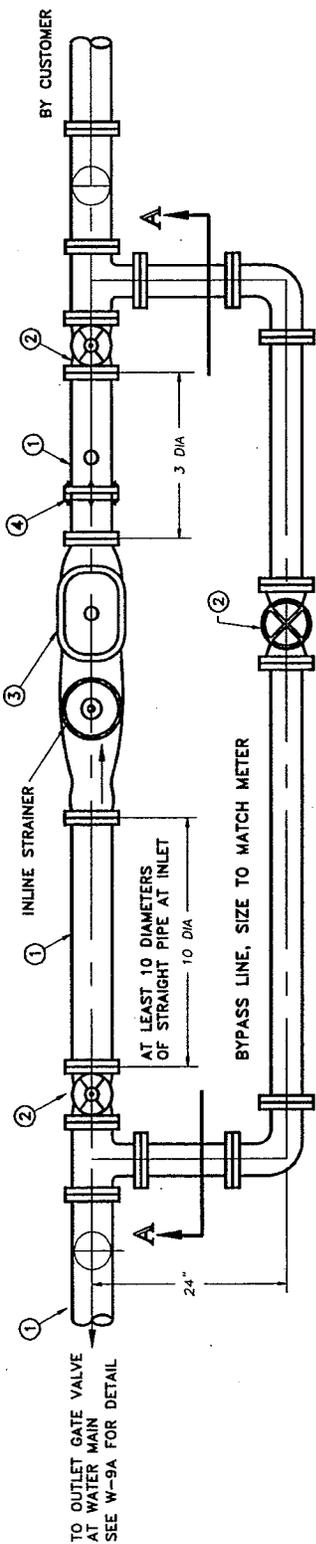


NOTES

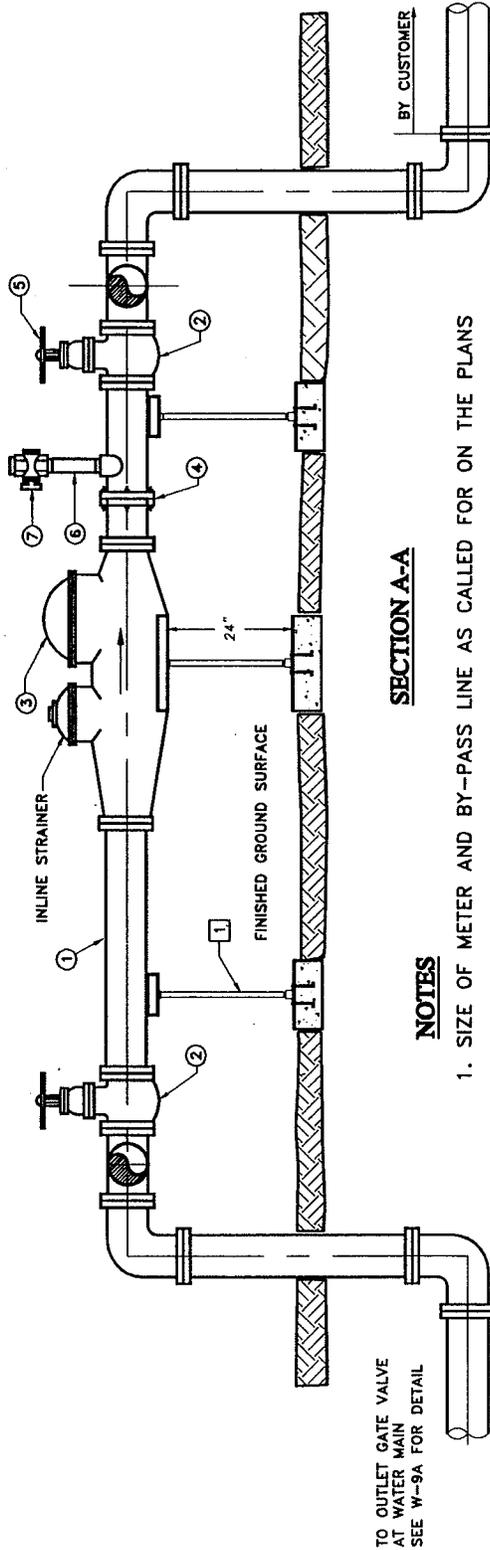
- METER AND GATE VALVES SHALL HAVE APPROVED PIPE SUPPORT.
- ADJUST VAULT AND COVER TO MEET CURB GRADE. VAULT COVER MUST BE OF ALUMINUM CONSTRUCTION WITH SPRING ACTION HINGES AND A 12"x12" READING LID COVER OVER THE METER.
- SIZE PRE CAST CONCRETE VAULT TO PROVIDE MINIMUM CLEARANCE AS SHOWN
- METER SIZE TO BE DETERMINED BY THE DISTRICT BASED ON CUSTOMER'S WATER DEMAND

FOR BELOW GROUND INSTALLATION

WEST SAN BERNARDINO COUNTY WATER DISTRICT	WATER SERVICE DETAIL
ANTHONY ARAIZA GENERAL MANAGER	3" AND LARGER TURBINE METER INSTALLATION
	W-9A



PLAN VIEW



SECTION A-A

NOTES

1. SIZE OF METER AND BY-PASS LINE AS CALLED FOR ON THE PLANS
2. METER AND GATE VALVES SHALL HAVE APPROVED PIPE SUPPORT.
3. INSTALL FITTINGS AND THRUST BLOCKS AS NEEDED

ITEM	QTY	DESCRIPTION
①	--	SCH.40 STEEL PIPE, SAME SIZE AS METER
②	3	RESILIENT SEATED GATE VALVE W/HANDWHEEL
③	1	METER TO BE FURNISHED BY THE DISTRICT
④	1	VICTAULIC COUPLING
⑤	1	2" STD. BLK. GALVANIZED STEEL COUPLING WELDED TO PIPE
⑥	1	2"φ X 6" LONG STD. WT. GALV. PIPE THREADED BOTH ENDS
⑦	1	2"φ CURB STOP INSIDE I.P.T. X INSIDE I.P.T.

FOR ABOVE GROUND INSTALLATION

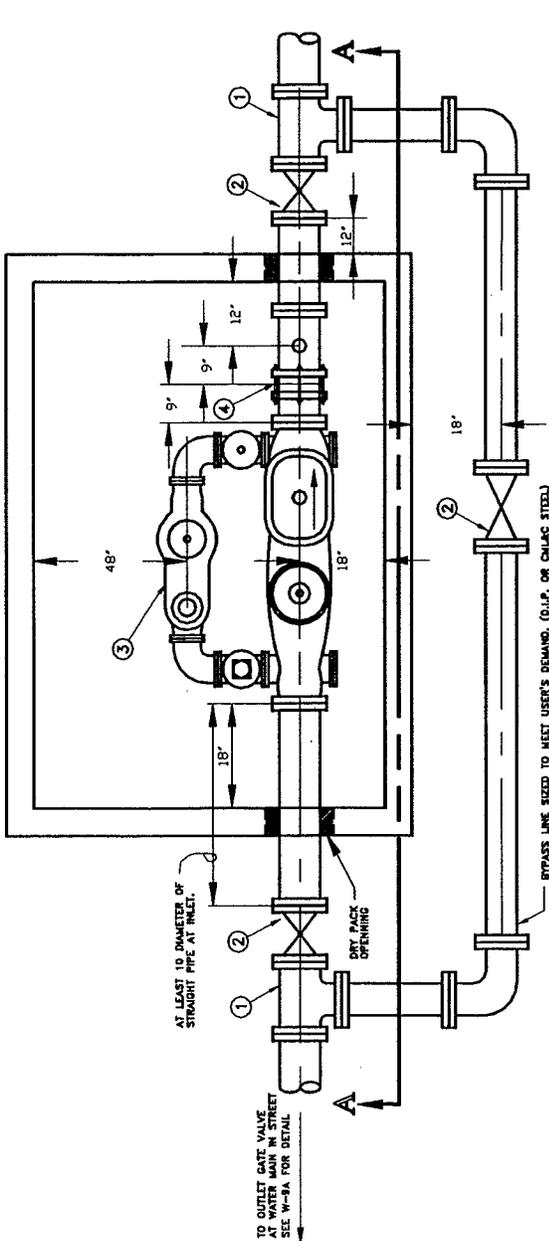
WEST SAN BERNARDINO COUNTY WATER DISTRICT
ANTHONY ARAJZA
 GENERAL MANAGER

WATER SERVICE DETAIL
3" AND LARGER METER
 TURBINE METER INSTALLATION

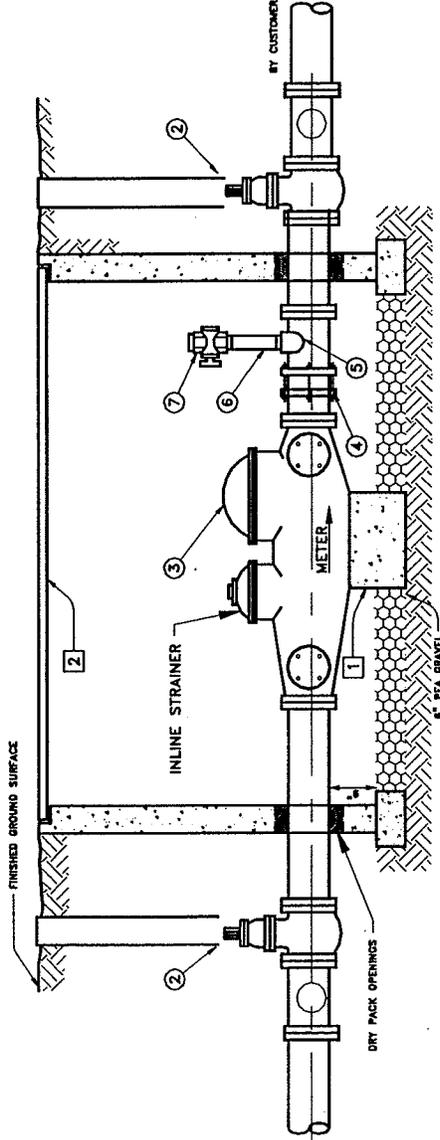
W-9B

ITEM	QTY	DESCRIPTION
1	2	FLANGED TEL. SIZE TO MATCH METER, WITH SIDE OUTLET TO MEET USER'S DEMAND
2	3	RESILIENT SEAT GATE VALVE PER SPECIFICATION W/VALVE BOX & COVER, SIZE TO MATCH LINE SIZE.
3	1	COMPOUND METER TO BE FURNISHED BY THE DISTRICT.
4	1	FLEXIBLE COUPLING
5	1	2" STD. BLK. COUPLING WELDED TO PIPE.
6	1	2" X 6" LONG STD. WT. GALV. PIPE THREADED BOTH ENDS.
7	1	2" CURB STOP INSIDE L.P.T. X INSIDE L.P.T. JONES MODEL J-200 OR APPROVED EQUAL

- 1—SUPPORT METER ON CONCRETE BLOCKS.
- 2—ADJUST VAULT AND COVER TO MEET CURB GRADE. PAINT EXTERIOR OF COVER WITH RED LEAD PRIMER AND TWO(2) COATS OF ALUMINUM PAINT. PAINT UNDER SIDE WITH KOPPERS #90 BITUMINASTIC OR SUPER TANK.
- 3—SIZE PRECAST CONCRETE VAULT TO PROVIDE MINIMUM CLEARANCE AS SHOWN.



PLAN VIEW



SECTION A-A

FOR BELOW GROUND INSTALLATION

WEST SAN BERNARDINO COUNTY WATER DISTRICT
 ANTHONY ARAIZA
 GENERAL MANAGER

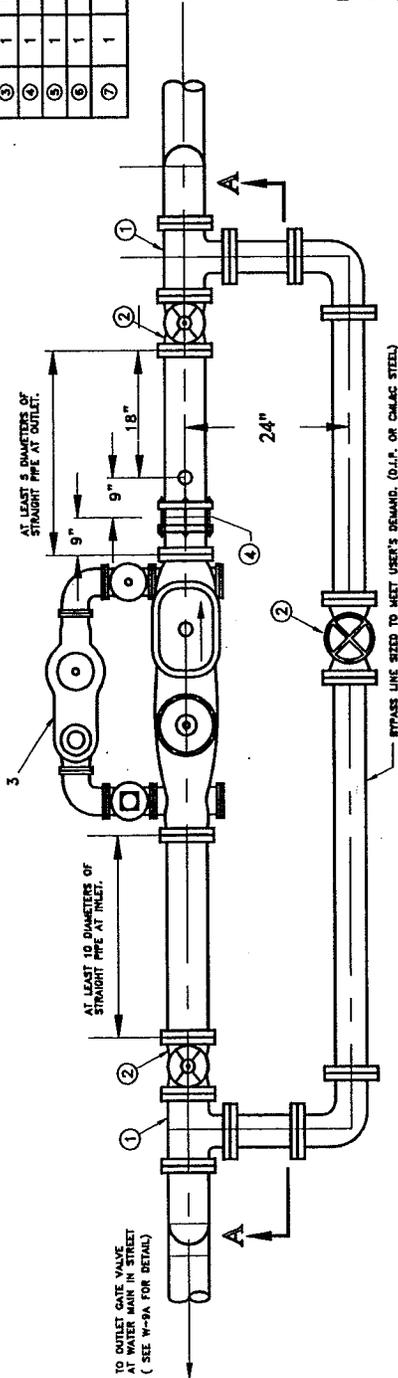
WATER SERVICE DETAIL
 3" AND LARGER METER
 COMPOUND METER INSTALLATION

W-10A

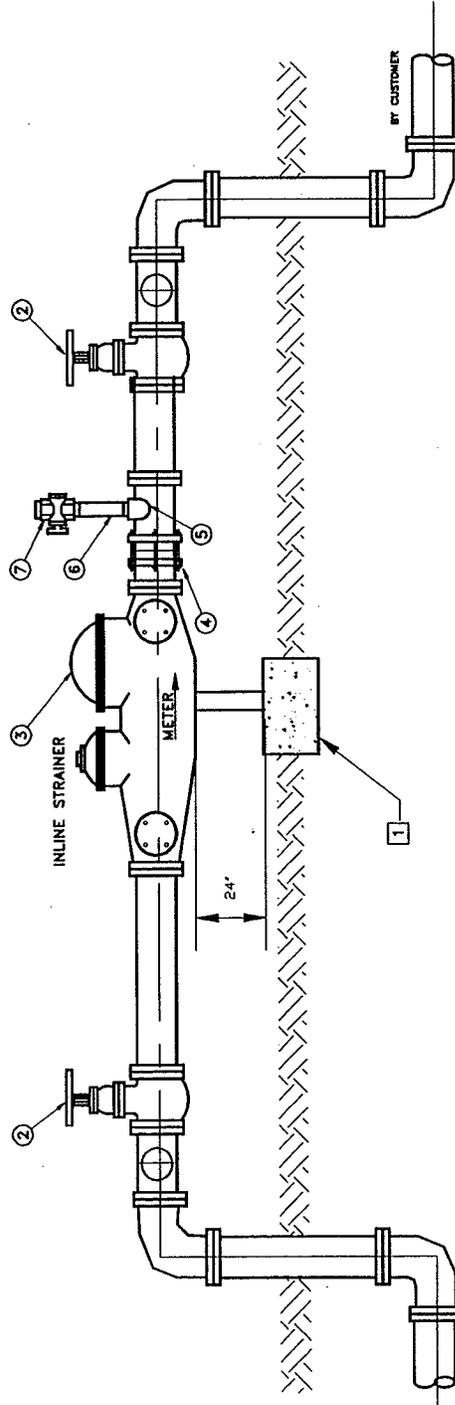
ITEM	QTY	DESCRIPTION
①	2	FLANGED TEE, SIZE TO MATCH METER, WITH SIDE OUTLET TO MEET USER'S DEMAND
②	3	RESILIENT SEAT GATE VALVE PER SPECIFICATION W/VALVE BOX & COVER, SIZE TO MATCH LINE SIZE, MUELLER OR APPROVED EQUAL.
③	1	COMPOUND METER PURCHASED FROM THE DISTRICT, 4", 6", 8", & 8"
④	1	FLEXIBLE COUPLING
⑤	1	2" STD. B.L.C. COUPLING WELDED TO PIPE.
⑥	1	2 7/8" X 6" LONG STD. WT. GALV. PIPE THREADED BOTH ENDS.
⑦	1	2 7/8" CURB STOP INSIDE I.P.T. X INSIDE I.P.T. JONES MODEL J-200 OR APPROVED EQUAL.

NOTES:

1. METERS AND GATE VALVE SHALL APPROVED PIPE SUPPORT
2. 24" MINIMUM CLEARANCE REQUIRED AROUND METER
3. DEPENDING ON THE RIGHT-OF-WAY, METER MAY HAVE TO BE INSTALLED PARALLEL TO PROPERTY LINE



PLAN VIEW



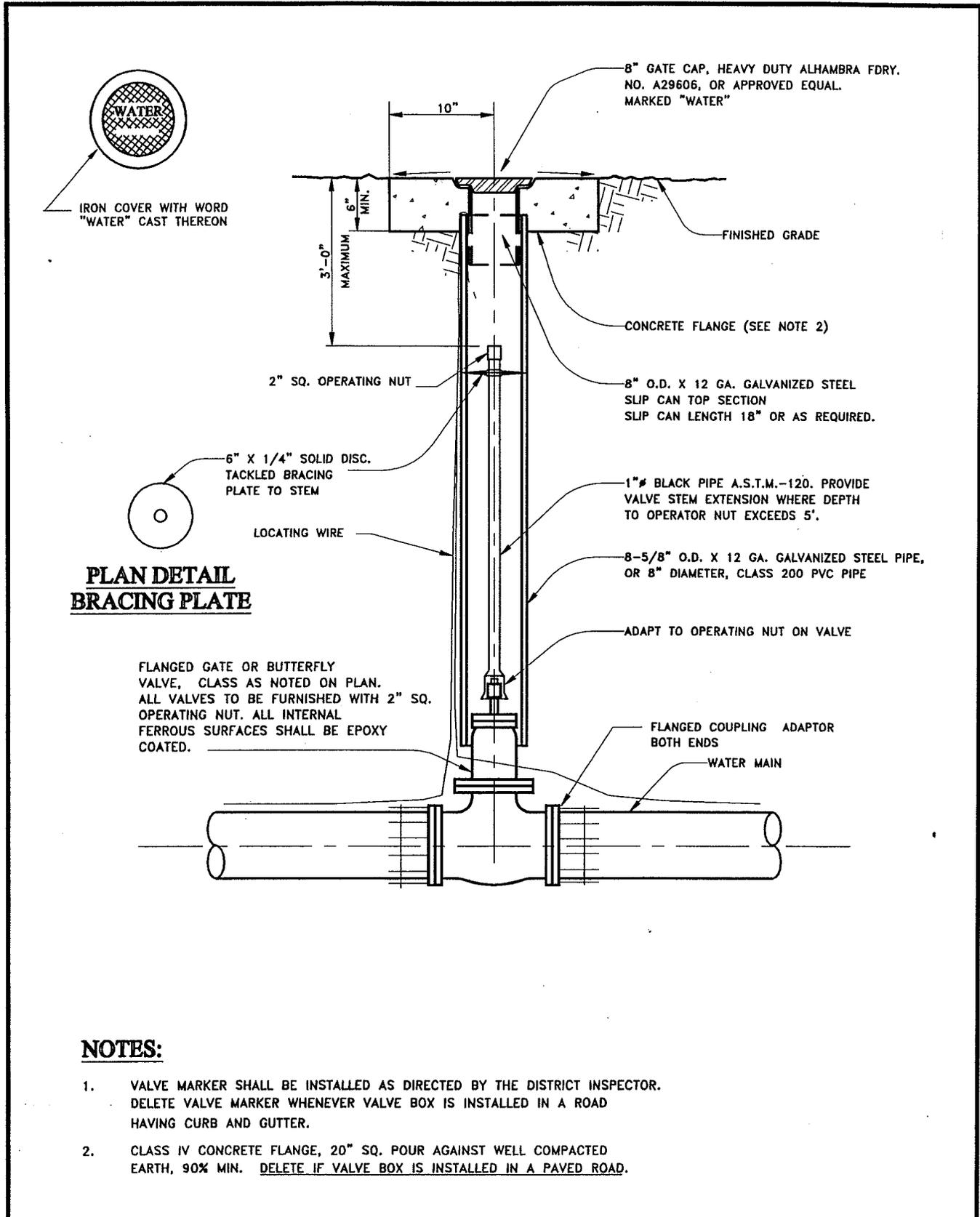
SECTION A-A

FOR ABOVE GROUND INSTALLATION

WEST SAN BERNARDINO COUNTY WATER DISTRICT
ANTHONY ARAIZA GENERAL MANAGER

WATER SERVICE DETAIL
3" AND LARGER METER
COMPOUND METER INSTALLATION

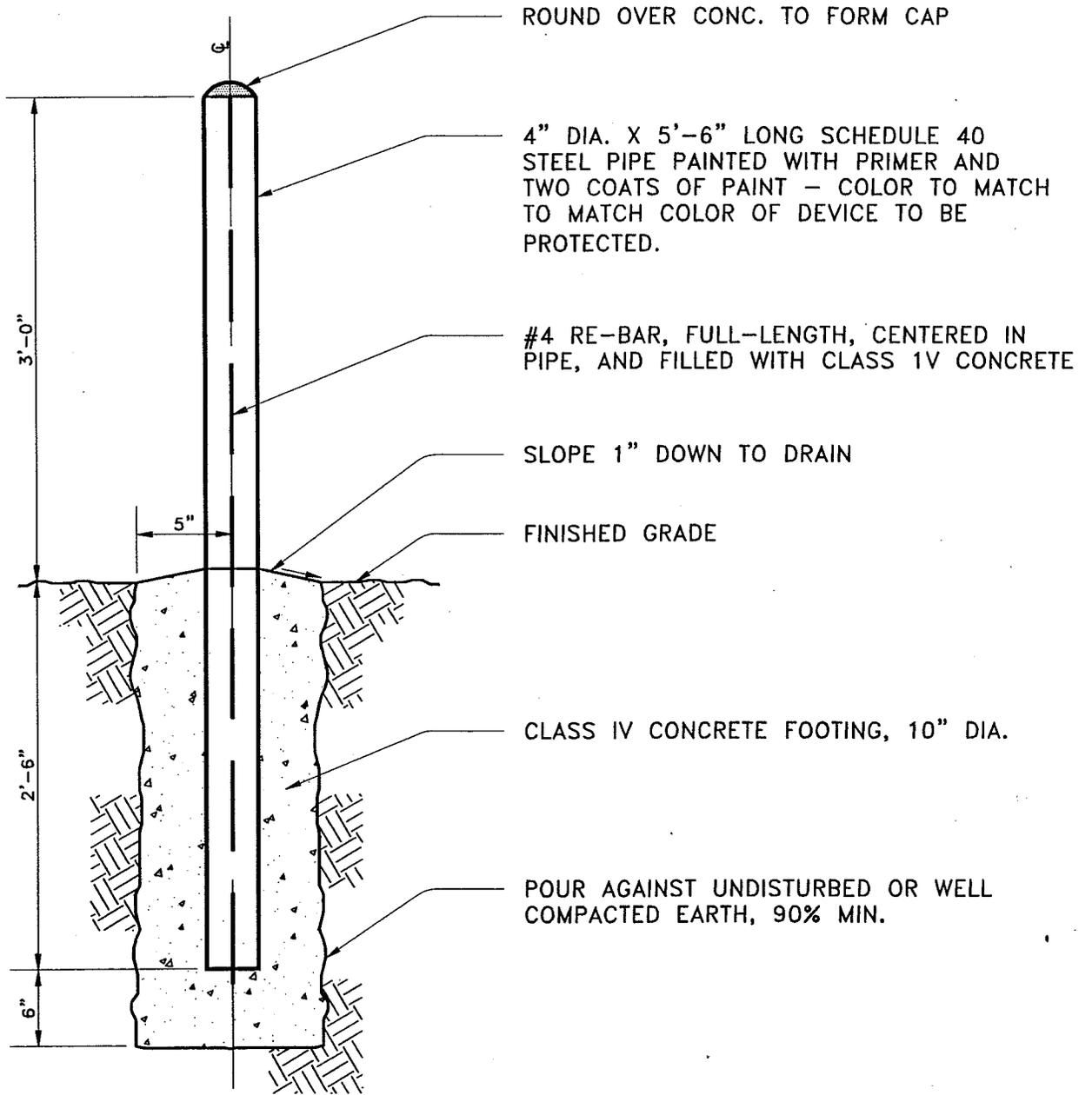
W-10B



NOTES:

1. VALVE MARKER SHALL BE INSTALLED AS DIRECTED BY THE DISTRICT INSPECTOR. DELETE VALVE MARKER WHENEVER VALVE BOX IS INSTALLED IN A ROAD HAVING CURB AND GUTTER.
2. CLASS IV CONCRETE FLANGE, 20" SQ. POUR AGAINST WELL COMPACTED EARTH, 90% MIN. DELETE IF VALVE BOX IS INSTALLED IN A PAVED ROAD.

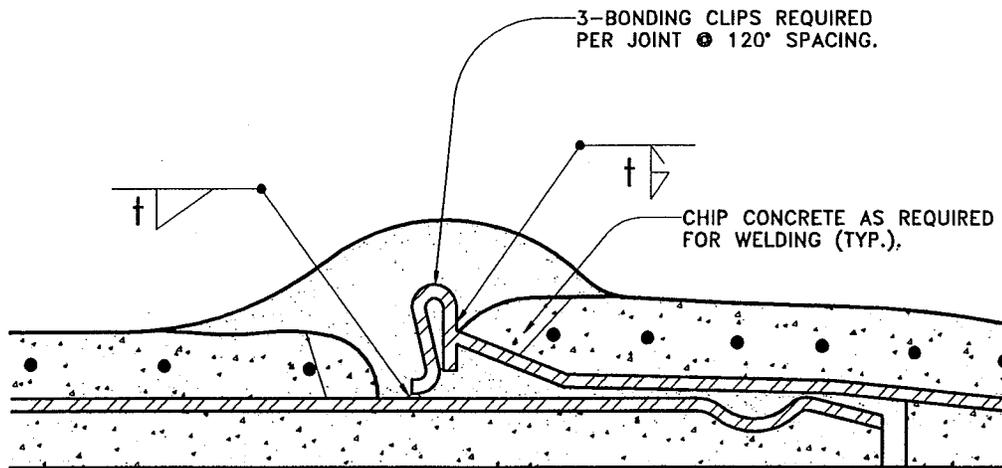
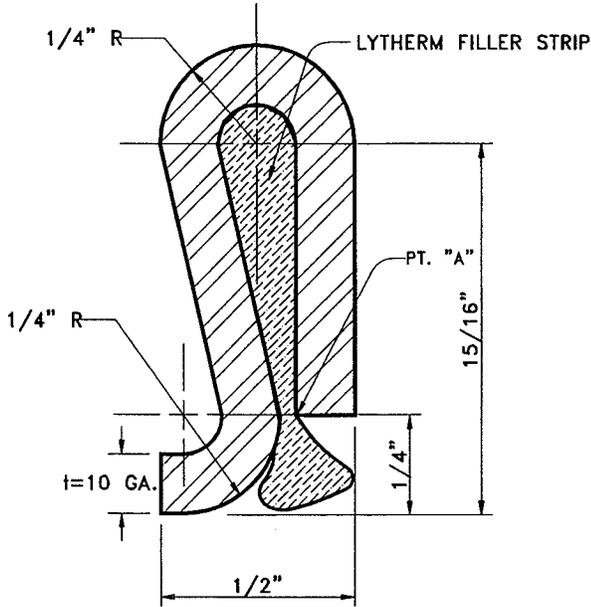
WEST SAN BERNARDINO COUNTY WATER DISTRICT	ANTHONY ARAIZA GENERAL MANAGER	VALVE AND VALVE BOX INSTALLATION DETAIL	W-11
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NOTE:

LOCATION SHALL BE AS SHOWN ON PLAN VIEW, OR AS DIRECTED IN THE FIELD BY THE DISTRICT INSPECTOR OR ENGINEER.

WEST SAN BERNARDINO COUNTY WATER DISTRICT	<p>GUARD POST INSTALLATION DETAIL</p>	<p>W-12</p>
<p>ANTHONY ARAIZA GENERAL MANAGER</p>		

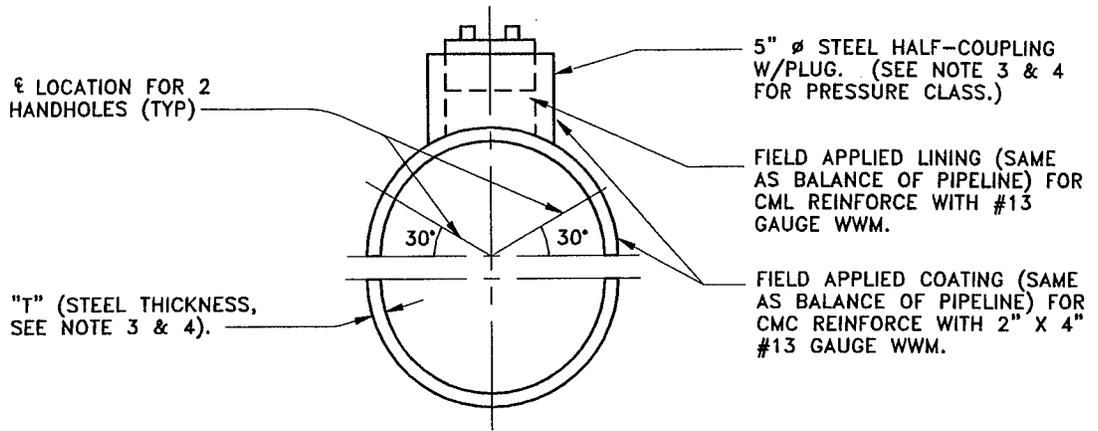


FIELD INSTALLATION

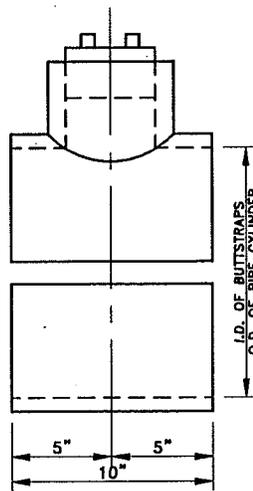
NOTES:

- 1. STEEL BONDING CLIP:
 MATERIAL SPECIFICATION: ASTM A366 (COMMERCIAL QUALITY).
 CUT LENGTH: 2-1/2" ± 1/16"
 WIDTH: 1-1/4" ± 1/16"
- 2. LYTHERM FILLER STRIP TO BE 1" x 1-1/2" WIDE TO OVERLAP SIDES OF CLIP.
- 3. CRIMP BONDING CLIP OVER FILLER AT "A" TO COMPRESS FILLER.

WEST SAN BERNARDINO COUNTY WATER DISTRICT		BONDING CLIP DETAIL	W-13
	ANTHONY ARAIZA GENERAL MANAGER		



END VIEW



SIDE VIEW

NOTES:

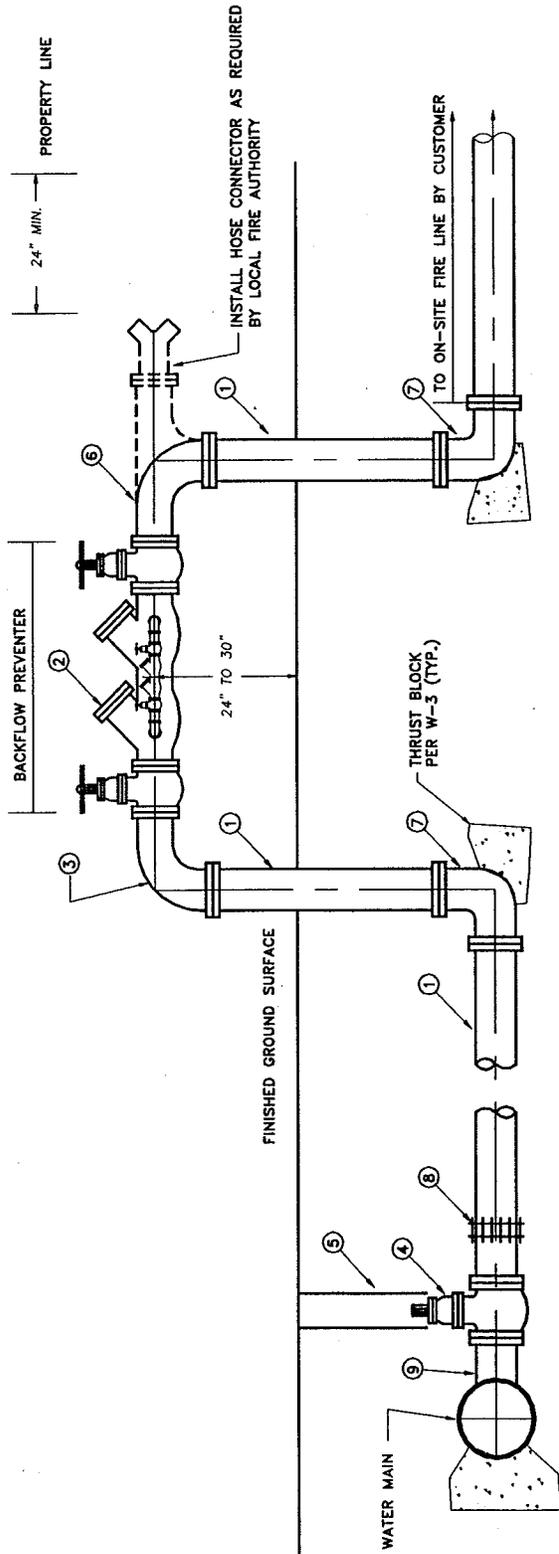
1. 1 HANDHOLE REQUIRED FOR 4" ϕ PIPE THROUGH 18" ϕ PIPE.
2. 2 HANDHOLES REQUIRED FOR 20" ϕ PIPE THROUGH 30" ϕ PIPE.
3. UP TO CLASS 200 PIPELINES:
 "T"=3/16" FOR 4" ϕ THROUGH 24" ϕ .
 "T"=1/4" FOR 30" ϕ
 5"-BLACK, HALF-COUPLING, CLASS 150, CRANE OR APPROVED EQUAL.
 5"-BLACK, CORED, BAR PLUG, CLASS 150, CRANE OR APPROVED EQUAL.
4. GREATER THAN CLASS 200 THROUGH CLASS 350 PIPELINES:
 "T"=3/16" FOR 4" ϕ THROUGH 14" ϕ .
 "T"=1/4" FOR 16" ϕ THROUGH 20" ϕ .
 "T"=5/16" FOR 24" ϕ .
 "T"=3/8" FOR 30" ϕ .
 5"+BLACK, HALF-COUPLING, CLASS 300, CRANE OR APPROVED EQUAL.
 5"+BLACK, SOLID, BAR PLUG, CLASS 300, CRANE OR APPROVED EQUAL.
5. SEAL THREADS WITH A NON-TOXIC COMPOUND.

WEST SAN BERNARDINO COUNTY WATER DISTRICT

ANTHONY ARAIZA
GENERAL MANAGER

BUTT STRAP DETAIL

W-14



ITEM	DESCRIPTION
①	BRANCH PIPELINE (SIZE = SIZE OF BACKFLOW PREVENTER + 2") SCHEDULE 40 STEEL PIPE WRAPPED WITH TWO LAYERS OF 10 MILS PVC TAPE
②	DOUBLE CHECK/ DETECTOR CHECK BACKFLOW PREVENTER, FEBCO, WILKIN OR APPROVED EQUAL. SIZE AS CALL FOR ON THE DRAWING
③	FLANGED 90 % REDUCING ELBOW
④	GATE VALVE WITH 2" OPERATING NUT. (SIZE = LINE SIZE)
⑤	8" VALVE BOX AND COVER PER STANDARD DRAWING W-11
⑥	FLANGED 90 % REDUCING ELBOW OR FLANGED TEE WHEN HOSE CONNECTOR IS REQUIRED
⑦	FLANGED 90 % ELBOW OR WELDED ELBOW
⑧	FLEXIBLE COUPLING OR FLANGED COUPLING ADAPTOR
⑨	FLANGED TEE

NOTES

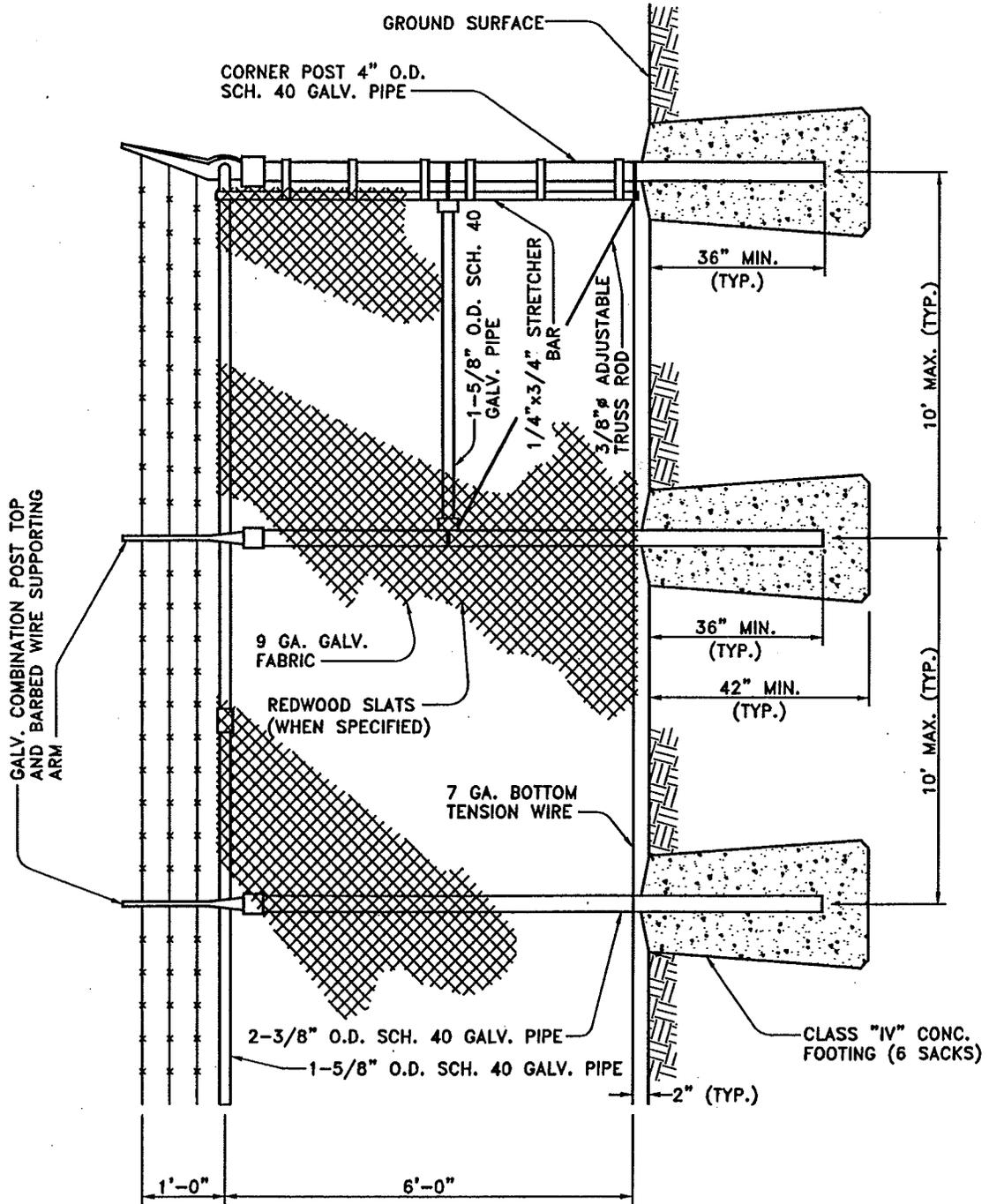
1. 24" MINIMUM CLEARANCE REQUIRED AROUND THE DEVICE
2. DEPENDING ON THE RIGHT-OF-WAY, DEVICE MAY HAVE TO BE INSTALLED PARALLEL TO PROPERTY LINE
3. PAINT THE DEVICE IN GREEN COLOR PER SPECIFICATION

**FIRE SERVICE
INSTALLATION DETAIL
W-15**

WEST SAN BERNARDINO COUNTY WATER DISTRICT
ANTHONY ARAIZA
GENERAL MANAGER

NOTES:

1. DIAMETER OF CONCRETE FOOTING SHALL BE 3 TIMES O.D. OF POST OR 8" MINIMUM.
2. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND SHALL BE APPROVED BY THE DISTRICT.

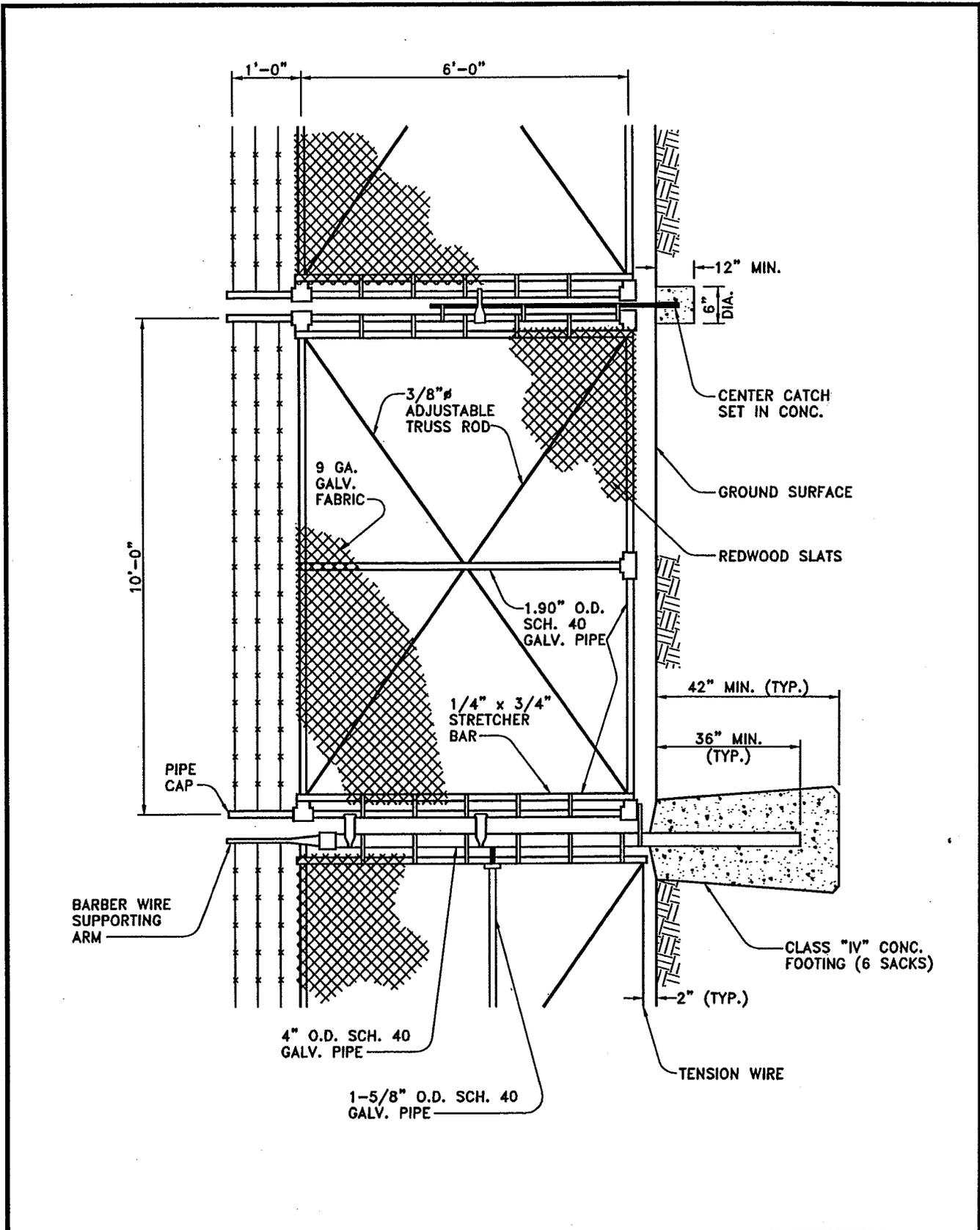


WEST SAN BERNARDINO COUNTY WATER DISTRICT

ANTHONY ARAIZA
GENERAL MANAGER

CHAIN LINK FENCE DETAIL

W-16

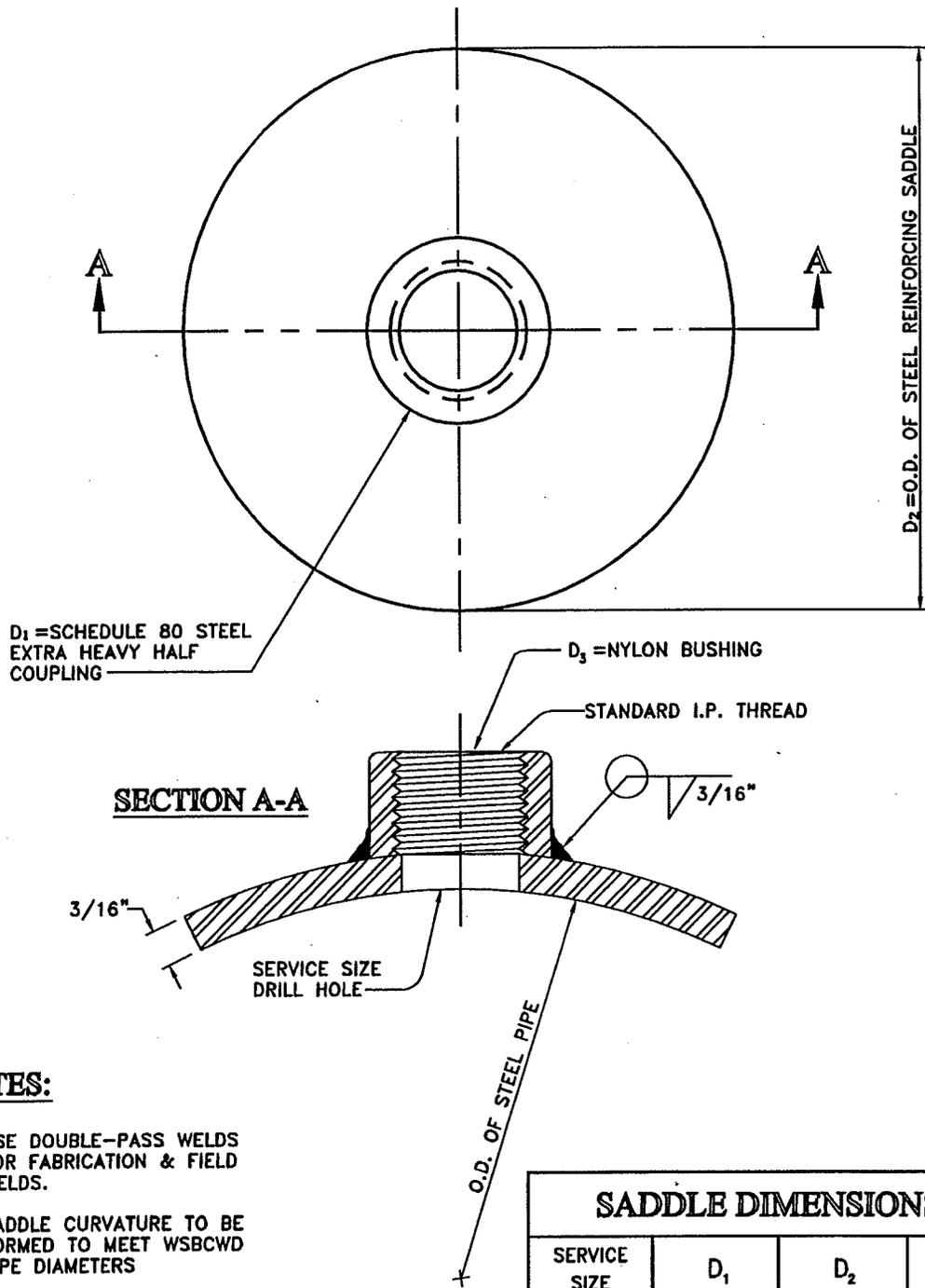


WEST SAN BERNARDINO COUNTY WATER DISTRICT

ANATHONY ARAIZA
GENERAL MANAGER

CHAIN LINK FENCE
GATE DETAIL

W-17



NOTES:

1. USE DOUBLE-PASS WELDS FOR FABRICATION & FIELD WELDS.
2. SADDLE CURVATURE TO BE FORMED TO MEET WSBOWD PIPE DIAMETERS
3. WHEN INSTALLED, OUTLET TO BE COATED WITH SAME COATING AS PIPE.
4. I.P. X I.P. NYLON BUSHING (USE I.P. X M.J. CORP. STOP).

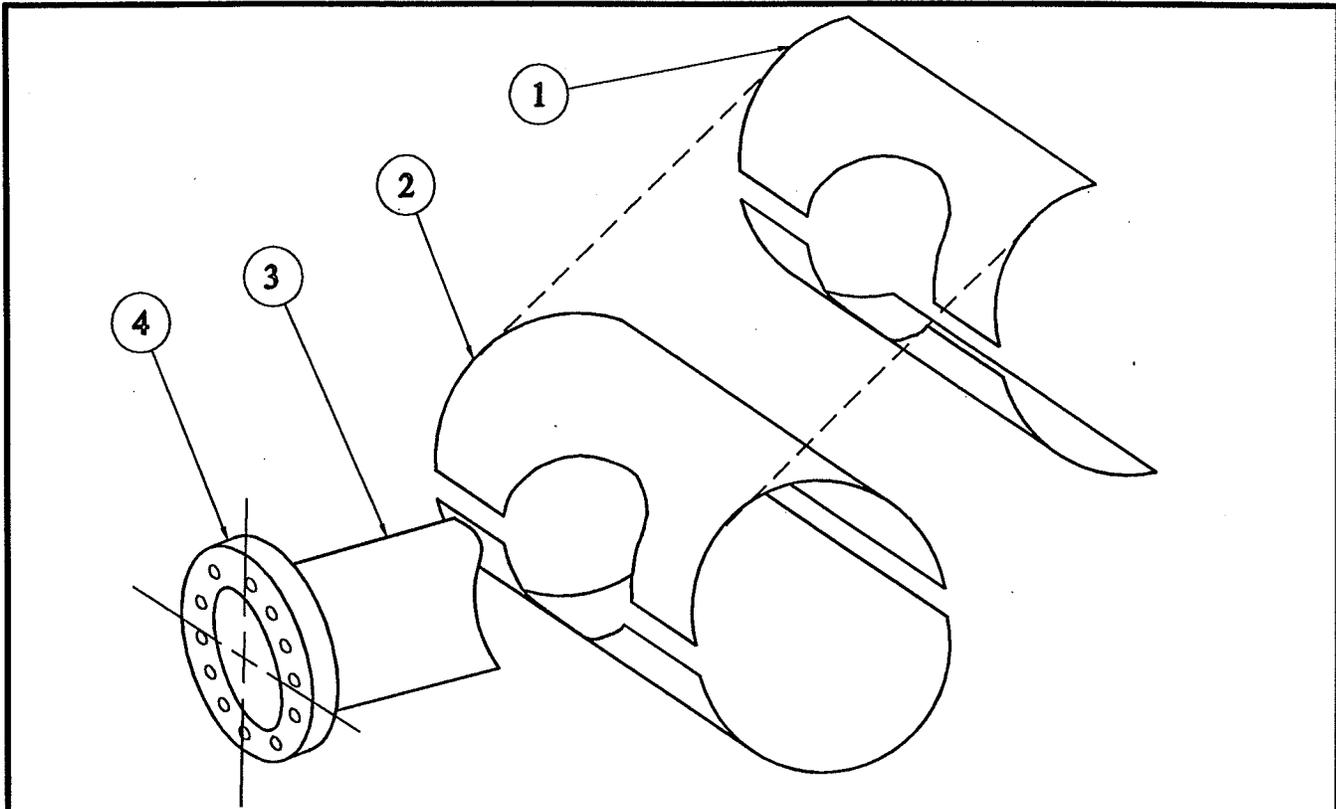
SADDLE DIMENSIONS			
SERVICE SIZE	D ₁	D ₂	D ₃
1"	2"	5"	1-1/2"
1-1/2"	2-1/2"	6"	2"
2"	3"	7"	2-1/2"

WEST SAN BERNARDINO COUNTY WATER DISTRICT

ANTHONY ARAIZA
GENERAL MANAGER

TAPPING OUTLET FOR STEEL PIPE
1" THROUGH 2"

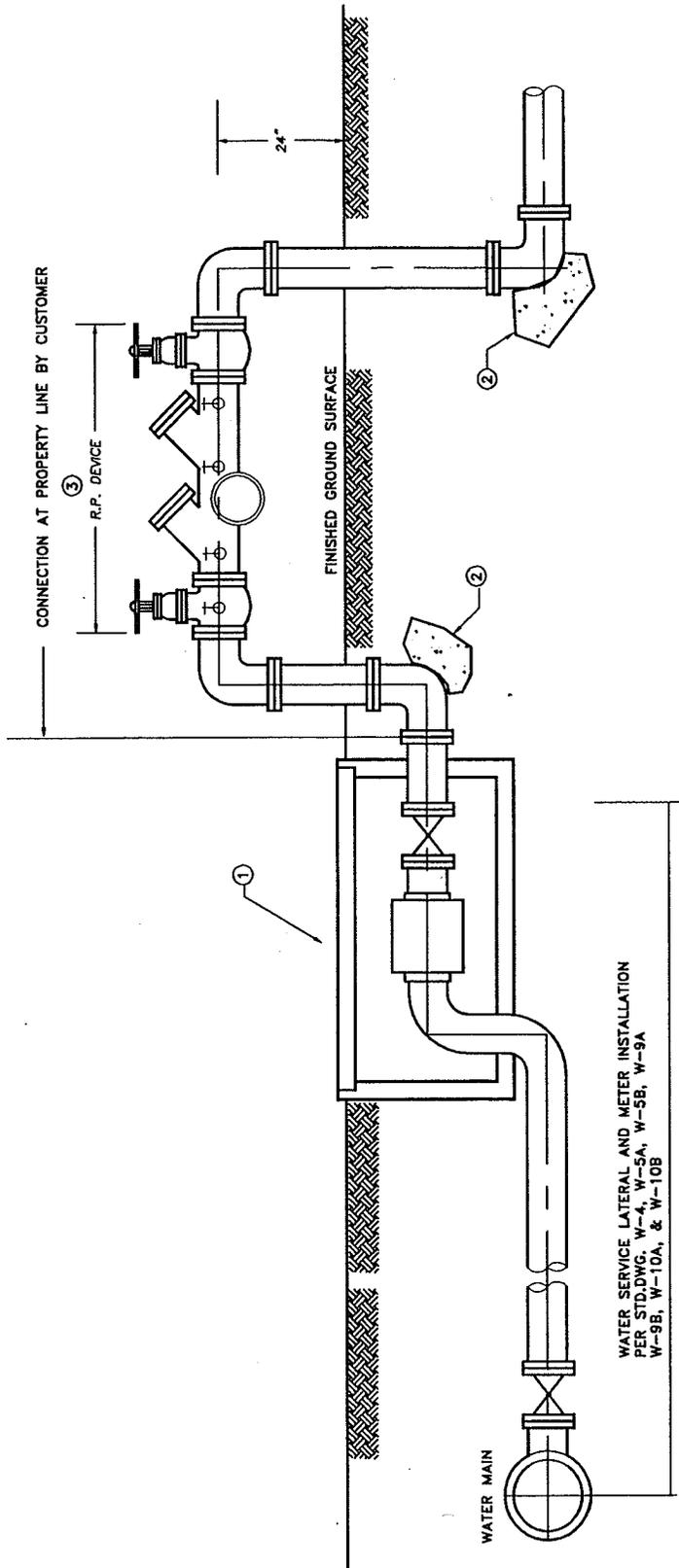
W-18



NOTES:

- ① USE COLLAR REINFORCEMENT WHEN OUTLET TO MAIN RATIO IS 50% OR LESS.
- ② USE WRAPPER REINFORCEMENT WHEN OUTLET TO MAIN RATIO IS GREATER THAN 50%.
- ③ SCHEDULE 40 STEEL OUTLET NOZZLE SHOULD BE POSITIONED AND WELDED ON TO WATER MAIN PRIOR TO WELDING ON THE REQUIRED REINFORCEMENT.
- ④ FLANGE SHALL BE ATTACHED WITH BOLT HOLES CENTERED ABOUT THE VERTICAL AXIS OF THE PIPE UNLESS OTHERWISE NOTED.
- ⑤ REINFORCEMENT DESIGN IS BASED ON THE STEEL AREA REMOVED FROM THE MAIN LINE AND THE OPERATING PRESSURE OF THE SYSTEM.
- ⑥ JOB SPECIFICATIONS/DETAILS FOR REINFORCEMENT SHALL GOVERN IF IN EXCESS OF NOTES 1, 2 AND 3 ABOVE.
- ⑦ ALL METAL SURFACES SHALL BE PAINTED PER SPECIFICATIONS. COMPONENTS.

WEST SAN BERNARDINO COUNTY WATER DISTRICT		TAPPING OUTLET FOR STEEL PIPE 3" AND LARGER	W-19
ANTHONY ARAIZA GENERAL MANAGER			



WATER SERVICE LATERAL AND METER INSTALLATION PER STD.DWG. W-4, W-5A, W-5B, W-9A W-9B, W-10A, & W-10B

DESCRIPTION

ITEM QTY

①	1	WATER METER AND METER BOX PER STANDARD DRAWING NO.W-4, W-5A, W-5B, W-9A, W-9B, W-10A & W-10B
②	--	CONCRETE THRUST BLOCK PER STANDARD DRAWING W-3
③	1	REDUCED PRESSURE (R.P.) PRINCIPAL BACKFLOW PREVENTER PER SPECIFICATIONS, SIZE AS INDICATED ON THE PLAN

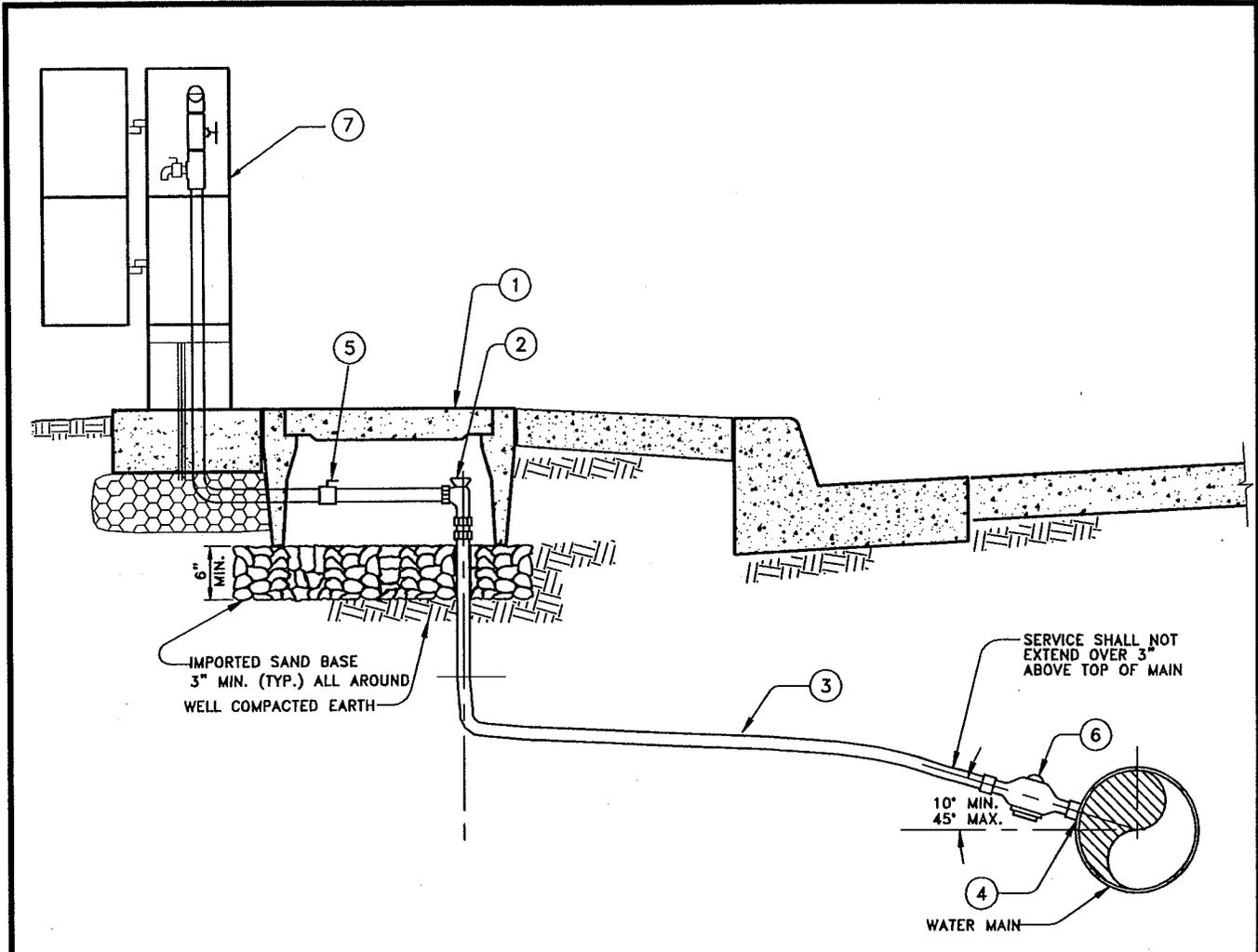
NOTES:

1. NO CONNECTIONS OR TEES BETWEEN WATER METER AND R.P. DEVICES
2. INSTALL R.P.DEVICE AT PROPERTY LINE, DEPENDING ON RIGHT-OF-WAY R.P. DEVICE MAY BE INSTALLED PARALLEL TO PROPERTY LINE
3. INSTALLATION SHALL BE APPROVED BY THE DISTRICT
4. R.P.DEVICE SHALL BE APPROVED BY USC PER HEALTH SERVICE DEPARTMENT'S REQUIREMENT
5. MINIMUM 24" CLEARANCE REQUIRED AROUND THE R.P. DEVICE
6. R.P. DEVICE SHALL BE MINIMUM 24" ABOVE FINISH GROUND
7. EACH R.P. DEVICE SHALL BE PROVIDED WITH TEST COCKS, SIZE AS LISTED BELOW:
 FOR 3/4" TO 2" DEVICE, USE 1/4" COCKS
 FOR 2-1/2" TO 4" DEVICE, USE 1/2" COCKS
 FOR 6" AND LARGER DEVICE, USE 3/4" COCKS

WEST SAN BERNARDINO COUNTY WATER DISTRICT
ANTHONY W. ARAIZA
 GENERAL MANAGER

**BACKFLOW PREVENTER (R. P.)
 INSTALLATION DETAIL**

W-20



DESCRIPTION	
①	METER BOX AND COVER PURCHASED FROM THE DISTRICT
②	1" INVERTED KEY ANGLE METER VALVE, THREAD X PACK JOINT, PER STD. DWG. W-4
③	1" COPPER WATER SERVICE, TYPE "K", SOFT TEMPER, PER ASTM B-88.
④	1" I.P.T. DOUBLE STRAP SERVICE SADDLE PER STD. DWG. W-4
⑤	1" BRASS BALL VALVE, PER STD DWG. W-4
⑥	1" Ø BALL CORP. STOP, I.P.T., INLET X PACK JOINT OUTLET PER STD. DWG. W-4
⑦	SAMPLING STATION, ECLIPSE NO. 88-WC FOR WARM CLIMATES OR APPROVED EQUAL

WEST SAN BERNARDINO COUNTY WATER DISTRICT

ANTHONY ARAIZA
GENERAL MANAGER

SAMPLE STATION DETAIL

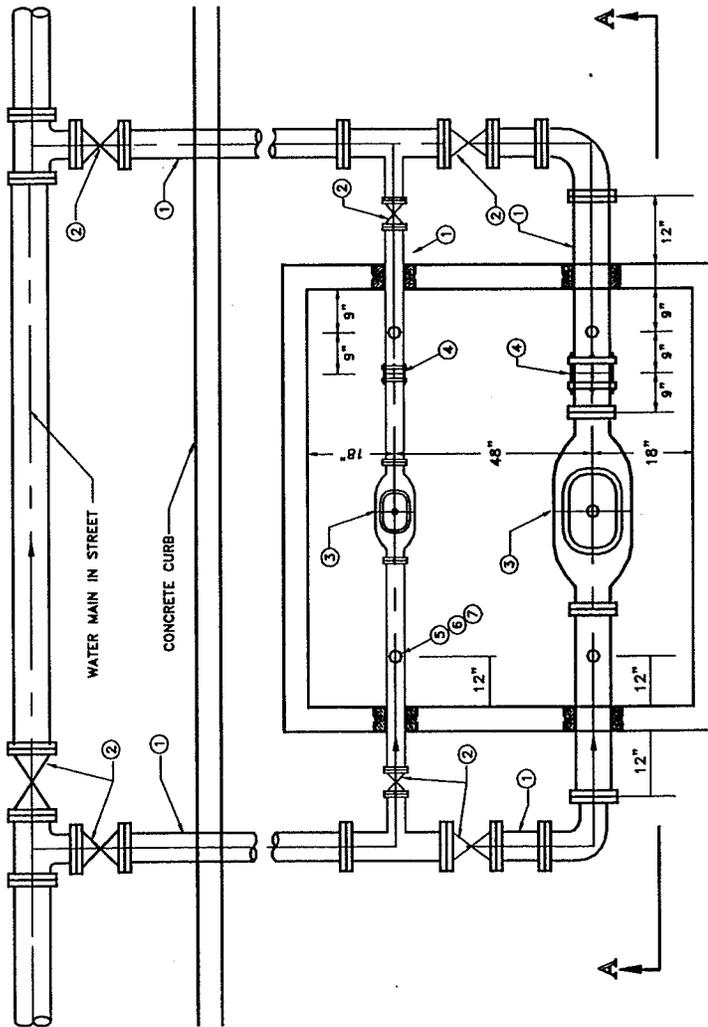
W-21

ITEM	QTY	DESCRIPTION
①	--	SCH. 40 STEEL PIPE, SAME SIZE AS VALVE, SEE PLAN FOR SIZE. WRAPPED WITH 2 LAYERS 10 MILS THICKNESS PVC TAPE
②	7	RESILIENT SEAT GATE VALVE AND VALVE BOX PER W-11, SAME SIZE AS PIPELINE.
③	2	PRESSURE REDUCING VALVE, SIZE AS INDICATED ON PLAN. (CLAYTON 90G-01KC)
④	2	FLEXIBLE COUPLING PER SPEC.
⑤	4	1" SCH. 40 GALVANIZED STEEL COUPLING WELDED TO PIPE.
⑥	4	1"Ø X 4" LONG SCH. 40 GALV. IRON PIPE THREADED BOTH ENDS.
⑦	4	1"Ø GATE VALVE, INSIDE I.P.T. X INSIDE I.P.T. WITH BUSHING AND PRESSURE GAGE

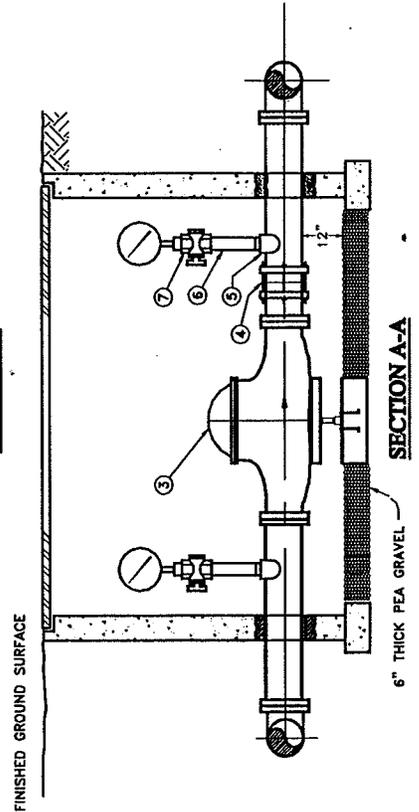
NOTES:

1. VALVE SHALL HAVE APPROVED PIPE SUPPORT.
2. INSTALL VALVE VAULT 12" BEHIND CURB. ADJUST VAULT AND COVER TO MEET CURB GRADE. VAULT COVER MUST BE OF ALUMINUM CONSTRUCTION WITH SPRING ACTION HINGES.
3. SIZE PRE CAST CONCRETE VAULT TO PROVIDE MINIMUM CLEARANCE AS SHOWN.
4. SIZE SMALL PRV TO MEET AVERAGE DAILY DEMAND SIZE LARGE PRV TO MEET THE HIGHER OF PEAK HOUR DEMAND PEAK DAILY DEMAND PLUS FIRE FLOW

FOR BELOW GROUND INSTALLATION



PLAN VIEW

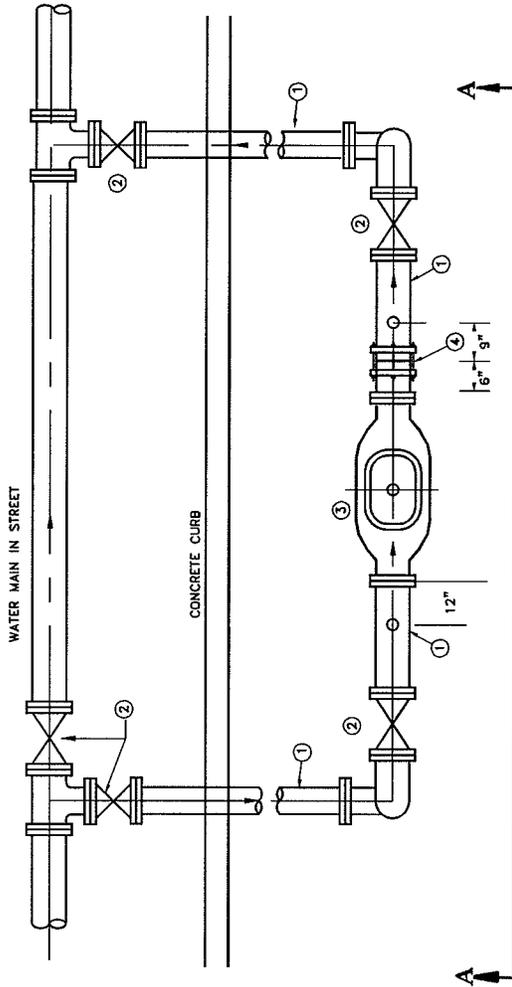


SECTION A-A

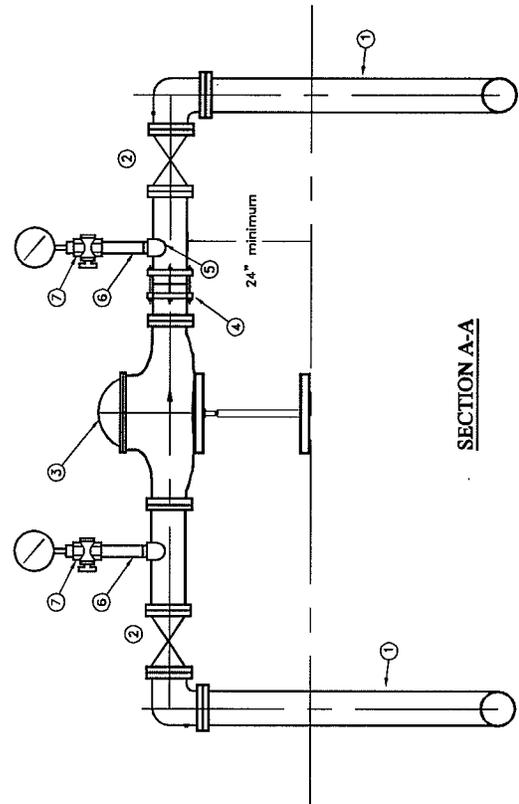
WEST SAN BERNARDINO COUNTY WATER DISTRICT
 ANTHONY ARAIZA
 GENERAL MANAGER

W-22

PRESSURE REGULATION STATION DETAIL
 DUAL VALVES INSTALLATION



PLAN VIEW



SECTION A-A

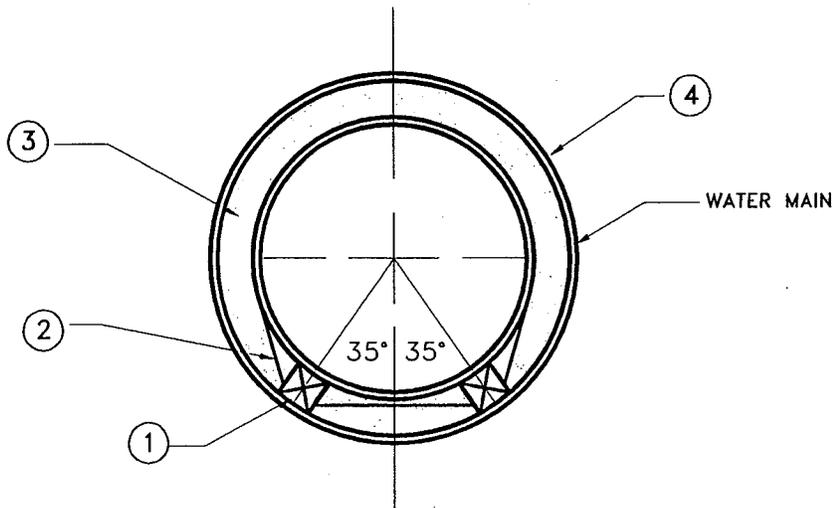
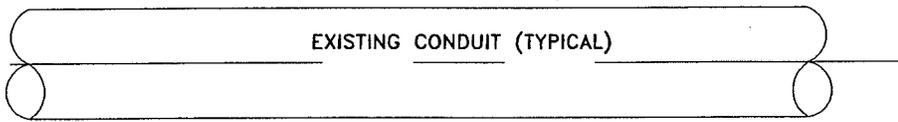
ITEM	QTY	DESCRIPTION
①	--	10 GAGE, CML & C STEEL PIPE SAME SIZE AS PRESSURE REDUCING VALVE PAINT ABOVE-GROUND PIPE AND VALVES
②	5	RESILIENT SEAT GATE VALVE, SAME SIZE AS PIPELINE.
③	1	PRESSURE REDUCING VALVE, SIZE AS INDICATED ON PLAN. (CLAYTON 90G-01KC)
④	1	FLEXIBLE COUPLING PER SPEC.
⑤	2	1" SCH. 40 GALVANIZED STEEL COUPLING WELDED TO PIPE.
⑥	2	1"Ø X 4" LONG SCH. 40 GALV. IRON PIPE THREADED BOTH ENDS.
⑦	2	1"Ø GATE VALVE, INSIDE I.P.T. X INSIDE I.P.T. WITH BUSHING AND PRESSURE GAGE

NOTES:

1. VALVE SHALL HAVE APPROVED PIPE SUPPORT.
2. INSTALL VALVE 24" ABOVE FINISH GRADE
3. MINIMUM 24" CLEARANCE AROUND PRESSURE REGULATOR
4. INSTALL GUARD POSTS AS DIRECTED BY THE DISTRICT IN FIELD

FOR ABOVE-GROUND INSTALLATION

WEST SAN BERNARDINO COUNTY WATER DISTRICT	PRESSURE REGULATION STATION DETAIL	W-22A
ANTHONY ARAIZA GENERAL MANAGER	SINGLE VALVE INSTALLATION FOR 2" AND LARGER	

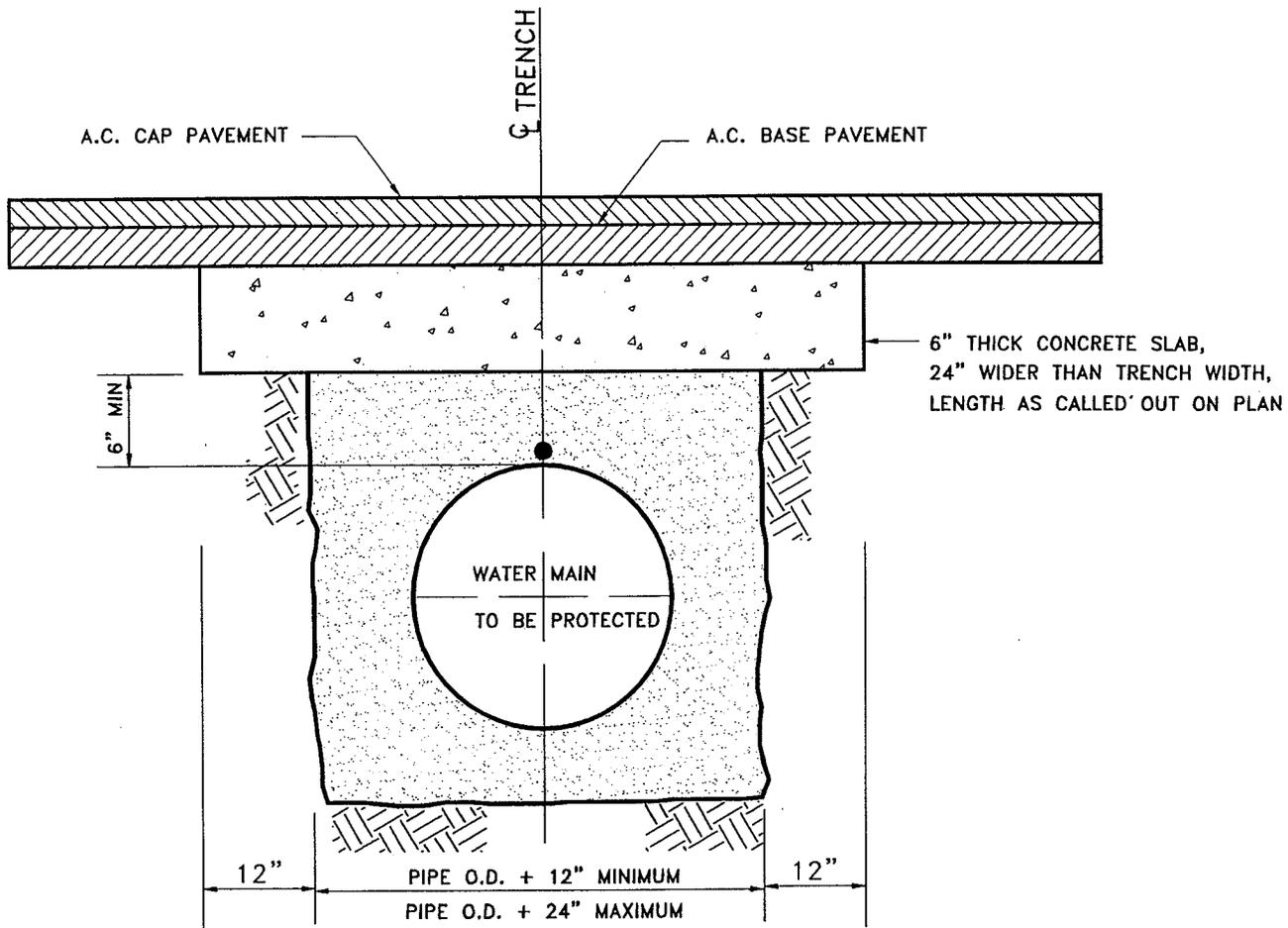


ITEM	DESCRIPTION
1	4" X 4" ROUGH REDWOOD SKID, CUT TO BEAR ON CONDUCTOR TUBE
2	3/4" WIDE X 0.045" THICK STAINLESS STEEL BAND
3	BLOWN SAND
4	STEEL CONDUCTOR TUBE

NOTE:

- 1. MINIMUM 4" CLEARANCE IS REQUIRED BETWEEN INNER WALL OF CONDUCTOR TUBE AND OUTER WALL OF WATER MAIN
- 1. MINIMUM 12" CLEARANCE IS REQUIRED BETWEEN OUTER WALL OF CONDUCTOR TUBE AND OUTER WALL OF EXISTING CONDUIT

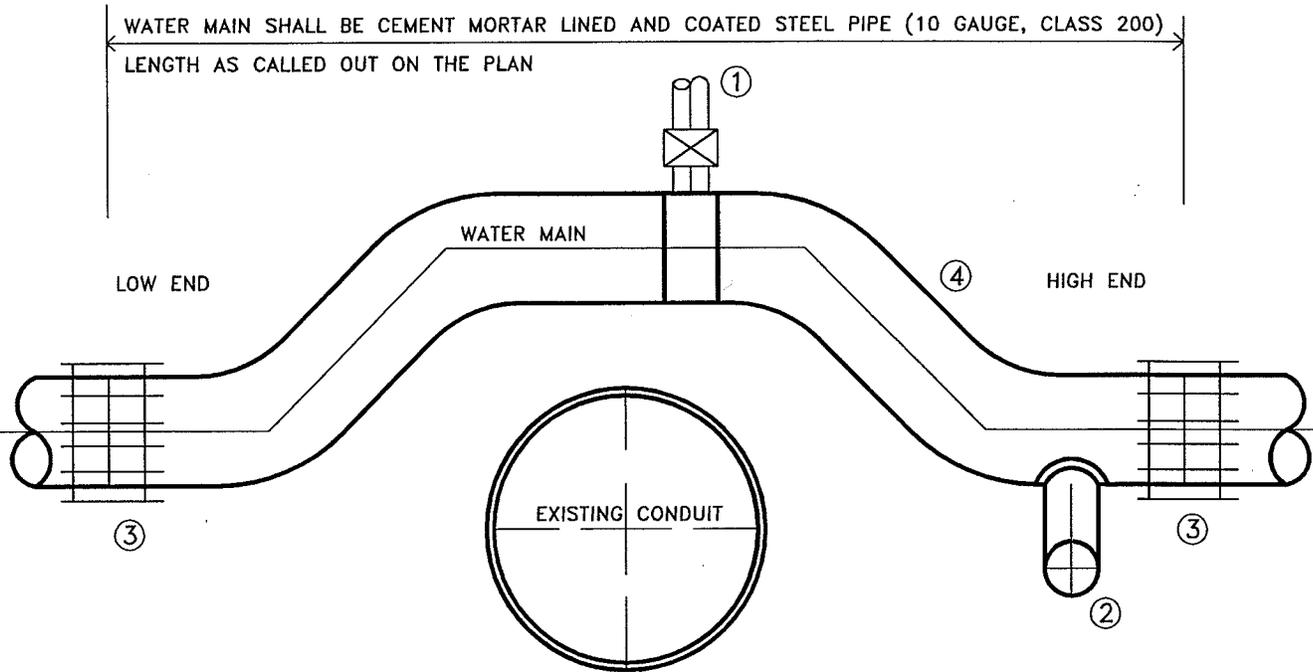
WEST SAN BERNARDINO COUNTY WATER DISTRICT		CONDUCTOR TUBE DETAIL	W-23
	<i>ANTHONY ARAIZA</i> GENERAL MANAGER		



NOTES:

1. CONCRETE BLANKET SHALL BE INSTALLED AT LOCATIONS WHERE PIPE LINE HAS LESS THAN 30 INCHES OF COVER.
2. REFER TO STD. DWG. W-1 FOR TYPICAL TRENCH CONSTRUCTION REQUIREMENT
3. REPLACE A.C. PAVEMENT AND ROAD BASE IN ACCORDANCE WITH EXCAVATION PERMIT.

WEST SAN BERNARDINO COUNTY WATER DISTRICT		CONCRETE BLANKET DETAIL	W-24
<i>ANTHONY ARAIZA</i> GENERAL MANAGER			

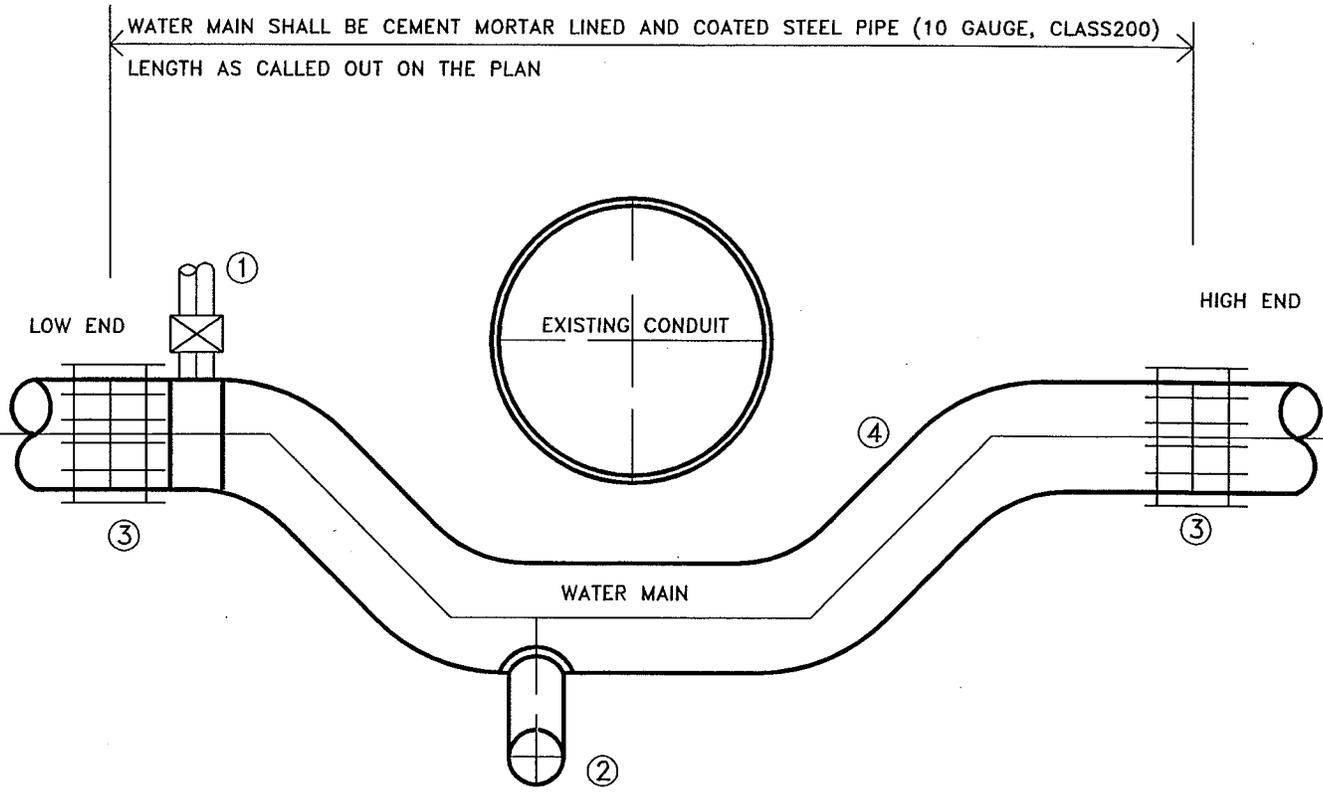


ITEM	DESCRIPTION
1	COMBINATION AIR VALVE PER STANDARD DWG. W-6 AT HIGHEST POINT
2	BLOW-OFF ASSEMBLY PER STANDARD DWG. W-7
3	FLEXIBLE COUPLING
4	CEMENT MORTAR LINED AND COATED STEEL PIPE (10 GAUGE, CLASS 200)

NOTE:

1. MINIMUM 12" CLEARANCE IS REQUIRED BETWEEN OUTER WALL OF WATER MAIN AND OUTER WALL OF CONFLICTING UTILITY
2. SIPHON SHALL BE ONE-PIECE CONSTRUCTION
3. INSTALL CONCRETE THRUST BLOCK PER STANDARD DRAWING W-3

WEST SAN BERNARDINO COUNTY WATER DISTRICT	SIPHON DETAIL	W-25
ANTHONY ARAIZA		
GENERAL MANAGER		



ITEM	DESCRIPTION
1	COMBINATION AIR VALVE PER STANDARD DWG. W-6
2	BLOW-OFF ASSEMBLY PER STANDARD DWG. W-7
3	FLEXIBLE COUPLING
4	CEMENT MORTAR LINED AND COATED STEEL PIPE (10 GAUGE, CLASS 200)

NOTE:

1. MINIMUM 12" CLEARANCE IS REQUIRED BETWEEN OUTER WALL OF WATER MAIN AND OUTER WALL OF CONFLICTING UTILITY
2. INVERTED SIPHON SHALL BE ONE-PIECE CONSTRUCTION
3. INSTALL CONCRETE THRUST BLOCK PER STANDARD DRAWING W-3

WEST SAN BERNARDINO COUNTY WATER DISTRICT		INVERTED SIPHON DETAIL	W-26
	ANTHONY ARAIZA GENERAL MANAGER		

WEST SAN BERNARDINO COUNTY WATER DISTRICT

DATE: JANUARY 26, 2001

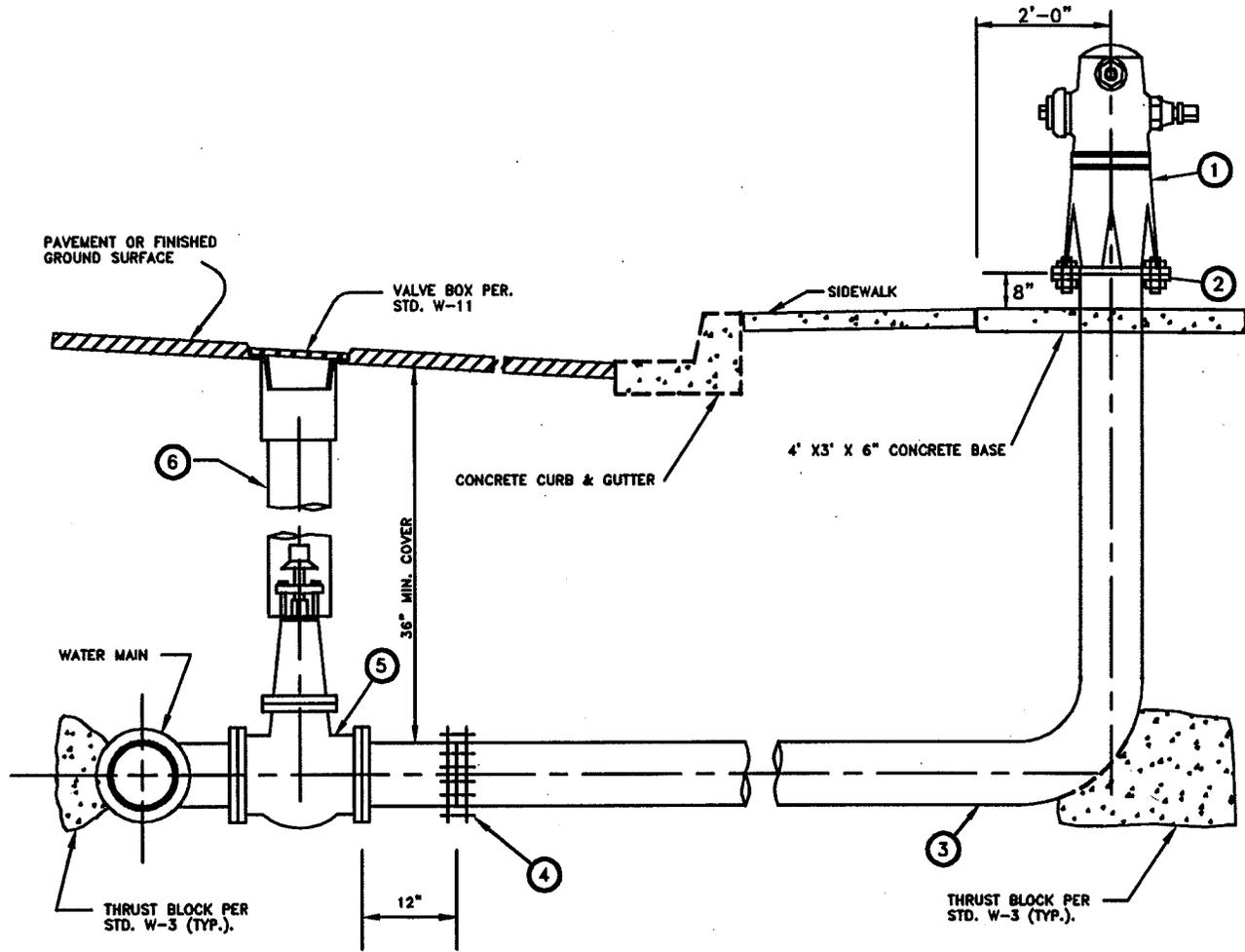
MEMO TO: DISTRICT APPROVED CONTRACTOR

**SUBJECT REF: AMENDMENT TO STANDARDS FOR DOMESTIC WATER
FACILITIES, REVISED OCTOBER 1999**

The West San Bernardino County Water District hereby inform you of the additions/revisions of District's Standard Drawings and Specifications.

Attached for your use are Drawings No. W-2, W-3A, W-3B, W-3C, W-3D, W-4, W-6C, W-25 and W-26.

Please contact your supplier regarding to this amendment, as this will be the only notice you will receive.



NOTES:

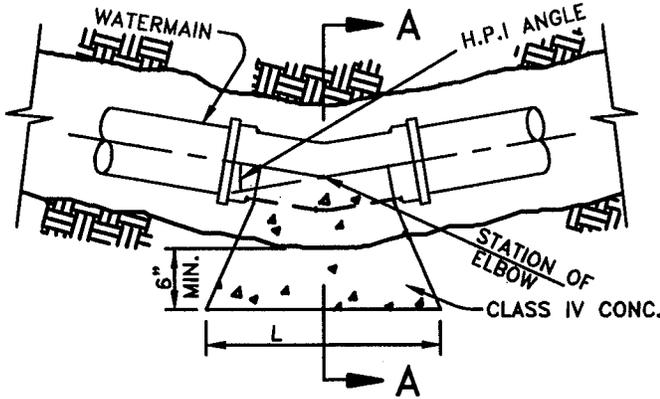
1. NORMAL LOCATION FOR HYDRANT IS 2'-0" BEHIND CURB FACE OR 2'-0" BEHIND SIDEWALK. IF THERE IS NO CURB, LOCATE FIRE HYDRANT 2'-0" FROM PROPERTY LINE.
2. IF THERE IS NO CURB, EACH HYDRANT SHALL HAVE TWO GUARD POSTS PER STANDARD DRAWING W-12. PLACEMENT SHALL BE DETERMINED BY DISTRICT INSPECTOR IN FIELD.
3. PAINT FIRE HYDRANT ASSEMBLY PER SPECIFICATION
4. THE 4" STEAMER OUTLET SHALL PLACED PERPENDICULAR TO CURB AND GUTTER, FACING THE STREET

ITEM	DESCRIPTION
①	WET BARREL FIRE HYDRANT. 6" FLANGED INLET WITH ONE 4" HOSE OUTLET & ONE 2 1/2" HOSE OUTLET. INSTALLED WITH 8 BREAK OFF BOLTS AND NUTS. CLOW F-850 OR APPROVED EQUAL.
②	FLANGE TO MATE HYDRANT BASE FLANGE. BREAK OFF BOLTS INSTALLED WITH NUT ON TOP.
③	SCHEDULE 40 STEEL PIPE, FIELD WRAPPED BELOW GROUND PART WITH TWO LAYERS OF 10 MILS PVC TAPE.
④	FLEXIBLE COUPLING AS SHOWN OR FLANGED COUPLING ADAPTOR ATTACH TO VALVE
⑤	6" Fx F R.S. GATE VALVE WITH PRESSURE RATING TO MATCH MAIN LINE. SEE W-11.
⑥	6" VALVE BOX AND COVER PER STANDARD DRAWING W-11

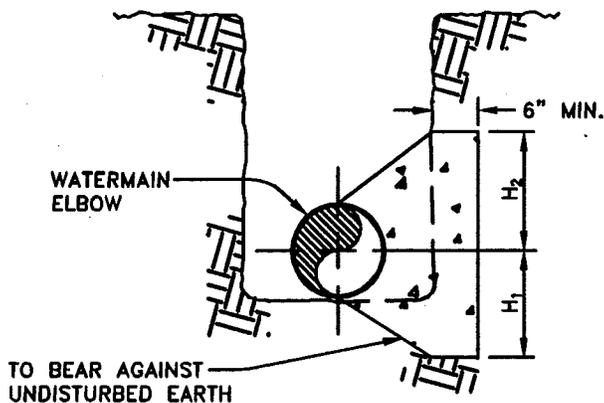
WEST SAN BERNARDINO COUNTY WATER DISTRICT		FIRE HYDRANT ASSEMBLY	W-2
ANTHONY ARAIZA GENERAL MANAGER			

HORIZONTAL THRUST BLOCK

PIPE DIA.	H ₁	H ₂	L	H.P.I. ANGLE
6"	1/2 O.D.	1/2 O.D.	2'-0"	≤11.25°
6"	6"	6"	4'-0"	≤22.50°
6"	9"	9"	4'-0"	≤45°
6"	12"	12"	4'-0"	≤67.50°
6"	1'-3"	1'-3"	4'-0"	≤90°
8"	1/2 O.D.	1/2 O.D.	2'-0"	≤11.25°
8"	8"	8"	4'-0"	≤22.50°
8"	1'-2"	1'-2"	4'-0"	≤45°
8"	1'-8"	1'-8"	4'-0"	≤67.50°
8"	2'-0"	2'-0"	4'-0"	≤90°
10"	1/2 O.D.	1/2 O.D.	4'-0"	≤11.25°
10"	10"	10"	4'-0"	≤22.50°
10"	1'-8"	1'-8"	4'-0"	≤45°
10"	2'-2"	2'-2"	4'-0"	≤67.50°
10"	2'-2"	2'-2"	6'-0"	≤90°
12"	1/2 O.D.	1/2 O.D.	4'-0"	≤11.25°
12"	12"	12"	4'-0"	≤22.50°
12"	2'-0"	2'-0"	4'-0"	≤45°
12"	2'-3"	2'-3"	4'-0"	≤67.50°
12"	2'-3"	2'-3"	6'-0"	≤90°
16"	1/2 O.D.	1/2 O.D.	4'-0"	≤11.25°
16"	1'-6"	1'-6"	4'-0"	≤22.50°
16"	2'-8"	2'-8"	6'-0"	≤45°
16"	2'-8"	2'-8"	8'-0"	≤67.50°
16"	2'-8"	2'-8"	10'-0"	≤90°
18"	1/2 O.D.	1/2 O.D.	4'-0"	≤11.25°
18"	1'-6"	1'-6"	5'-0"	≤22.50°
18"	3'-0"	3'-0"	8'-0"	≤45°
18"	3'-0"	3'-0"	10'-0"	≤67.50°
18"	3'-0"	3'-0"	12'-0"	≤90°
20"	1/2 O.D.	1/2 O.D.	4'-0"	≤11.25°
20"	2'-0"	2'-0"	5'-0"	≤22.50°
20"	3'-0"	3'-0"	9'-0"	≤45°
20"	3'-0"	3'-0"	11'-0"	≤67.50°
20"	3'-0"	3'-0"	13'-0"	≤90°
24"	1/2 O.D.	1/2 O.D.	4'-0"	≤11.25°
24"	2'-0"	2'-0"	5'-0"	≤22.50°
24"	3'-0"	3'-0"	10'-0"	≤45°
24"	3'-0"	3'-0"	16'-0"	≤67.50°
24"	3'-0"	3'-0"	18'-0"	≤90°
30"	1/2 O.D.	1/2 O.D.	4'-0"	≤11.25°
30"	3'-6"	3'-3"	8'-0"	≤22.50°
30"	3'-6"	3'-3"	12'-0"	≤45°
30"	3'-9"	3'-9"	18'-0"	≤67.50°
30"	3'-9"	3'-9"	21'-0"	≤90°
36"	1/2 O.D.	1/2 O.D.	4'-0"	≤11.25°
36"	3'-9"	3'-9"	8'-0"	≤22.50°
36"	3'-9"	3'-9"	14'-0"	≤45°
36"	3'-9"	3'-9"	20'-0"	≤67.50°
36"	4'-2"	4'-2"	22'-0"	≤90°



SECTIONAL PLAN



SECTION A-A

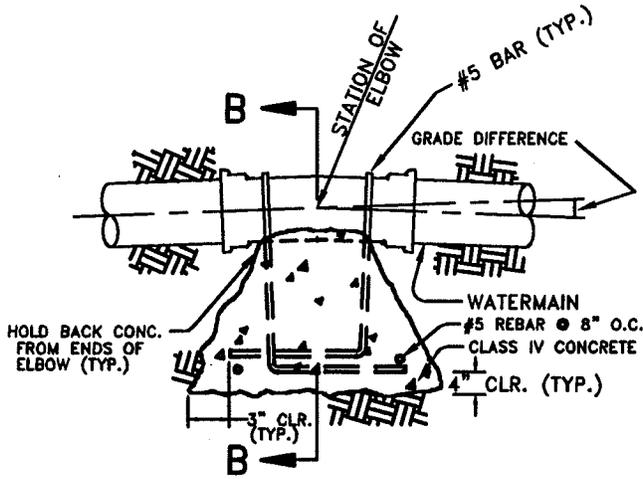
HORIZONTAL THRUST BLOCK

WEST SAN BERNARDINO COUNTY WATER DISTRICT

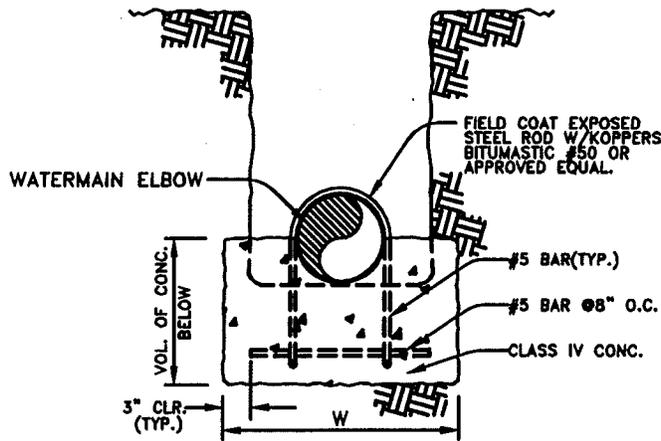
ANTHONY ARAIZA
GENERAL MANAGER

CONCRETE THRUST BLOCKS FOR
PIPELINES, CLASS 200 P.S.I. MAX.

W-3A



SECTIONAL ELEVATION



SECTION B-B

VERTICAL ANCHOR BLOCK

VERTICAL ANCHOR BLOCK

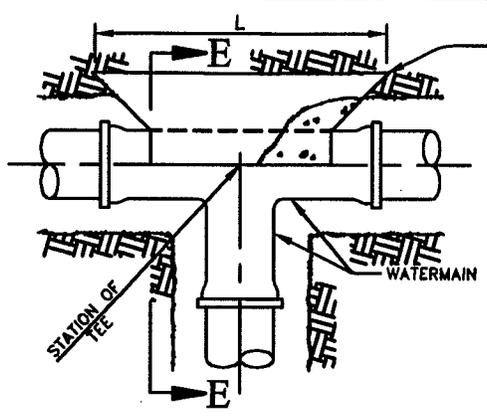
PIPE DIA.	W	VOLUME OF CONC (cu ft)	GRADE X DIFFERENCE
6"	2'-6"	7.6	5 TO 15
6"	2'-6"	11.4	16 TO 25
6"	2'-6"	15.2	26 TO 35
6"	2'-6"	22.8	36 TO 45
6"	2'-6"	31.0	46 TO 55
8"	2'-6"	10.3	5 TO 15
8"	2'-6"	15.5	16 TO 25
8"	2'-6"	20.6	26 TO 35
8"	2'-6"	31.0	36 TO 45
8"	2'-6"	41.3	46 TO 55
10"	3'-0"	27.6	5 TO 15
10"	3'-0"	36.8	16 TO 25
10"	3'-0"	55.3	26 TO 35
10"	3'-0"	73.7	36 TO 45
10"	3'-0"	92.1	46 TO 55
12"	3'-6"	30.0	5 TO 15
12"	3'-6"	45.0	16 TO 25
12"	3'-6"	67.5	26 TO 35
12"	3'-6"	75.0	36 TO 45
12"	3'-6"	97.5	46 TO 55
16"	4'-0"	48.0	5 TO 15
16"	4'-0"	72.0	16 TO 25
16"	4'-0"	84.0	26 TO 35
16"	4'-0"	130.0	36 TO 45
16"	4'-0"	168.0	46 TO 55
18"	4'-0"	81.0	5 TO 15
18"	4'-0"	108.0	16 TO 25
18"	4'-0"	135.0	26 TO 35
18"	4'-0"	192.5	36 TO 45
18"	4'-0"	270.0	46 TO 55
20"	4'-3"	108.0	5 TO 15
20"	4'-3"	162.0	16 TO 25
20"	4'-3"	189.0	26 TO 35
20"	4'-3"	216.0	36 TO 45
20"	4'-3"	297.0	46 TO 55
24"	4'-6"	120.0	5 TO 15
24"	4'-6"	150.0	16 TO 25
24"	4'-6"	210.0	26 TO 35
24"	4'-6"	270.0	36 TO 45
24"	4'-6"	330.0	46 TO 55
30"	5'-0"	168.0	5 TO 15
30"	5'-0"	294.0	16 TO 25
30"	5'-0"	378.0	26 TO 35
30"	5'-0"	462.0	36 TO 45
30"	5'-0"	546.0	46 TO 55
36"	5'-6"	196.0	5 TO 15
36"	5'-6"	392.0	16 TO 25
36"	5'-6"	490.0	26 TO 35
36"	5'-6"	637.0	36 TO 45
36"	5'-6"	784.0	46 TO 55

WEST SAN BERNARDINO COUNTY WATER DISTRICT

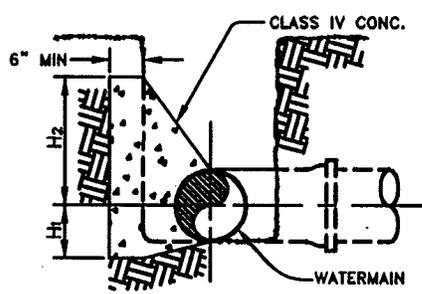
ANTHONY ARAIZA
GENERAL MANAGER

CONCRETE THRUST BLOCKS FOR PIPELINES, CLASS 200 P.S.I. MAX.

W-3C



SECTIONAL PLAN

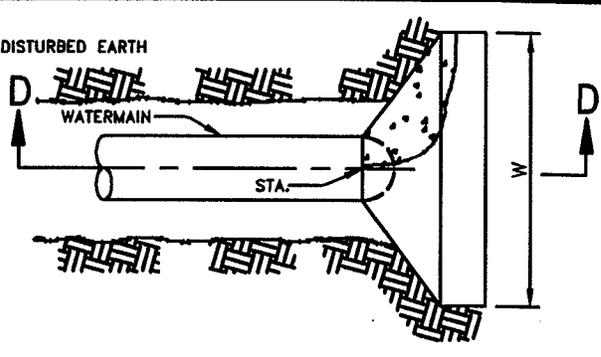


SECTION E-E

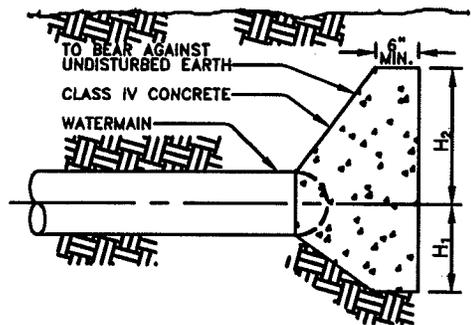
*PIPE DIA.	H ₁	H ₂	L
4"	1'-0"	1'-0"	3'-6"
6"	1'-0"	1'-0"	4'-0"
8"	1'-0"	2'-3"	4'-0"
10"	1'-0"	2'-6"	4'-0"
12"	1'-0"	3'-0"	5'-0"
16"	1'-4"	3'-0"	4'-0"
18"	1'-6"	3'-0"	4'-0"
20"	1'-8"	3'-6"	4'-0"
24"	2'-0"	4'-0"	5'-0"
30"	2'-6"	4'-6"	4'-0"
36"	3'-0"	5'-0"	4'-0"

* USE OUTLET PIPE DIAMETER

TEE THRUST BLOCK



SECTIONAL PLAN



SECTION D-D

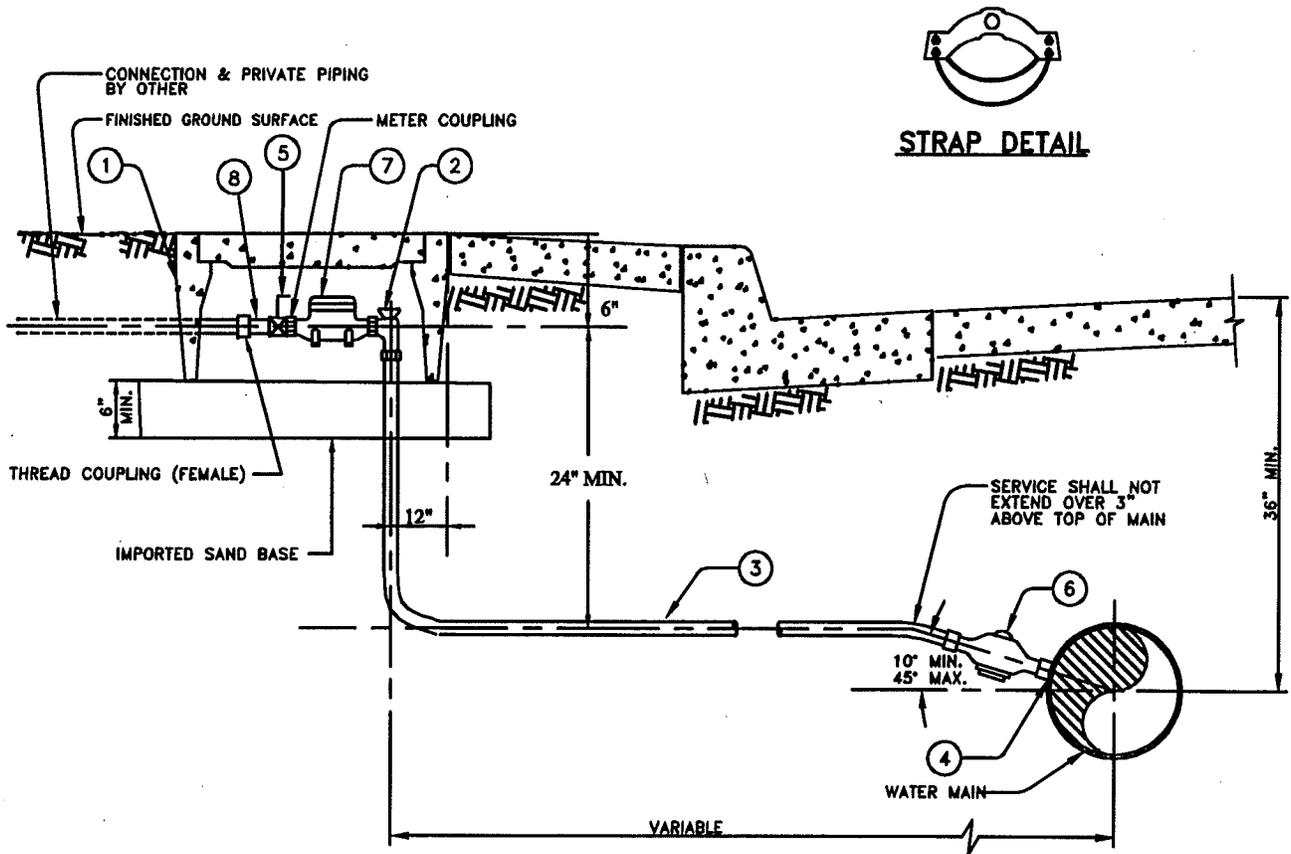
PIPE DIA.	H ₁	H ₂	L
4"	1'-0"	1'-0"	3'-6"
6"	1'-0"	1'-0"	4'-0"
8"	1'-0"	2'-3"	4'-0"
10"	1'-0"	2'-6"	4'-0"
12"	1'-0"	3'-0"	5'-0"
16"	1'-4"	3'-0"	4'-0"
18"	1'-6"	3'-0"	4'-0"
20"	1'-8"	3'-6"	4'-0"
24"	2'-0"	4'-0"	5'-0"
30"	2'-6"	4'-6"	4'-0"
36"	3'-0"	5'-0"	4'-0"

END THRUST BLOCK

WEST SAN BERNARDINO COUNTY WATER DISTRICT
ANTHONY ARAIZA
 GENERAL MANAGER

CONCRETE THRUST BLOCKS FOR PIPELINES, 200 P.S.I. MAX.

W-3D



DESCRIPTION	
①	METER BOX AND COVER TO BE FURNISHED BY THE DISTRICT.
②	1" X 1" OR 1" X 3/4" INVERTED KEY ANGLE METER VALVE, PACK JOINT INLET X METER SWIVEL NUT OUTLET, FORD KV43, MULLER P-14258 OR APPROVED EQUAL.
③	1" COPPER WATER SERVICE, TYPE "K", SOFT TEMPER, PER ASTM B-88.
④	1" I.P.T. PAINTED DUCTILE IRON SERVICE SADDLE WITH DOUBLE STAINLESS STEEL STRAPS, FORD FS202, MULLER DB2S, ROMAC 202S, SMITH-BLAIR 317 OR APPROVED EQUAL
⑤	1" OR 3/4" BRASS BALL VALVE TO BE FURNISHED BY THE DISTRICT, FORD B-13 WITH HH-34 HIGH LEVEL HANDLE OR APPROVED EQUAL
⑥	1" # BALL CORP. STOP, I.P.T. INLET X PACK JOINT OUTLET, FORD FB1100, MULLER P-25028 OR APPROVED EQUAL.
⑦	METER TO BE FURNISHED BY THE DISTRICT. 3/4" OR 1"
⑧	1" OR 3/4" THREADED, GALVANIZED IRON PIPE NIPPLE

NOTES:

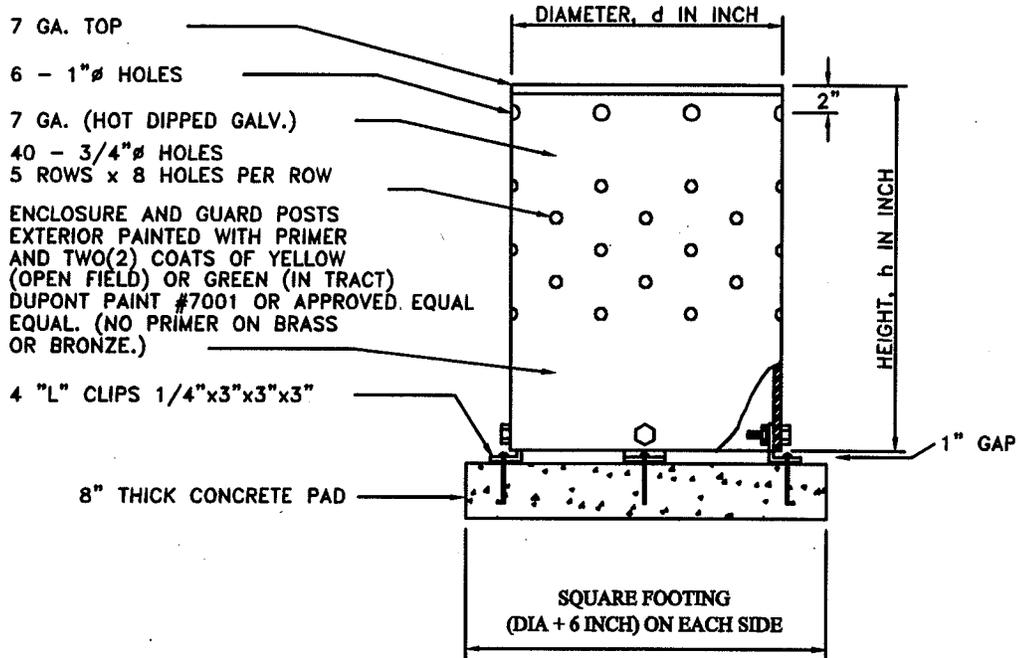
1. CHISEL 1" HIGH " W " ON TOP OF CURB DIRECTLY OVER WATER SERVICE LATERAL

WEST SAN BERNARDINO COUNTY WATER DISTRICT

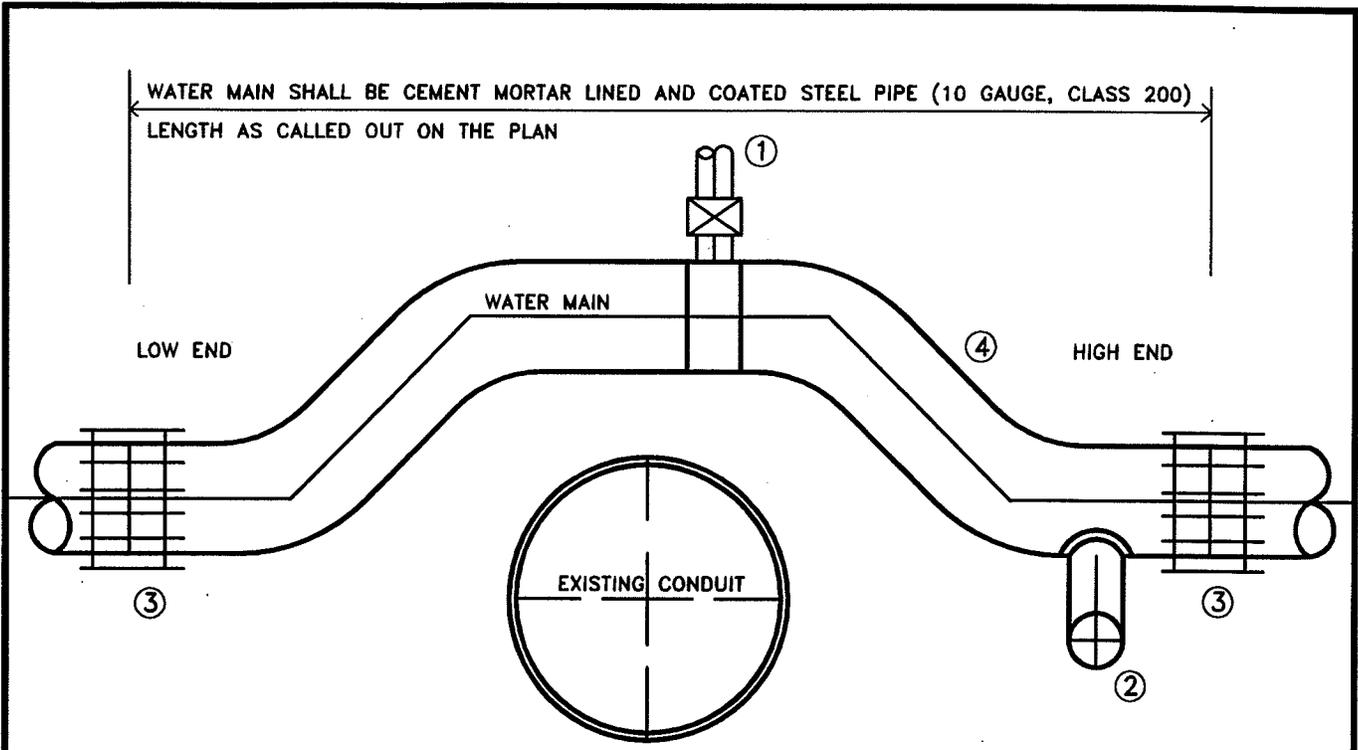
ANTHONY ARAIZA
GENERAL MANAGER

WATER SERVICE DETAIL
3/4" & 1" METER

W-4



SIZE OF AIR VALVE IN INCH	DIAMETER, d	HEIGHT, h
1"	16"	30"
1-1/2"	18"	30"
2"	24"	36"
3"	30"	36"
4"	36"	36"

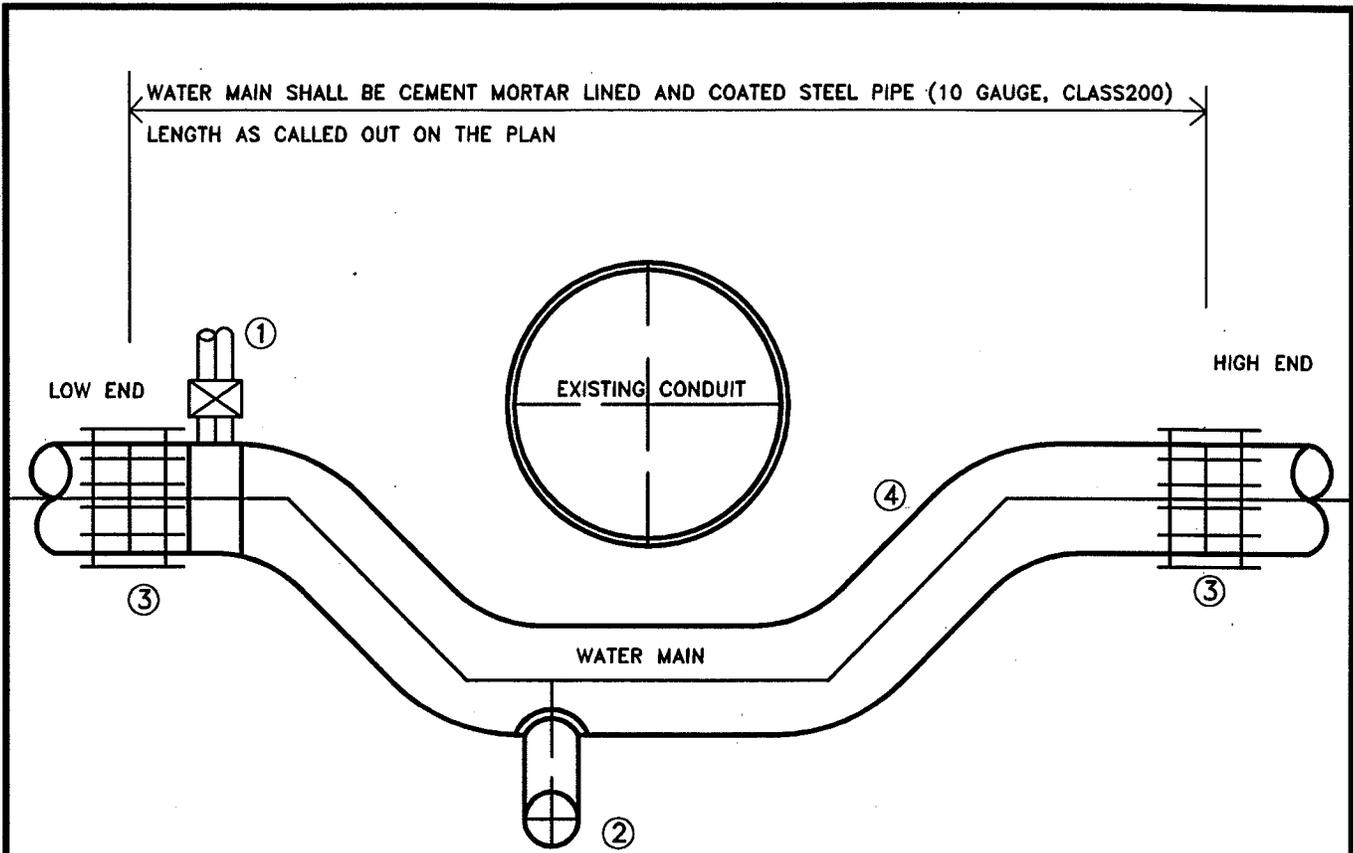


ITEM	DESCRIPTION
1	COMBINATION AIR VALVE PER STANDARD DWG. W-6 AT HIGHEST POINT
2	BLOW-OFF ASSEMBLY PER STANDARD DWG. W-7
3	FLEXIBLE COUPLING
4	CEMENT MORTAR LINED AND COATED STEEL PIPE (10 GAUGE, CLASS 200)

NOTE:

1. MINIMUM 12" CLEARANCE IS REQUIRED BETWEEN OUTER WALL OF WATER MAIN AND OUTER WALL OF CONFLICTING UTILITY
2. SIPHON SHALL BE ONE-PIECE CONSTRUCTION
3. INSTALL CONCRETE THRUST BLOCK PER STANDARD DRAWING W-3

WEST SAN BERNARDINO COUNTY WATER DISTRICT		SIPHON DETAIL	W-25
ANTHONY ARAIZA GENERAL MANAGER			



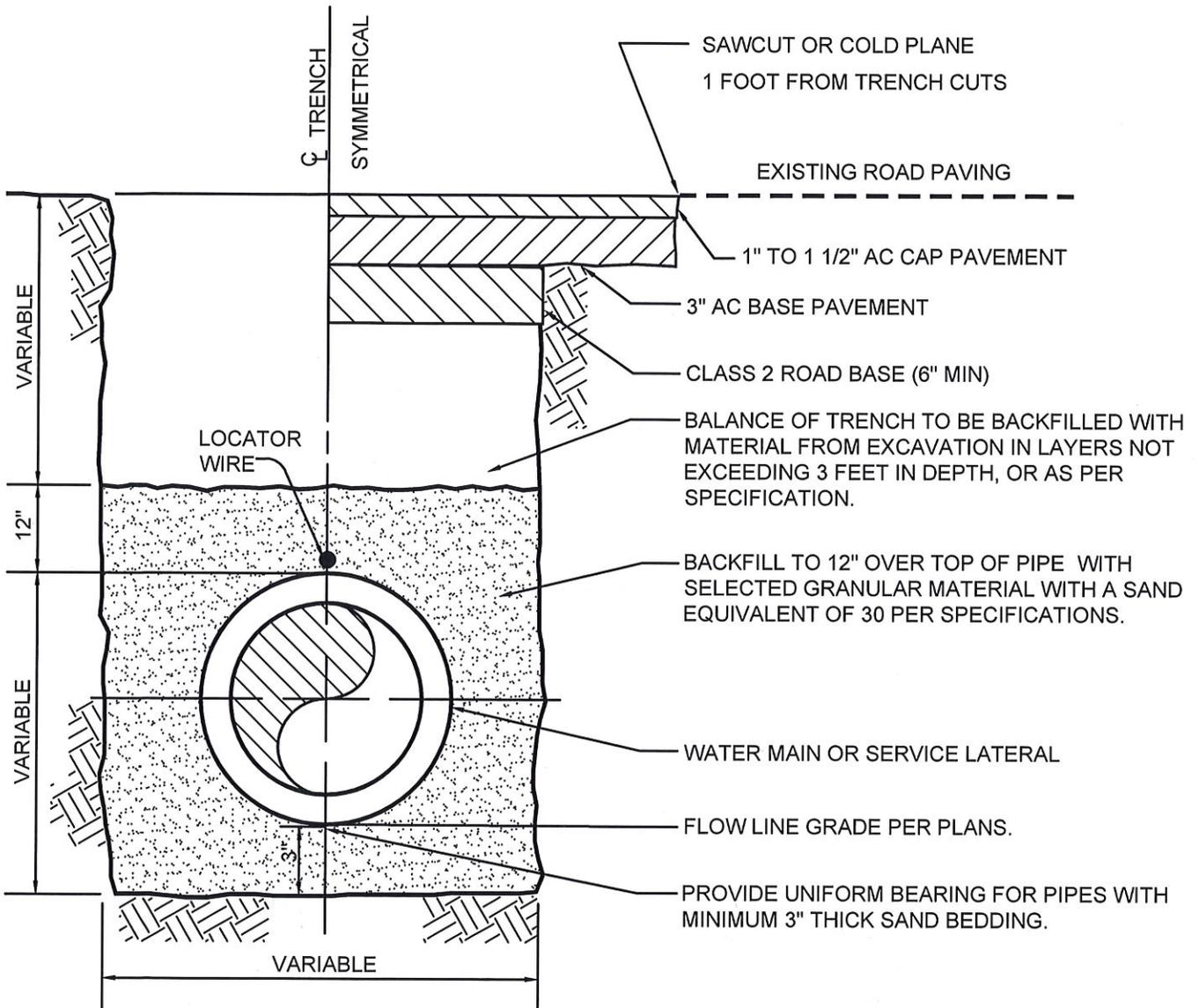
ITEM	DESCRIPTION
1	COMBINATION AIR VALVE PER STANDARD DWG. W-6
2	BLOW-OFF ASSEMBLY PER STANDARD DWG. W-7
3	FLEXIBLE COUPLING
4	CEMENT MORTAR LINED AND COATED STEEL PIPE (10 GAUGE, CLASS 200)

NOTE:

1. MINIMUM 12" CLEARANCE IS REQUIRED BETWEEN OUTER WALL OF WATER MAIN AND OUTER WALL OF CONFLICTING UTILITY
2. INVERTED SIPHON SHALL BE ONE-PIECE CONSTRUCTION
3. INSTALL CONCRETE THRUST BLOCK PER STANDARD DRAWING W-3

WEST SAN BERNARDINO COUNTY WATER DISTRICT <hr/> <hr/> <hr/>	ANTHONY ARAIZA GENERAL MANAGER	INVERTED SIPHON DETAIL	W-26
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EXHIBIT B



NOTES:

1. WIDTH OF TRENCH

MIN. = PIPE O.D. + 12"

MAX. = PIPE O.D. + 16"

2. REPLACE A.C. PAVEMENT AND ROAD BASE IN ACCORDANCE WITH EXCAVATION PERMIT.

WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

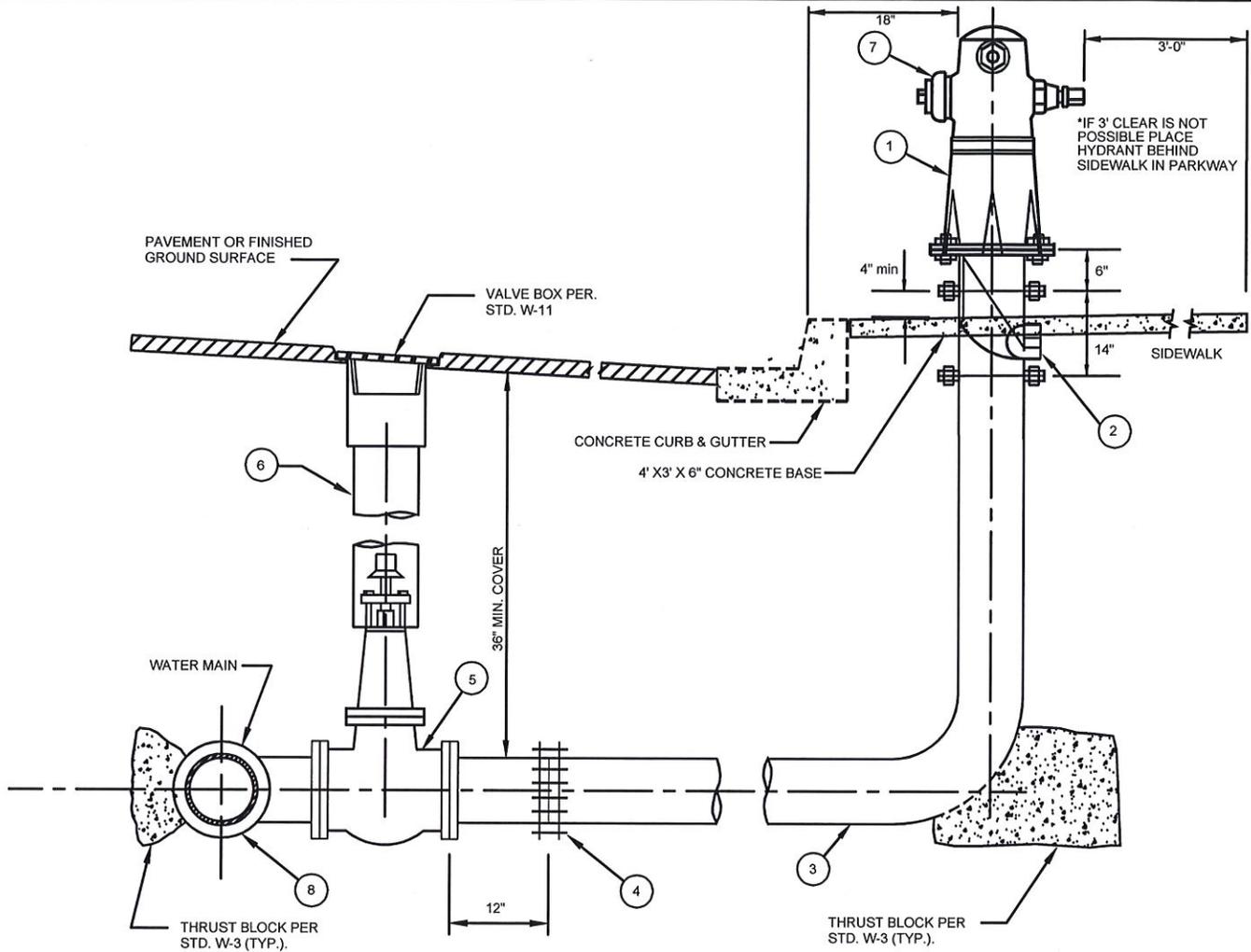
MATTHEW H. LITCHFIELD, P.E. RCE58097

DATE

TYPICAL TRENCH DETAIL

DRAWING NUMBER

W-1



NOTES:

1. NORMAL LOCATION FOR HYDRANT IS 2'-0" BEHIND CURB FACE OR 2'-0" BEHIND SIDEWALK. IF THERE IS NO CURB, LOCATE FIRE HYDRANT 2'-0" FROM PROPERTY LINE.
2. IF THERE IS NO CURB, EACH HYDRANT SHALL HAVE TWO GUARD POSTS PER STAND DRAWING W-12. PLACEMENT SHALL BE DETERMINED BY DISTRICT INSPECTOR IN FIELD.
3. PAINT FIRE HYDRANT ASSEMBLY PER SPECIFICATION
4. THE 4" STEAMER OUTLET SHALL PLACED PERPENDICULAR TO CURB AND GUTTER, FACING THE STREET

TABLE A

BLUE	1500 GPM OR MORE	VERY GOOD FLOWS
GREEN	1000-1499 GPM	GOOD FOR RESIDENTIAL AREAS
ORANGE	500-999 GPM	MARGINALLY ADEQUATE
RED	BELOW 500 GPM	INADEQUATE

ITEM	DESCRIPTION
1	WET BARREL FIRE HYDRANT. 6" FLANGED INLET WITH ONE 4" HOSE OUTLET & ONE 2 1/2" HOSE OUTLET. INSTALLED WITH 8 HOLES PATTERN BASE FLANGE, CLOW F-850 OR APPROVED EQUAL.
2	CLOW VALVE CO. BREAK OFF CHECK VALVE MODEL LB1 400A (NO SUBSTITUTIONS)
3	SCHEDULE 40 STEEL PIPE, FIELD WRAPPED BELOW GROUND PART WITH TWO LAYERS OF 10 MILS PVC TAPE.
4	FLEXIBLE COUPLING AS SHOWN OR FLANGED COUPLING ADAPTOR ATTACH TO VALVE
5	6" Fx F R.S. GATE VALVE WITH PRESSURE RATING TO MATCH MAIN LINE. SEE W-11.
6	6" VALVE BOX AND COVER PER STANDARD DRAWING W-11
7	PAINT HYDRANT CAPS ACCORDING TO NFPA STANDARDS. SEE TABLE A.
8	TAPPING OUTLET FOR PVC PIPE AND DUCTILE IRON PIPE LINES SHALL BE MUELLER CATALOG NO. H-615 CLASS 150 MECHANICAL JOINT TAPPING SLEEVE OR APPROVED EQUAL. TAPPING OUTLET FOR STEEL PIPE SHALL BE A WELD-ON OUTLET PER DISTRICT STANDARD DRAWINGS W-18 AND W-19.

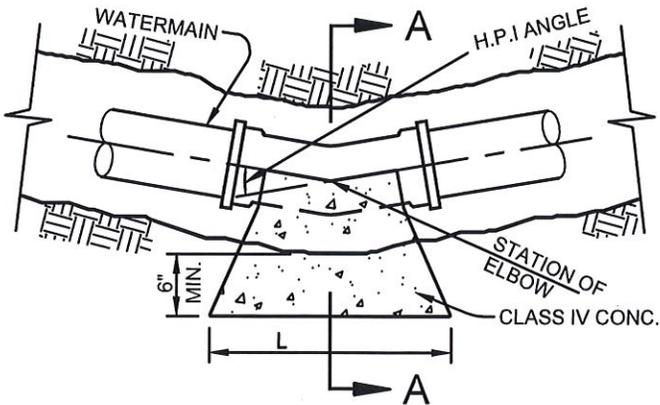
WEST VALLEY WATER DISTRICT

APPROVED:  09/07/2016
 MATTHEW H. LITCHFIELD, P.E. RCE58097 DATE

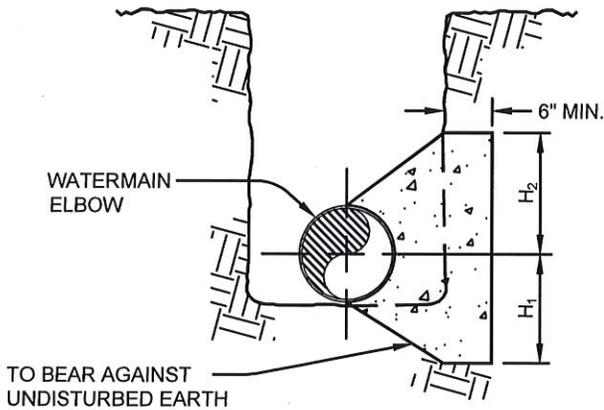
FIRE HYDRANT ASSEMBLY

DRAWING NUMBER
W-2

HORIZONTAL THRUST BLOCK



PLAN



SECTION A-A

HORIZONTAL THRUST BLOCK

PIPE DIA.	H ₁	H ₂	L	H.P.I. ANGLE
6"	1/2 O.D.	1/2 O.D.	2'-0"	≤11.25°
6"	6"	6"	4'-0"	≤22.50°
6"	9"	9"	4'-0"	≤45°
6"	12"	12"	4'-0"	≤67.50°
6"	1'-3"	1'-3"	4'-0"	≤90°
8"	1/2 O.D.	1/2 O.D.	2'-0"	≤11.25°
8"	8"	8"	4'-0"	≤22.50°
8"	1'-2"	1'-2"	4'-0"	≤45°
8"	1'-8"	1'-8"	4'-0"	≤67.50°
8"	2'-0"	2'-0"	4'-0"	≤90°
10"	1/2 O.D.	1/2 O.D.	4'-0"	≤11.25°
10"	10"	10"	4'-0"	≤22.50°
10"	1'-8"	1'-8"	4'-0"	≤45°
10"	2'-2"	2'-2"	4'-0"	≤67.50°
10"	2'-2"	2'-2"	6'-0"	≤90°
12"	1/2 O.D.	1/2 O.D.	4'-0"	≤11.25°
12"	12"	12"	4'-0"	≤22.50°
12"	2'-0"	2'-0"	4'-0"	≤45°
12"	2'-3"	2'-3"	4'-0"	≤67.50°
12"	2'-3"	2'-3"	6'-0"	≤90°
16"	1/2 O.D.	1/2 O.D.	4'-0"	≤11.25°
16"	1'-6"	1'-6"	4'-0"	≤22.50°
16"	2'-8"	2'-8"	6'-0"	≤45°
16"	2'-8"	2'-8"	8'-0"	≤67.50°
16"	2'-8"	2'-8"	10'-0"	≤90°
18"	1/2 O.D.	1/2 O.D.	4'-0"	≤11.25°
18"	1'-6"	1'-6"	5'-0"	≤22.50°
18"	3'-0"	3'-0"	8'-0"	≤45°
18"	3'-0"	3'-0"	10'-0"	≤67.50°
18"	3'-0"	3'-0"	12'-0"	≤90°
20"	1/2 O.D.	1/2 O.D.	4'-0"	≤11.25°
20"	2'-0"	2'-0"	5'-0"	≤22.50°
20"	3'-0"	3'-0"	9'-0"	≤45°
20"	3'-0"	3'-0"	11'-0"	≤67.50°
20"	3'-0"	3'-0"	13'-0"	≤90°
24"	1/2 O.D.	1/2 O.D.	4'-0"	≤11.25°
24"	2'-0"	2'-0"	5'-0"	≤22.50°
24"	3'-0"	3'-0"	10'-0"	≤45°
24"	3'-0"	3'-0"	16'-0"	≤67.50°
24"	3'-0"	3'-0"	18'-0"	≤90°
30"	1/2 O.D.	1/2 O.D.	4'-0"	≤11.25°
30"	3'-6"	3'-3"	8'-0"	≤22.50°
30"	3'-6"	3'-3"	12'-0"	≤45°
30"	3'-9"	3'-9"	18'-0"	≤67.50°
30"	3'-9"	3'-9"	21'-0"	≤90°
36"	1/2 O.D.	1/2 O.D.	4'-0"	≤11.25°
36"	3'-9"	3'-9"	8'-0"	≤22.50°
36"	3'-9"	3'-9"	14'-0"	≤45°
36"	3'-9"	3'-9"	20'-0"	≤67.50°
36"	4'-2"	4'-2"	22'-0"	≤90°

WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

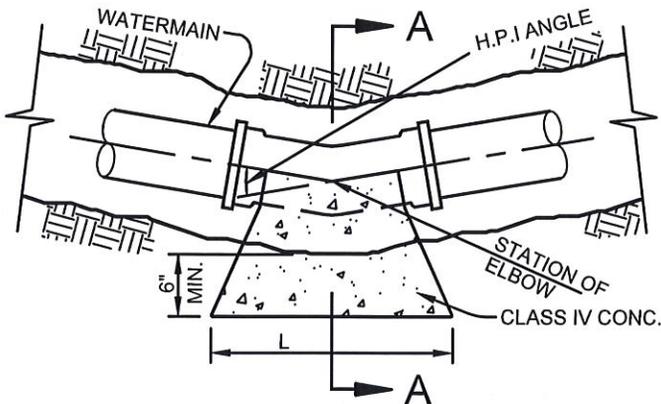
MATTHEW H. LITCHFIELD, P.E. RCE58097

DATE

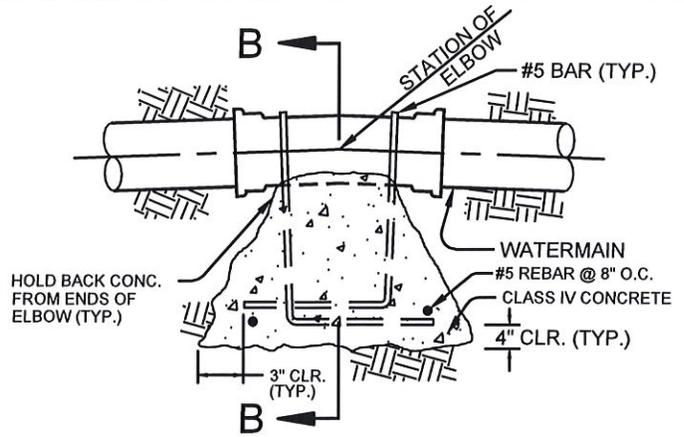
CONCRETE THRUST BLOCKS FOR
PIPELINES, CLASS 200 PSI MAX

DRAWING NUMBER

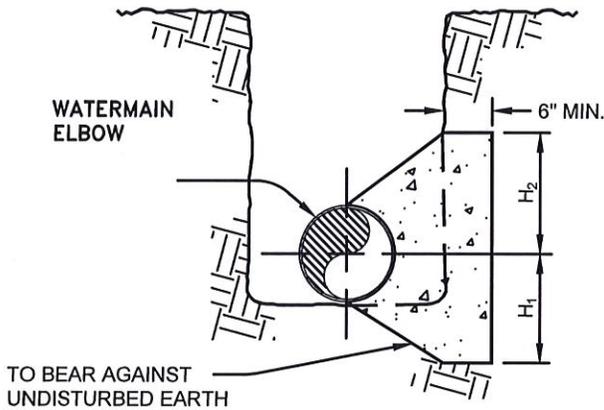
W-3A



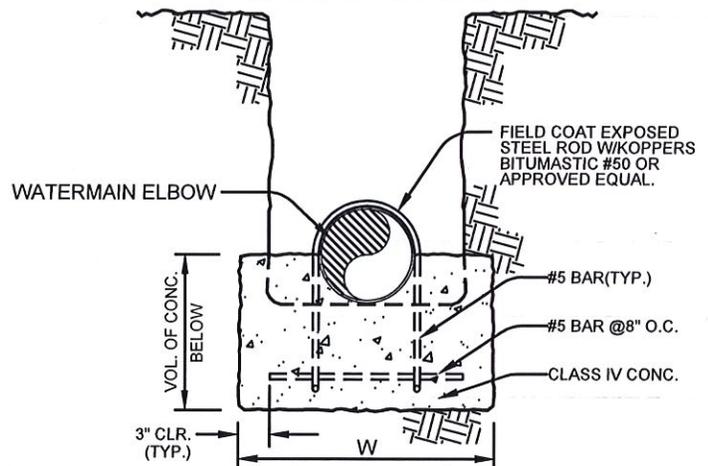
SECTIONAL PLAN



SECTIONAL ELEVATION



SECTION A-A



SECTION B-B

HORIZONTAL THRUST BLOCK

PIPE DIA.	H ₁	H ₂	L	H.P.I. ANGLE
4"	1/2 O.D.	1/2 O.D.	4'-0"	5° TO 41°
4"	4"	4"	4'-0"	42° TO 83°
4"	10"	5"	4'-0"	84° TO 104°
6"	1/2 O.D.	1/2 O.D.	4'-0"	5° TO 27°
6"	6"	6"	4'-0"	28° TO 51°
6"	1'-6"	9"	4'-0"	52° TO 90°
8"	1/2 O.D.	1/2 O.D.	4'-0"	5° TO 20°
8"	8"	8"	4'-0"	21° TO 36°
8"	1'-8"	10"	4'-0"	37° TO 54°
8"	2'-2"	1'-1"	4'-0"	55° TO 78°
8"	2'-8"	1'-4"	4'-0"	79° TO 111°
10"	1/2 O.D.	1/2 O.D.	4'-0"	5° TO 16°
10"	10"	10"	4'-0"	17° TO 28°
10"	1'-10"	11"	4'-0"	29° TO 39°
10"	2'-4"	1'-2"	4'-0"	40° TO 53°
10"	2'-10"	1'-5"	4'-0"	54° TO 70°
10"	2'-10"	1'-5"	6'-0"	71° TO 120°
12"	1/2 O.D.	1/2 O.D.	4'-0"	5° TO 13°
12"	12"	12"	4'-0"	14° TO 22°
12"	2'-0"	12"	4'-0"	23° TO 30°
12"	2'-6"	1'-3"	4'-0"	31° TO 40°
12"	3'-0"	1'-6"	4'-0"	41° TO 52°
12"	3'-0"	1'-6"	6'-0"	53° TO 83°

VERTICAL ANCHOR BLOCK

PIPE DIA.	W	VOLUME OF CONC. (cu ft)	GRADE % DIFFERENCE
4"	1'-6"	4.3	5 TO 15
4"	1'-6"	6.5	16 TO 25
4"	1'-6"	8.6	26 TO 35
4"	1'-6"	10.8	36 TO 45
4"	1'-6"	13.0	46 TO 55
4"	1'-6"	15.1	56 TO 65
6"	2'-0"	7.6	5 TO 10
6"	2'-0"	11.4	11 TO 25
6"	2'-0"	15.2	26 TO 40
6"	2'-0"	22.8	41 TO 55
8"	2'-0"	10.3	5 TO 10
8"	2'-0"	15.5	11 TO 20
8"	2'-0"	20.6	21 TO 30
8"	2'-0"	31.0	31 TO 40
8"	2'-0"	41.3	41 TO 55
10"	2'-6"	20.9	5 TO 15
10"	2'-6"	27.8	16 TO 25
10"	2'-6"	41.7	26 TO 35
10"	2'-6"	55.6	36 TO 45
10"	2'-6"	69.5	46 TO 55
12"	2'-6"	27.6	5 TO 15
12"	2'-6"	36.8	16 TO 25
12"	2'-6"	55.3	26 TO 35
12"	2'-6"	73.7	36 TO 45
12"	2'-6"	92.1	46 TO 55

WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

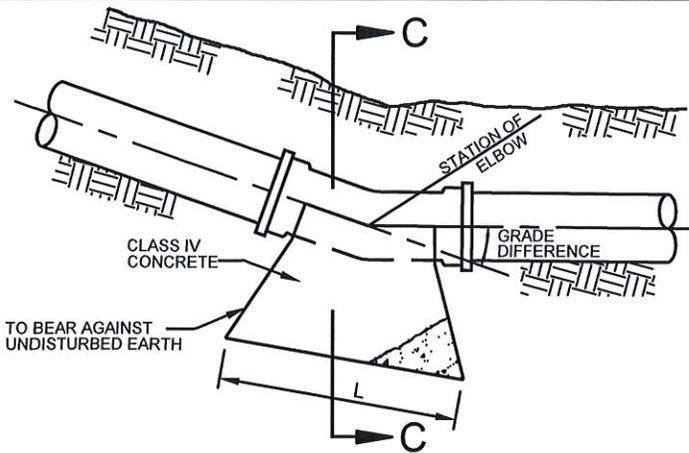
MATTHEW H. LITCHFIELD, P.E. RCE58097

DATE

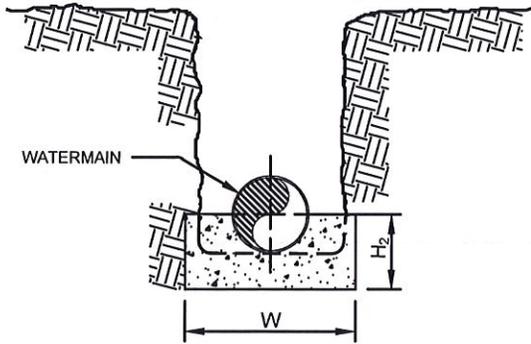
CONCRETE THRUST BLOCKS FOR PIPELINES, CLASS 200 P.S.I. MAX.

DRAWING NUMBER

W-3A



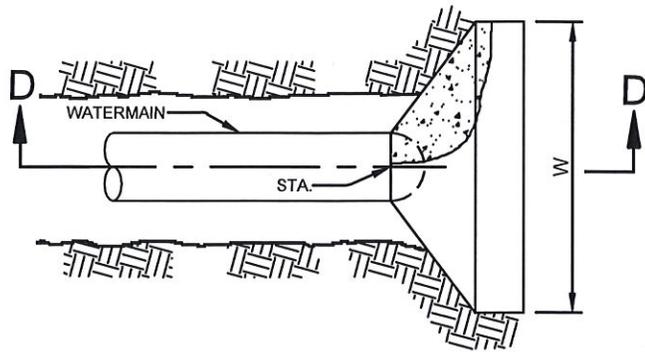
SECTIONAL ELEVATION



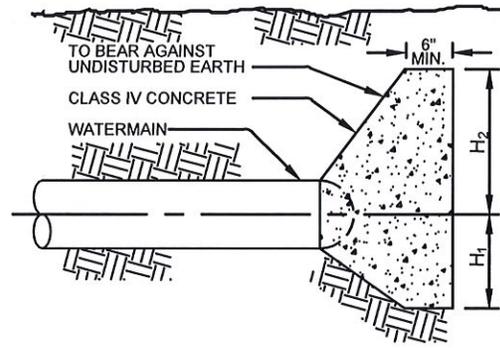
SECTION C-C

VERTICAL BEARER BLOCK

PIPE DIA.	W	H ₂	L	GRADE % DIFF.
4"	1'-6"	8"	1'-0"	5 TO 60
6"	2'-0"	9"	1'-0"	5 TO 40
6"	2'-0"	9"	1'-6"	41 TO 55
8"	2'-0"	10"	1'-0"	5 TO 25
8"	2'-0"	10"	1'-6"	16 TO 40
8"	2'-0"	10"	2'-0"	41 TO 55
10"	2'-6"	1'-2"	1'-0"	5 TO 10
10"	2'-6"	1'-2"	2'-0"	11 TO 40
10"	2'-6"	1'-2"	3'-0"	41 TO 60
12"	2'-6"	1'-3"	2'-0"	5 TO 25
12"	2'-6"	1'-3"	3'-0"	26 TO 45
12"	2'-6"	1'-3"	4'-0"	46 TO 60



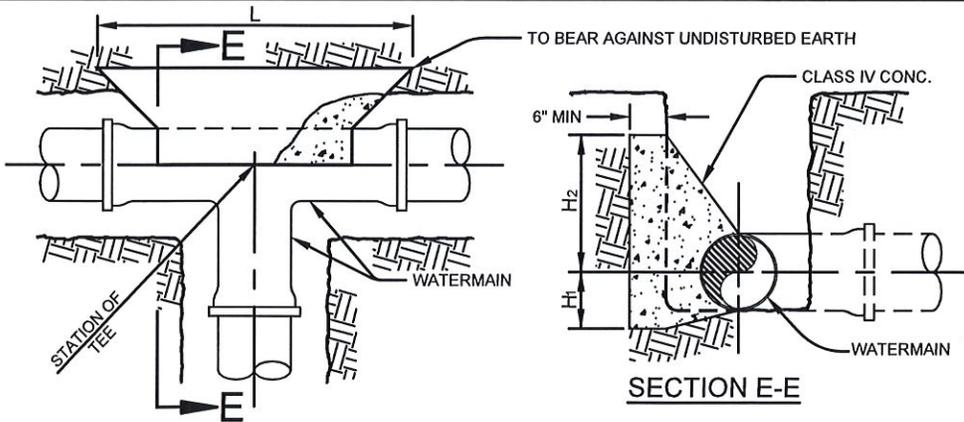
SECTIONAL PLAN



SECTION D-D

END THRUST BLOCK

*PIPE DIA.	H ₁	H ₂	L
4"	9"	6"	3'-6"
6"	1'-6"	9"	4'-0"
8"	2'-2"	1'-1"	4'-0"
10"	2'-10"	1'-5"	4'-0"
12"	3'-0"	1'-6"	5'-0"



SECTIONAL PLAN

SECTION E-E

*PIPE DIA.	H ₁	H ₂	L
4"	9"	6"	3'-6"
6"	1'-6"	9"	4'-0"
8"	2'-2"	1'-1"	4'-0"
10"	2'-10"	1'-5"	4'-0"
12"	3'-0"	1'-6"	5'-0"

* USE OUTLET PIPE DIAMETER

TEE THRUST BLOCK

WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

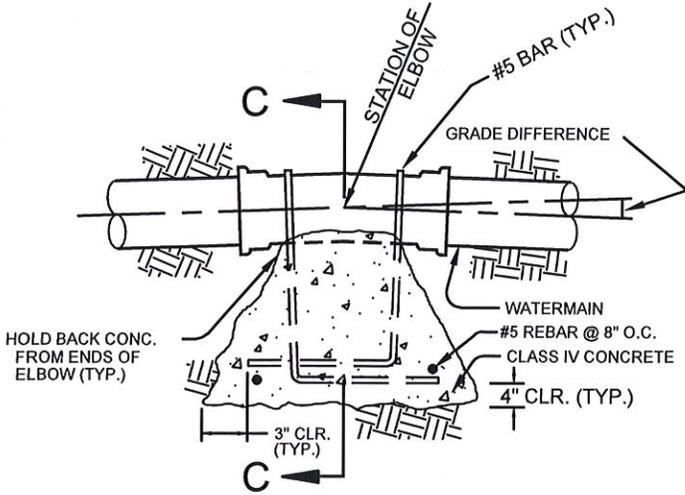
MATTHEW H. LITCHFIELD, P.E. RCE58097

DATE

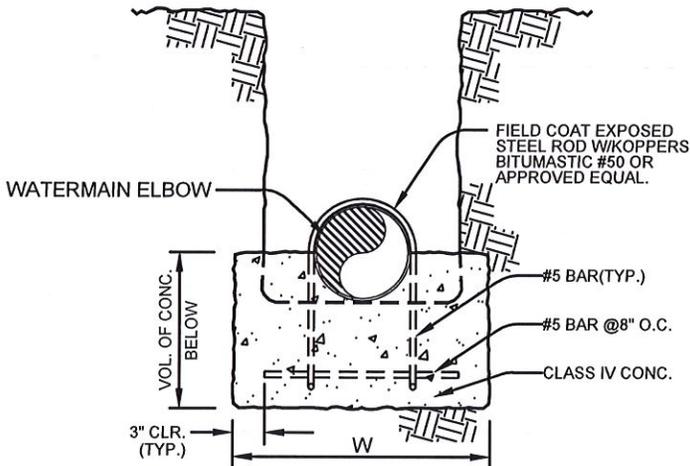
CONCRETE THRUST BLOCKS FOR PIPELINES, 200 P.S.I. MAX.

DRAWING NUMBER

W-3B



SECTIONAL ELEVATION



SECTION C-C

VERTICAL ANCHOR BLOCK

VERTICAL ANCHOR BLOCK

PIPE DIA.	W	VOLUME OF CONC (cu ft)	GRADE % DIFFERENCE
6"	2'-6"	7.6	5 TO 15
6"	2'-6"	11.4	16 TO 25
6"	2'-6"	15.2	26 TO 35
6"	2'-6"	22.8	36 TO 45
6"	2'-6"	31.0	46 TO 55
8"	2'-6"	10.3	5 TO 15
8"	2'-6"	15.5	16 TO 25
8"	2'-6"	20.6	26 TO 35
8"	2'-6"	31.0	36 TO 45
8"	2'-6"	41.3	46 TO 55
10"	3'-0"	27.6	5 TO 15
10"	3'-0"	36.8	16 TO 25
10"	3'-0"	55.3	26 TO 35
10"	3'-0"	73.7	36 TO 45
10"	3'-0"	92.1	46 TO 55
12"	3'-6"	30.0	5 TO 15
12"	3'-6"	45.0	16 TO 25
12"	3'-6"	67.5	26 TO 35
12"	3'-6"	75.0	36 TO 45
12"	3'-6"	97.5	46 TO 55
16"	4'-0"	48.0	5 TO 15
16"	4'-0"	72.0	16 TO 25
16"	4'-0"	84.0	26 TO 35
16"	4'-0"	130.0	36 TO 45
16"	4'-0"	168.0	46 TO 55
18"	4'-0"	81.0	5 TO 15
18"	4'-0"	108.0	16 TO 25
18"	4'-0"	135.0	26 TO 35
18"	4'-0"	192.5	36 TO 45
18"	4'-0"	270.0	46 TO 55
20"	4'-3"	108.0	5 TO 15
20"	4'-3"	162.0	16 TO 25
20"	4'-3"	189.0	26 TO 35
20"	4'-3"	216.0	36 TO 45
20"	4'-3"	297.0	46 TO 55
24"	4'-6"	120.0	5 TO 15
24"	4'-6"	150.0	16 TO 25
24"	4'-6"	210.0	26 TO 35
24"	4'-6"	270.0	36 TO 45
24"	4'-6"	330.0	46 TO 55
30"	5'-0"	168.0	5 TO 15
30"	5'-0"	294.0	16 TO 25
30"	5'-0"	378.0	26 TO 35
30"	5'-0"	462.0	36 TO 45
30"	5'-0"	546.0	46 TO 55
36"	5'-6"	196.0	5 TO 15
36"	5'-6"	a	16 TO 25
36"	a	490.0	26 TO 35
36"	5'-6"	637.0	36 TO 45
36"	5'-6"	784.0	46 TO 55

WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

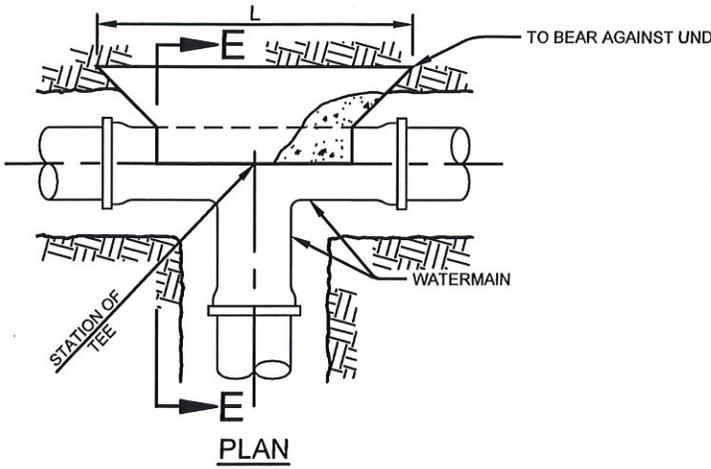
MATTHEW H. LITCHFIELD, P.E. RCE58097

DATE

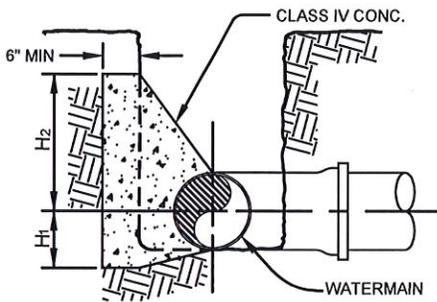
CONCRETE THRUST BLOCKS FOR PIPELINES, CLASS 200 P.S.I. MAX.

DRAWING NUMBER

W-3C



PLAN

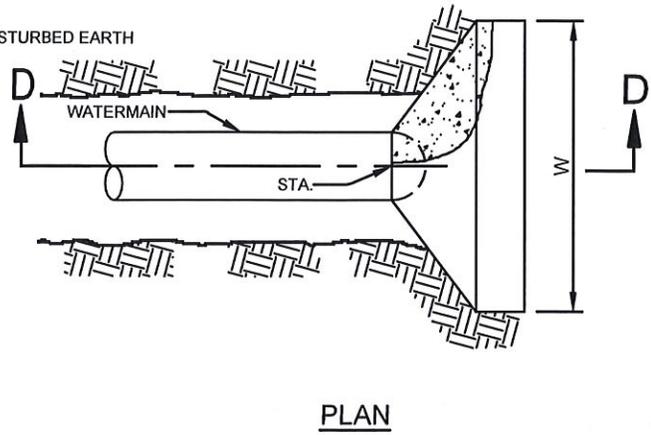


SECTION E-E

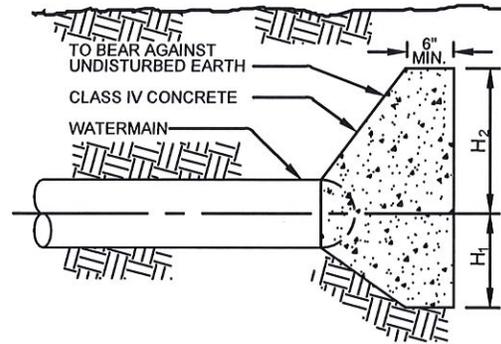
*PIPE DIA.	H ₁	H ₂	L
4"	1'-0"	1'-0"	3'-6"
6"	1'-0"	1'-0"	4'-0"
8"	1'-0"	2'-3"	4'-0"
10"	1'-0"	2'-6"	4'-0"
12"	1'-0"	3'-0"	5'-0"
16"	1'-4"	3'-0"	4'-0"
18"	1'-6"	3'-0"	4'-0"
20"	1'-8"	3'-6"	4'-0"
24"	2'-0"	4'-0"	5'-0"
30"	2'-6"	4'-6"	4'-0"
36"	3'-0"	5'-0"	4'-0"

* USE OUTLET PIPE DIAMETER

TEE THRUST BLOCK



PLAN



SECTION D-D

PIPE DIA.	H ₁	H ₂	L
4"	1'-0"	1'-0"	3'-6"
6"	1'-0"	1'-0"	4'-0"
8"	1'-0"	2'-3"	4'-0"
10"	1'-0"	2'-6"	4'-0"
12"	1'-0"	3'-0"	5'-0"
16"	1'-4"	3'-0"	4'-0"
18"	1'-6"	3'-0"	4'-0"
20"	1'-8"	3'-6"	4'-0"
24"	2'-0"	4'-0"	5'-0"
30"	2'-6"	4'-6"	4'-0"
36"	3'-0"	5'-0"	4'-0"

END THRUST BLOCK

WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

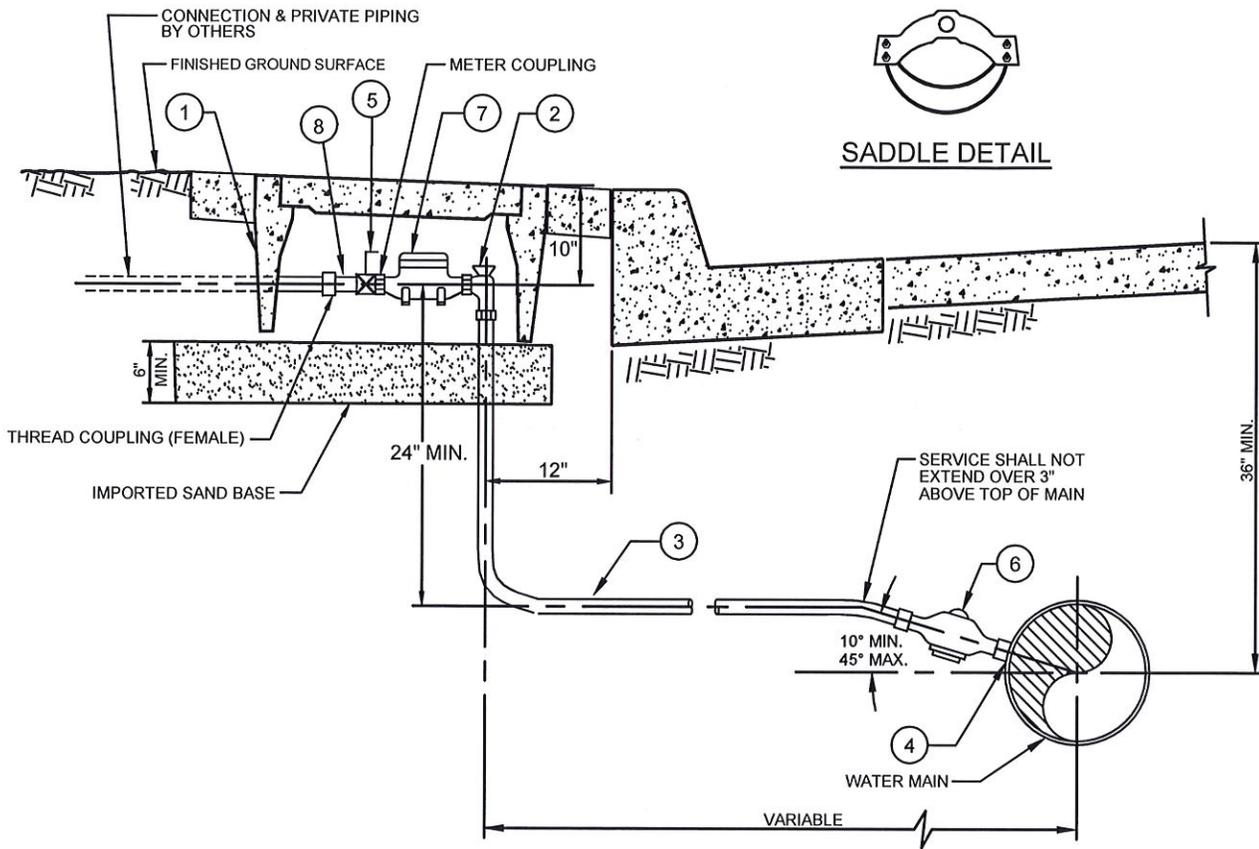
MATTHEW H. LITCHFIELD, P.E. RCE58097

DATE

CONCRETE THRUST BLOCKS FOR PIPELINES, 200 P.S.I. MAX.

DRAWING NUMBER

W-3D



DESCRIPTION

	DESCRIPTION
①	METER BOX AND COVER TO BE FURNISHED BY THE DISTRICT.
②	1" X 1" OR 1" X 3/4" INVERTED KEY ANGLE METER VALVE, PACK JOINT INLET X METER SWIVEL NUT OUTLET, FORD KV43, MULLER P-14258 OR APPROVED EQUAL.
③	1" COPPER WATER SERVICE, TYPE "K", SOFT TEMPER, PER ASTM B-88.
④	1" I.P.T. PAINTED DUCTILE IRON SERVICE SADDLE WITH DOUBLE STAINLESS STEEL STRAPS, FORD FS202, MULLER DB2S, ROMAC 202S, SMITH-BLAIR 317 OR APPROVED EQUAL
⑤	1" OR 3/4" BRASS BALL VALVE TO BE FURNISHED BY THE DISTRICT, FORD B-13 WITH HH-34 HIGH LEVEL HANDLE OR APPROVED EQUAL
⑥	1" Ø BALL CORP. STOP, I.P.T. INLET X PACK JOINT OUTLET, FORD FB1100, MULLER P-25028 OR APPROVED EQUAL.
⑦	METER TO BE FURNISHED BY THE DISTRICT. 3/4" OR 1"
⑧	1" OR 3/4" THREADED, GALVANIZED IRON PIPE NIPPLE

NOTES:

1. CHISEL 1" HIGH " W " ON TOP OF CURB DIRECTLY OVER WATER SERVICE LATERAL

WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

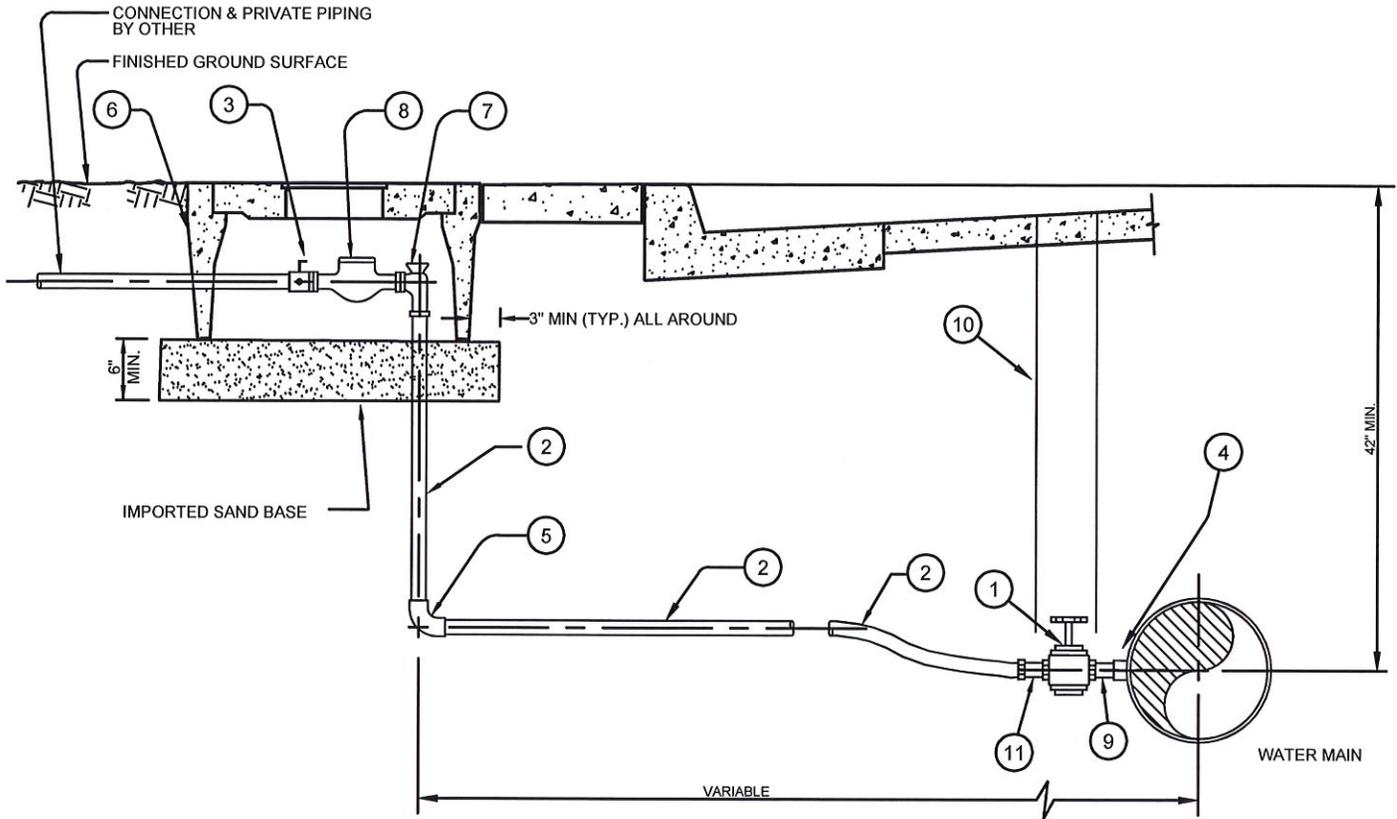
MATTHEW H. LITCHFIELD, P.E. RCE58097

DATE

WATER SERVICE DETAIL
3/4 " & 1" METER

DRAWING NUMBER

W-4



DESCRIPTION

①	2" RESILIENT SEATED GATE VALVE, FEMALE X FEMALE IRON PIPE THREAD WITH 2" OPERATING NUT MUELLER A-2360 OR APPROVED EQUAL
②	2" TYPE K COPPER TUBING
③	1 1/2" OR 2" BRASS BALL METER VALVE, METER FLANGE X FEMALE IRON PIPE THREAD, FORD BF-13 OR APPROVED EQUAL.
④	PAINTED IRON SERVICE SADDLE WITH DOUBLE STAINLESS STEEL STRAPS, FORD FS 202, ROMAC 202S OR SMITH-BLAIR 317.
⑤	2" DIAMETER 90 ° SILVER SOLDERED ELBOW.
⑥	METER BOX AND COVER.
⑦	2" ANGLE METER VALVE W/ PACK JOINT INLET, METER FLANGE OUTLET AND LOCK WING, FORD FV-13 AND/OR FV-43, MULLER P-14277 OR APPROVED EQUAL.
⑧	1 1/2" OR 2" METER TO BE FURNISHED BY THE DISTRICT.
⑨	2" THREADED GALVANIZED PIPE NIPPLE
⑩	VALVE BOX AND COVER PER STANDARD DRAWING NO. 11
⑪	BRASS COUPLING, MALE IRON PIPE THREAD X PACK JOINT, FORD C-84 OR APPROVED EQUAL

NOTES:

1. CHISEL 1" HIGH " W " ON TOP OF CURB DIRECTLY OVER WATER SERVICE LATERAL
2. WRAP GIP PIPE WITH 2 LAYERS OF 10 MILS PVC TAPE

WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

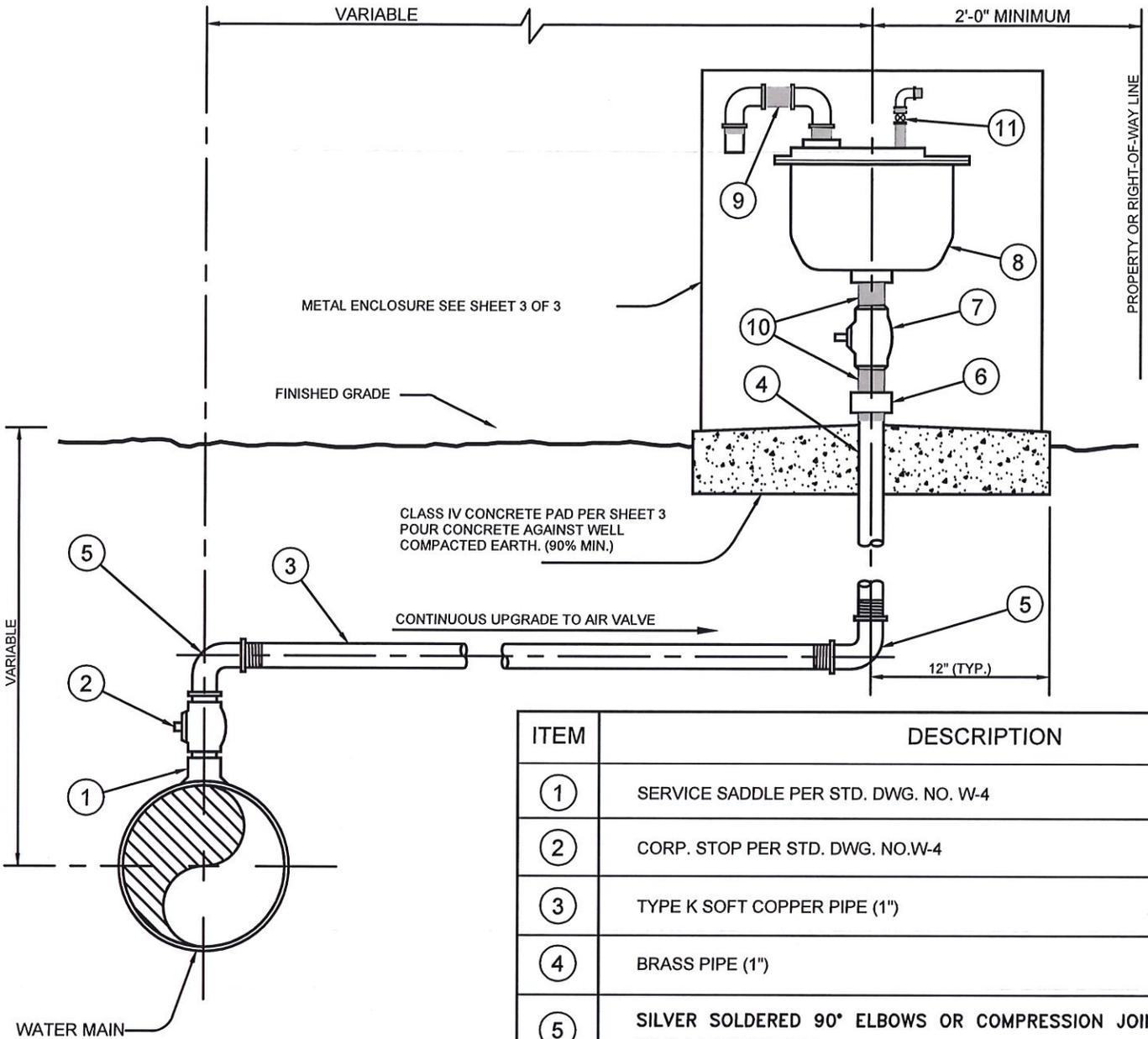
MATTHEW H. LITCHFIELD, P.E. RCE58097

DATE

**WATER SERVICE DETAIL
1 1/2" & 2" METER**

DRAWING NUMBER

W-5



ALL PIPE FITTINGS AND VALVES SHALL BE SAME DIAMETER AS AIR VALVE INLET.

PIPE THREADS SHALL BE CLEAN AND SHARP AND SEALED WITH AN APPROVED JOINT COMPOUND.

ITEM	DESCRIPTION
①	SERVICE SADDLE PER STD. DWG. NO. W-4
②	CORP. STOP PER STD. DWG. NO.W-4
③	TYPE K SOFT COPPER PIPE (1")
④	BRASS PIPE (1")
⑤	SILVER SOLDERED 90° ELBOWS OR COMPRESSION JOINT WITH LOCKING WINGS.
⑥	BRASS COUPLING AT SURFACE ON CONC.
⑦	BRASS OR BRONZE GLOBE VALVE (1")
⑧	"APCO" HEAVY DUTY COMB. AIR RELEASE VALVE.
⑨	STD. GALV. 90° ST. ELBOW; 3" LONG STD BLK NIPPLE T-2E; STD. BLK, 90° ELBOW; & 3" LONG STD GALV. NIPPLE T-1E. ORIENTED TO CLEAR AIR VALVE BODY. PROVIDE EXHAUST SCREEN.
⑩	BRASS PIPE NIPPLE, THREADED BOTH ENDS.
⑪	1/2" BRASS GATE VALVE, (NO HANDLE); 1/2" X 2" BRASS NIPPLE; 1/2" BRASS ST. EL..

WEST VALLEY WATER DISTRICT

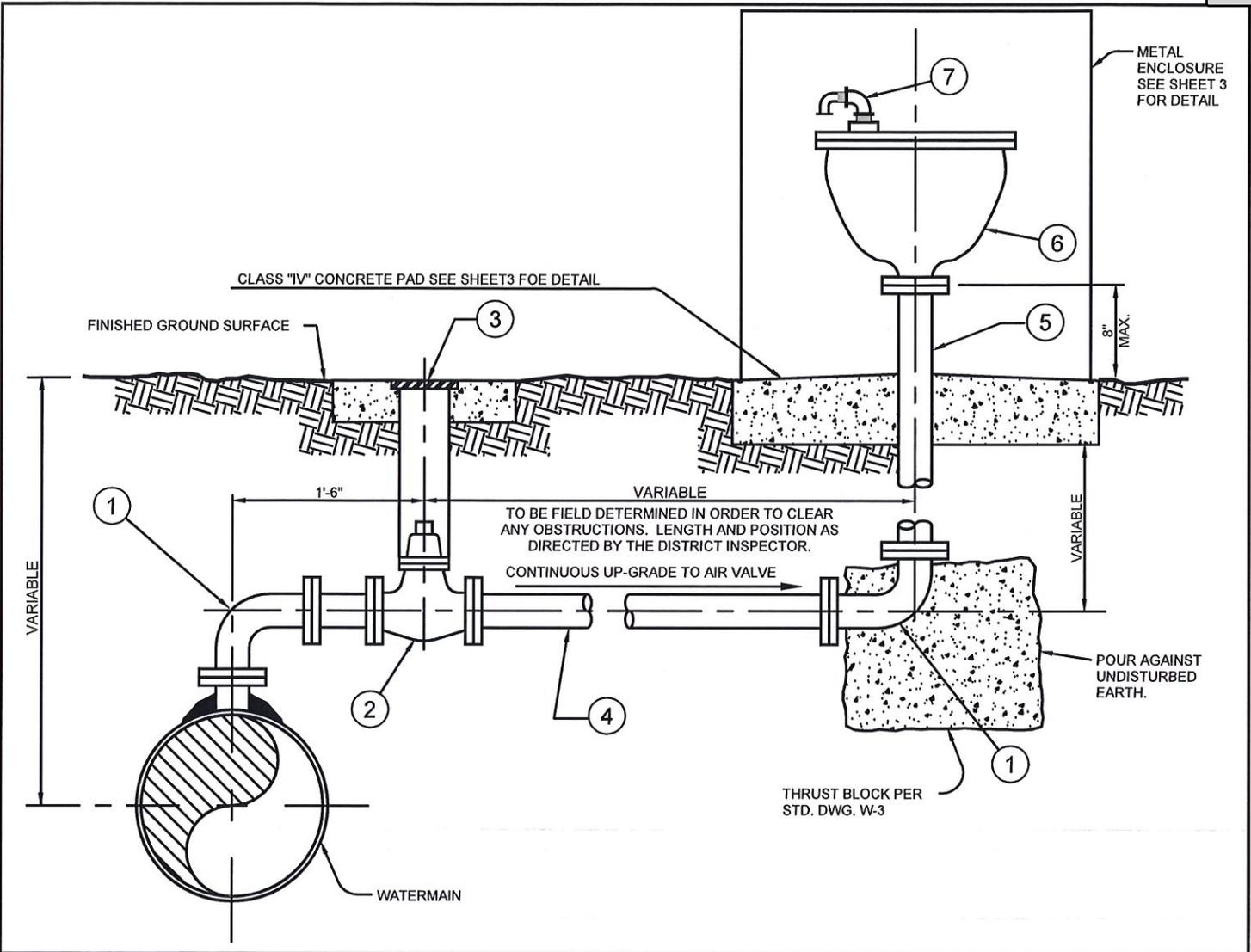
APPROVED: 

MATTHEW H. LITCHFIELD, P.E. RCE58097 09/07/2016 DATE

AIR VALVE INSTALLATION FOR 1" DIAMETER ONLY

DRAWING NUMBER

W-6A



ITEM	DESCRIPTION
①	FL X FL 90° ELBOW, SIZE TO MATCH AIR VALVE
②	A.W.W.A. C-509 FLANGED RESILENT SEAT GATE VALVE, CLASS AS NOTED ON PLAN, 2" SQ. OPERATING NUT, MUELLER OR APPROVED EQUAL. SEE STD DWG W-11. SIZE TO MATCH AIR VALVE
③	8" VALVE BOX AND COVER PER STANDARD DWG. W-11.
④	SCH 40 STEEL PIPE, WRAPPED W/TWO LAYERS OF 10 MILS PVC TAPE FOR BELOW GROUND PORTION. SIZE TO MATCH AIR VALVE
⑤	SCH 40 FLG. SPOOL
⑥	"APCO" HEAVY DUTY COMBINATION AIR RELEASE VALVE, OR APPROVED EQUAL, CAST IRON BODY, STAINLESS STEEL AND BRONZE INTERNAL WORKING PARTS, STANDARD SCREWED OUTLET TOP AND FLANGED BOTTOM, 300 W.O.G. MODEL 149C. SIZE AS CALLED FOR ON PLAN
⑦	STANDARD WEIGHT GALV. 90° ELBOW W/EXHAUST SCREEN.

WEST VALLEY WATER DISTRICT

APPROVED: 

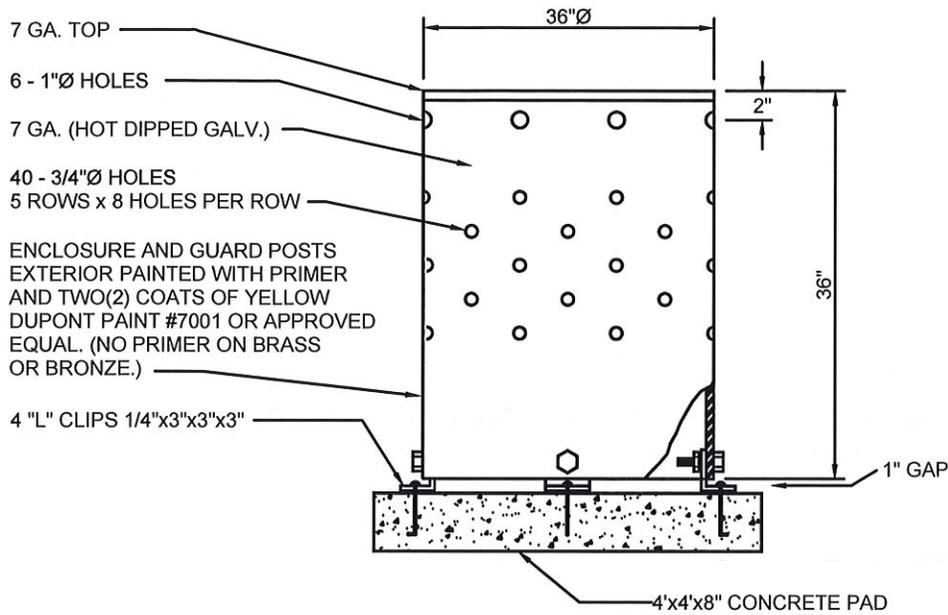
MATTHEW H. LITCHFIELD, P.E. RCE58097

09/07/2016 DATE

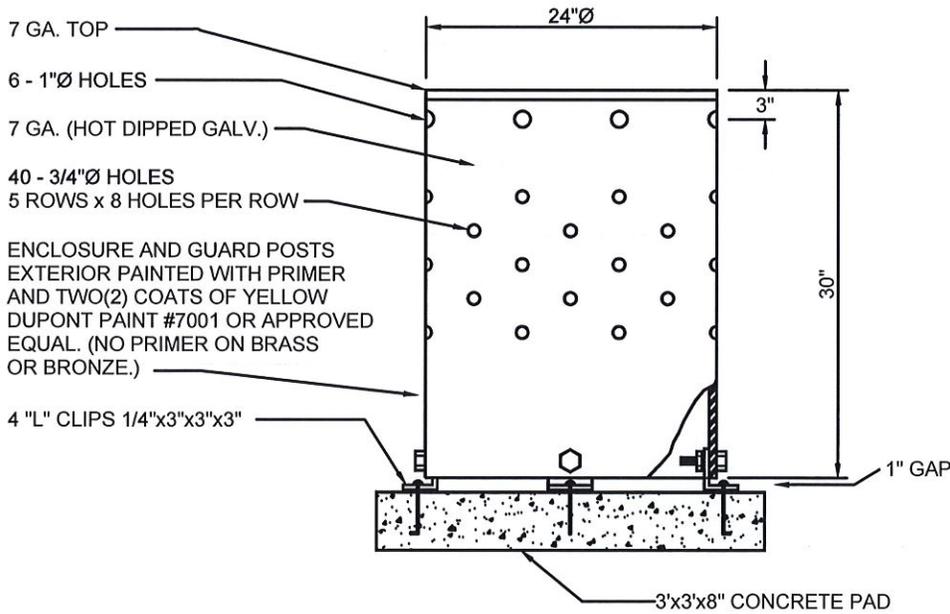
AIR VALVE INSTALLATION FOR 2" OR LARGER

DRAWING NUMBER

W-6B



4" DIAMETER AIR VALVE ENCLOSURE



1" AND 2" DIAMETER AIR VALVE ENCLOSURES

WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

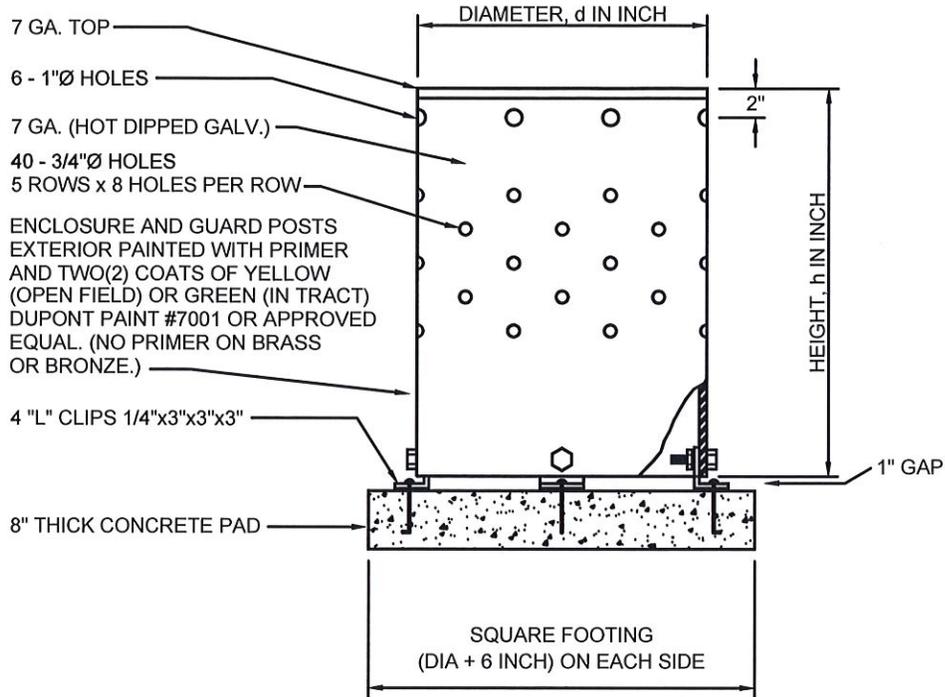
MATTHEW H. LITCHFIELD, P.E. RCE58097

DATE

AIR VALVE ENCLOSURES

DRAWING NUMBER

W-6C



SIZE OF AIR VALVE IN INCH	DIAMETER, d	HEIGHT, h
1"	16"	30"
1-1/2"	18"	30"
2"	24"	36"
3"	30"	36"
4"	36"	36"

WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

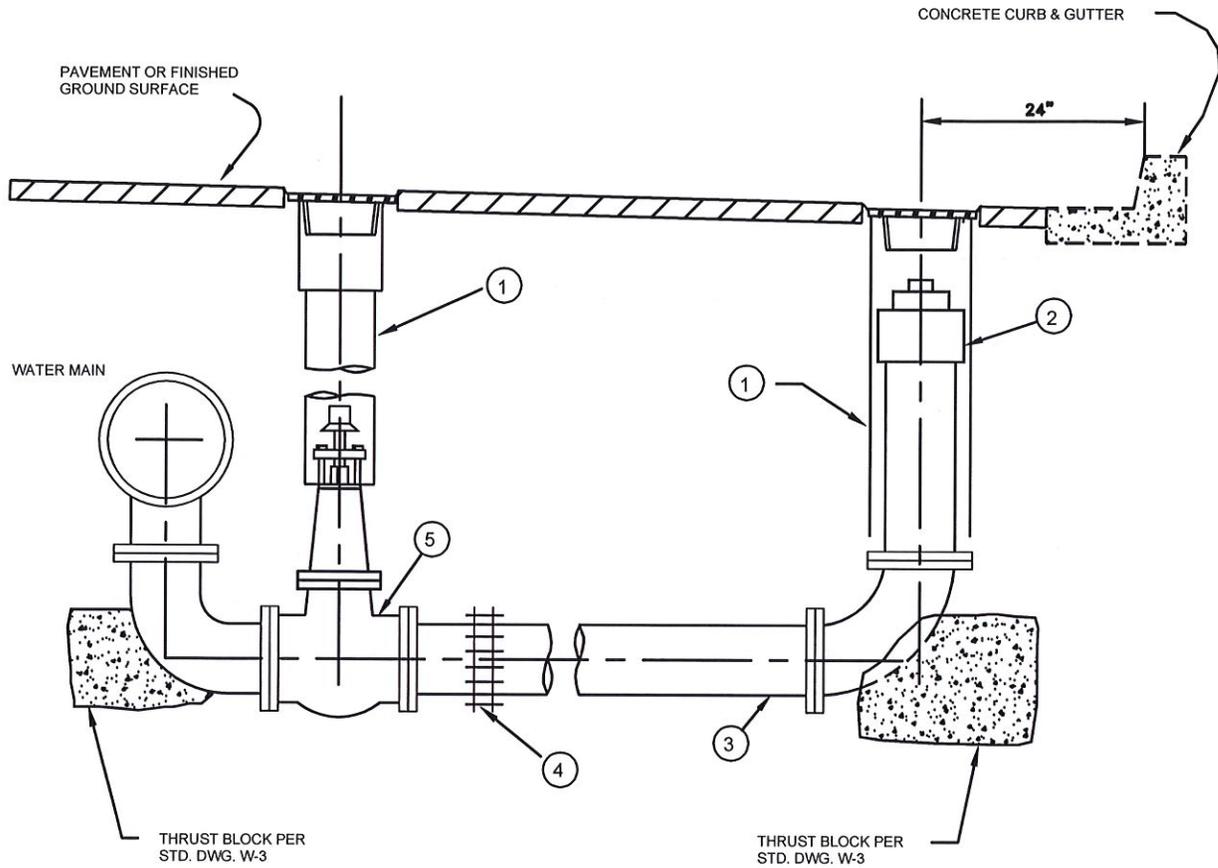
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DATE

AIR VALVE ENCLOSURES

DRAWING NUMBER

W-6C



NOTES:

1. LOCATE BLOW-OFF VALVE CAN 2'-0" IN FRONT OF FACE CURB
2. 4" BLOW-OFF WILL BE REQUIRED FOR 6" - 12" WATER MAIN;
6" BLOW-OFF WILL BE REQUIRED FOR 14" AND LARGER WATER MAIN.
3. SIZE OF PIPE, VALVE AND FITTINGS SHALL CONFORM TO THE SIZE OF BLOW-OFF REQUIRED.

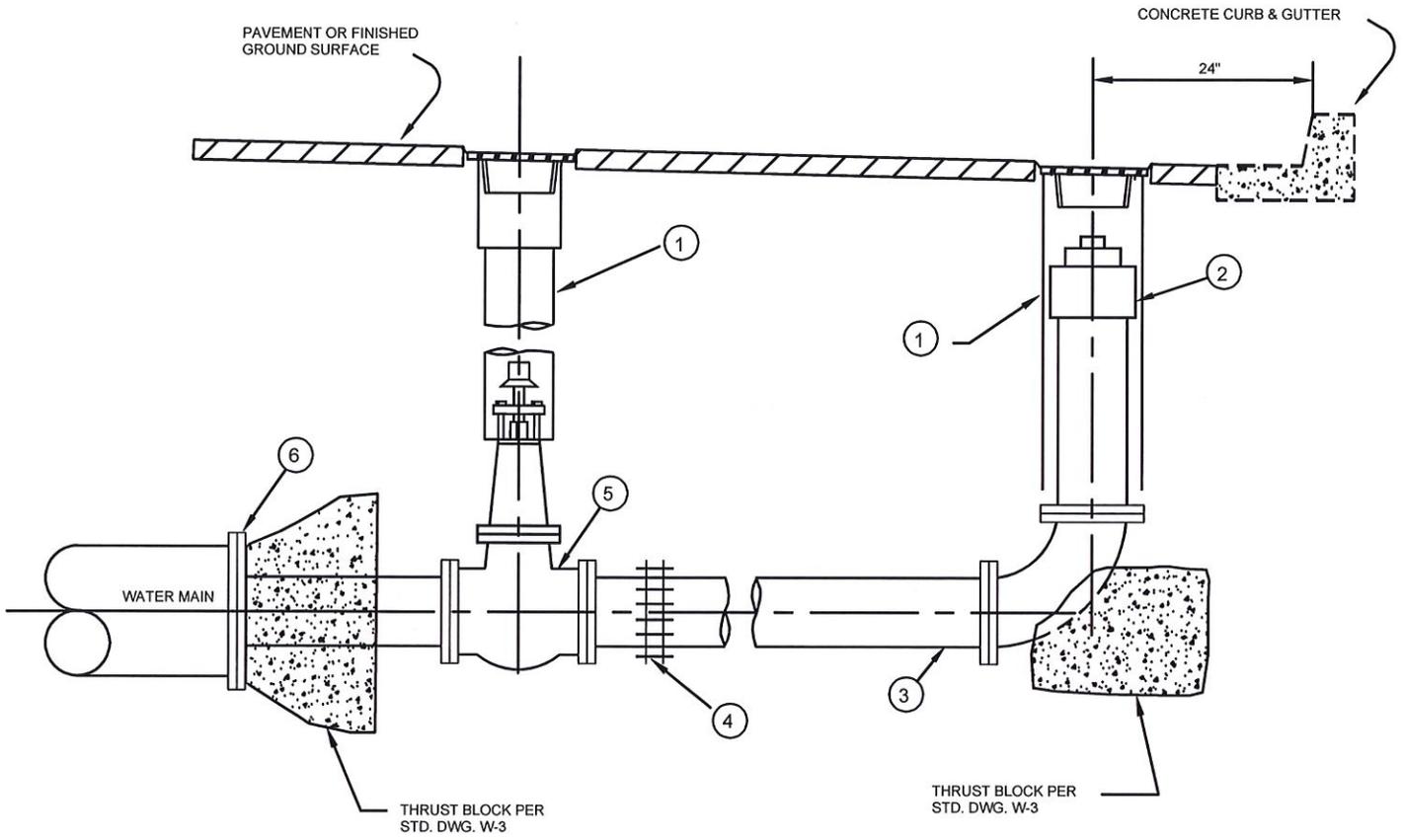
ITEM	DESCRIPTION
①	8" VALVE BOX AND COVER PER STANDARD DRAWING NO. 11
②	4" OR 6" THREAD GALVANIZED IRON PIPE COUPLING WITH SLOTTED PLUG
③	4" OR 6" SCHEDULE 40 STEEL PIPE, FIELD WRAPPED BELOW GROUND PART WITH TWO LAYERS OF 10 MILS PVC TAPE.
④	4" OR 6" FLEXIBLE COUPLING
⑤	4" OR 6" Fx F R.S. GATE VALVE WITH PRESSURE RATING TO MATCH MAIN LINE. SEE W-11.

WEST VALLEY WATER DISTRICT

APPROVED: 
 MATTHEW H. LITCHFIELD, P.E. RCE58097 09/07/2016 DATE

4" & 6" BLOW-OFF ASSEMBLY

DRAWING NUMBER
 W-7



NOTES:

1. LOCATE DEAD-END FLUSH-OUT VALVE CAN 2'-0" IN FRONT OF FACE CURB
2. A 2" FLUSH-OUT SHALL BE REQUIRED FOR 6" AND SMALLER WATER MAIN.
A 4" FLUSH-OUT SHALL BE REQUIRED FOR 8" AND LARGER WATER MAIN.
3. SIZE OF PIPE, VALVE AND FITTINGS SHALL CONFORM TO THE SIZE OF FLUSH-OUT REQUIRED.

ITEM	DESCRIPTION
①	8" VALVE BOX AND COVER PER STANDARD DRAWING NO. 11
②	2" OR 4" THREAD GALVANIZED IRON PIPE COUPLING WITH SLOTTED PLUG
③	2" OR 4" SCHEDULE 40 GALVANIZED STEEL PIPE WRAPPED WITH TWO LAYERS OF 10 MILS PVC TAPE.
④	2" OR 4" FLEXIBLE COUPLING
⑤	2" OR 4" Fx F R.S. GATE VALVE WITH PRESSURE RATING TO MATCH MAIN LINE. SEE W-11.
⑥	DUCTILE IRON PLUG OR CAP WITH 2" OR 4" THREADED OUTLET.

WEST VALLEY WATER DISTRICT

APPROVED: 
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09/07/2016
 DATE

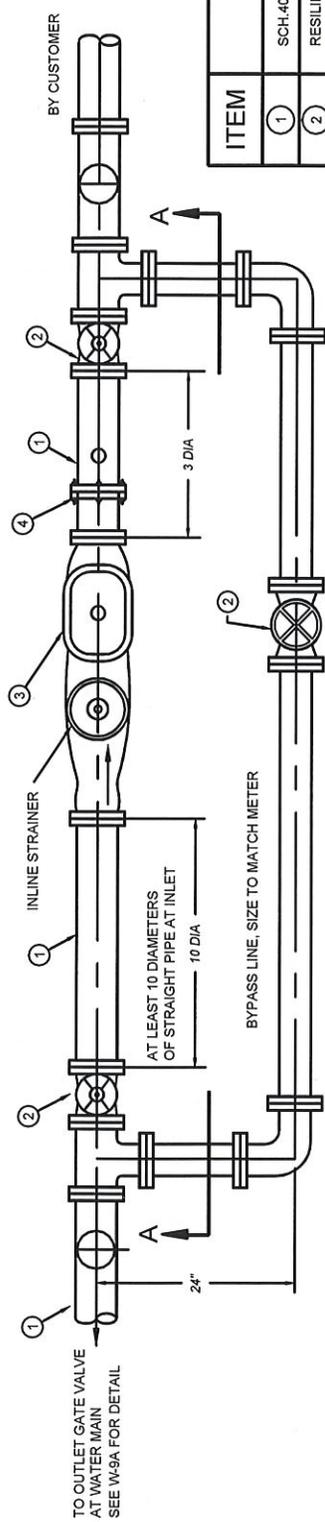
2" & 4" DEAD-END FLUSH-OUT

DRAWING NUMBER
 W-8

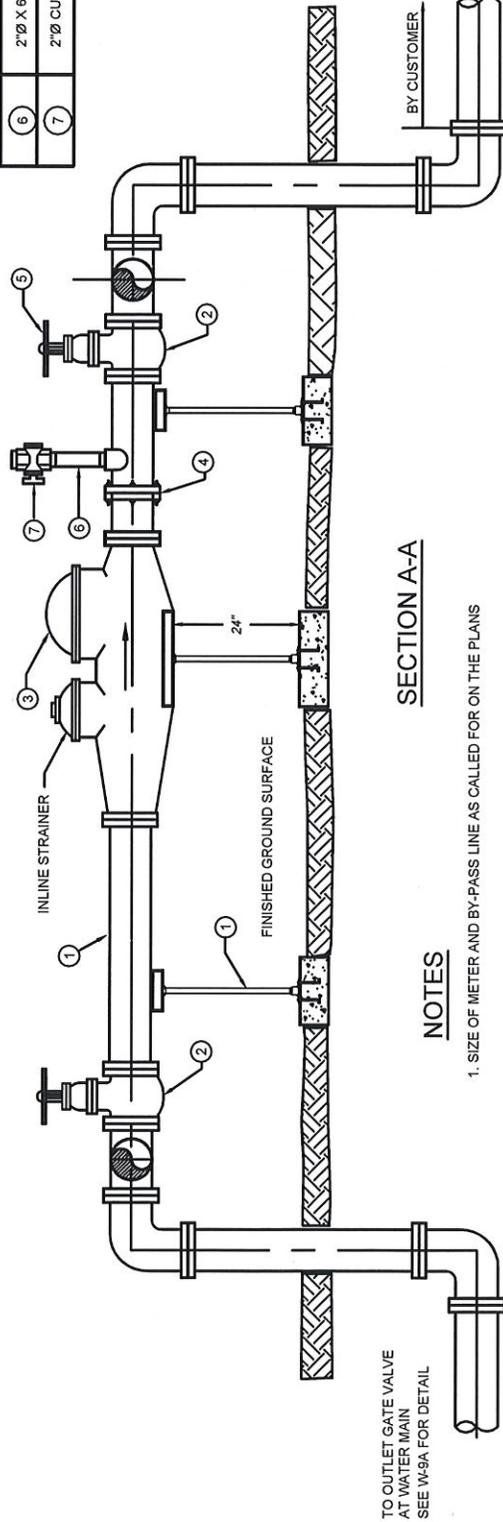
WEST VALLEY WATER DISTRICT
 WATER SERVICE DETAIL
 3" AND LARGER METER
 TURBINE METER INSTALLATION

APPROVED: *[Signature]*
 MATTHEW H. LITCHFIELD, P.E. RCE58097

09/07/2016
 DATE



PLAN VIEW



SECTION A-A

NOTES

1. SIZE OF METER AND BY-PASS LINE AS CALLED FOR ON THE PLANS
2. METER AND GATE VALVES SHALL HAVE APPROVED PIPE SUPPORT.
3. INSTALL FITTINGS AND THRUST BLOCKS AS NEEDED

FOR ABOVE GROUND INSTALLATION

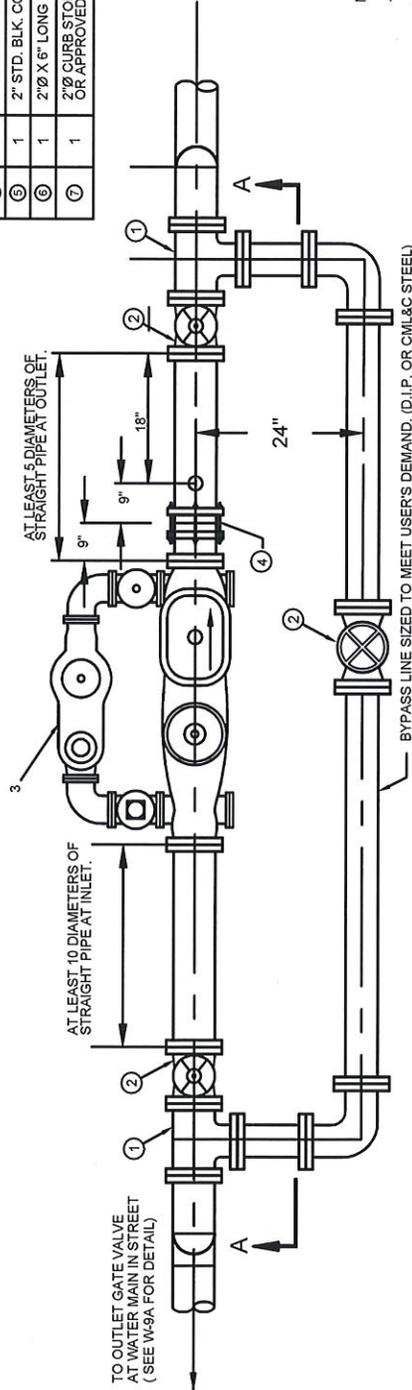
ITEM	DESCRIPTION
1	SCH.40 STEEL PIPE, SAME SIZE AS METER
2	RESILIENT SEATED GATE VALVE W/HANDWHEEL
3	METER TO BE FURNISHED BY THE DISTRICT
4	VICTAULIC COUPLING
5	2" STD. BLK. GALVANIZED STEEL COUPLING WELDED TO PIPE
6	2"Ø X 6" LONG STD. WT. GALV. PIPE THREADED BOTH ENDS
7	2"Ø CURB STOP INSIDE I.P.T. X INSIDE I.P.T.

**WATER SERVICE DETAIL
3" AND LARGER METER
COMPOUND METER INSTALLATION**

WEST VALLEY WATER DISTRICT

APPROVED: *[Signature]* 09/07/2016 DATE
MATTHEW H. LITCHFIELD, P.E. RCE58097

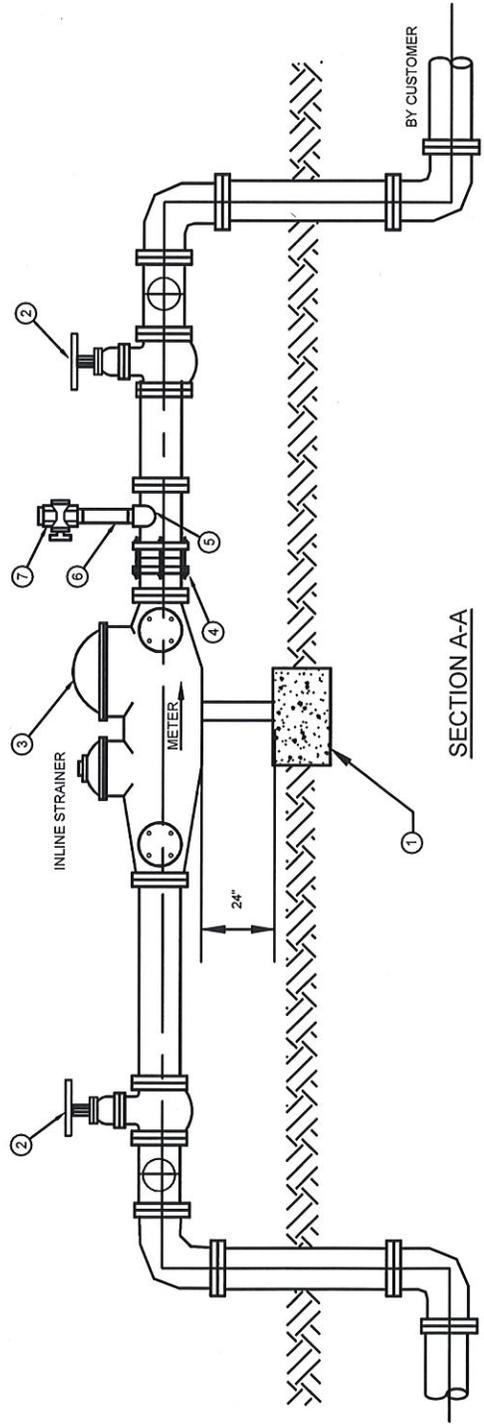
ITEM	QTY	DESCRIPTION
①	2	FLANGED TEE, SIZE TO MATCH METER, WITH SIDE OUTLET TO MEET USER'S DEMAND
②	3	RESILIENT SEAT GATE VALVE PER SPECIFICATION W/VALVE BOX & COVER, SIZE TO MATCH LINE SIZE, MUELLER OR APPROVED EQUAL
③	1	COMPOUND METER PURCHASED FROM THE DISTRICT, 4", 6", & 8"
④	1	FLEXIBLE COUPLING
⑤	1	2" STD. BLK. COUPLING WELDED TO PIPE.
⑥	1	2" X 6" LONG STD. WT. GALV. PIPE THREADED BOTH ENDS.
⑦	1	2" CURB STOP INSIDE I.P.T. X INSIDE I.P.T. JONES MODEL L-200 OR APPROVED EQUAL



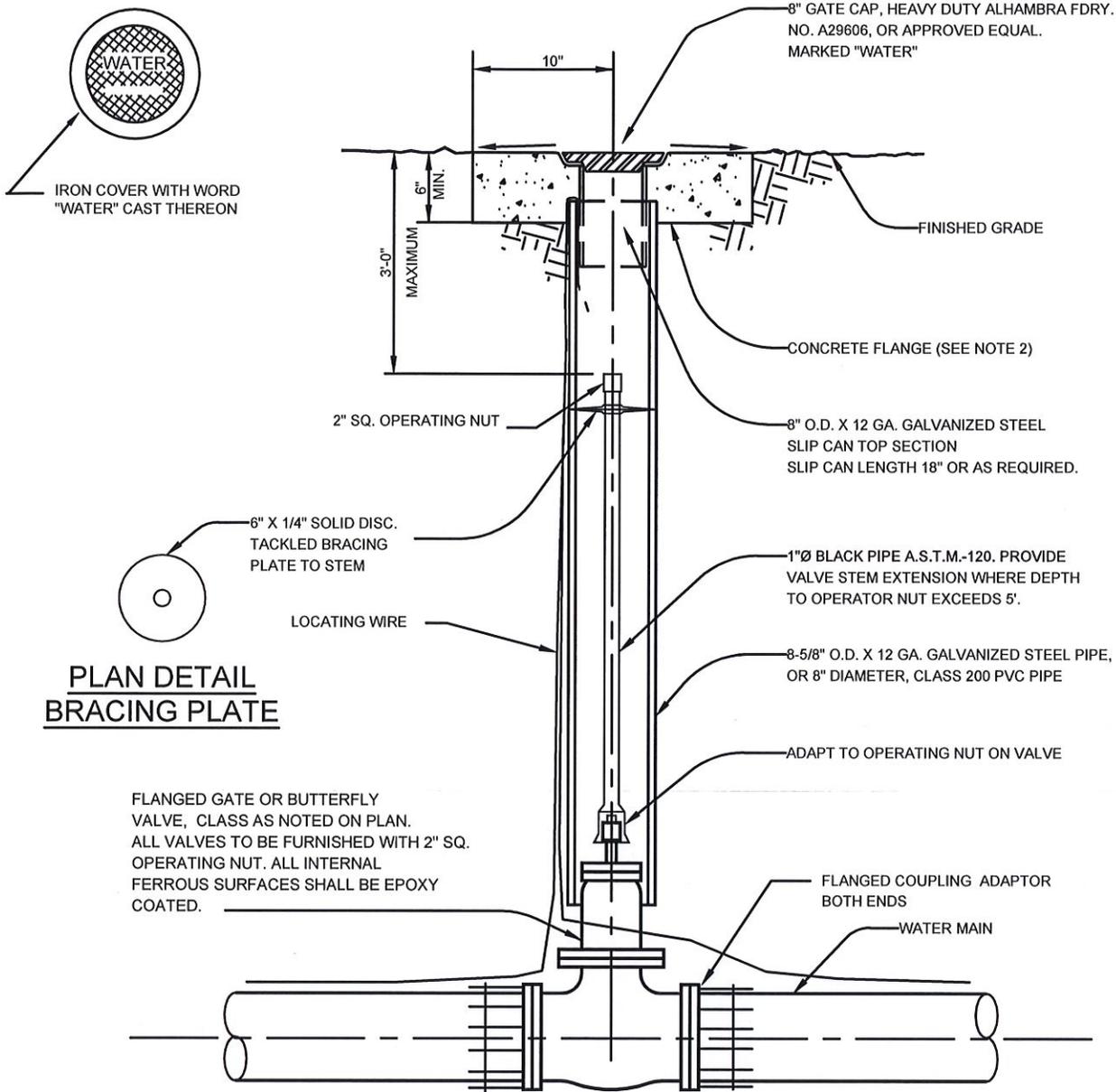
PLAN VIEW

NOTES:

1. METERS AND GATE VALVE SHALL APPROVED PIPE SUPPORT
2. 24" MINIMUM CLEARNESS REQUIRED AROUND METER
3. INSTALLED PARALLEL TO PROPERTY LINE
3. DEPENDING ON THE RIGHT-OF-WAY, METER MAY HAVE TO BE



FOR ABOVE GROUND INSTALLATION



NOTES:

1. VALVE MARKER SHALL BE INSTALLED AS DIRECTED BY THE DISTRICT INSPECTOR. DELETE VALVE MARKER WHENEVER VALVE BOX IS INSTALLED IN A ROAD HAVING CURB AND GUTTER.
2. CLASS IV CONCRETE FLANGE, 20" SQ. POUR AGAINST WELL COMPACTED EARTH, 90% MIN. DELETE IF VALVE BOX IS INSTALLED IN A PAVED ROAD.

WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

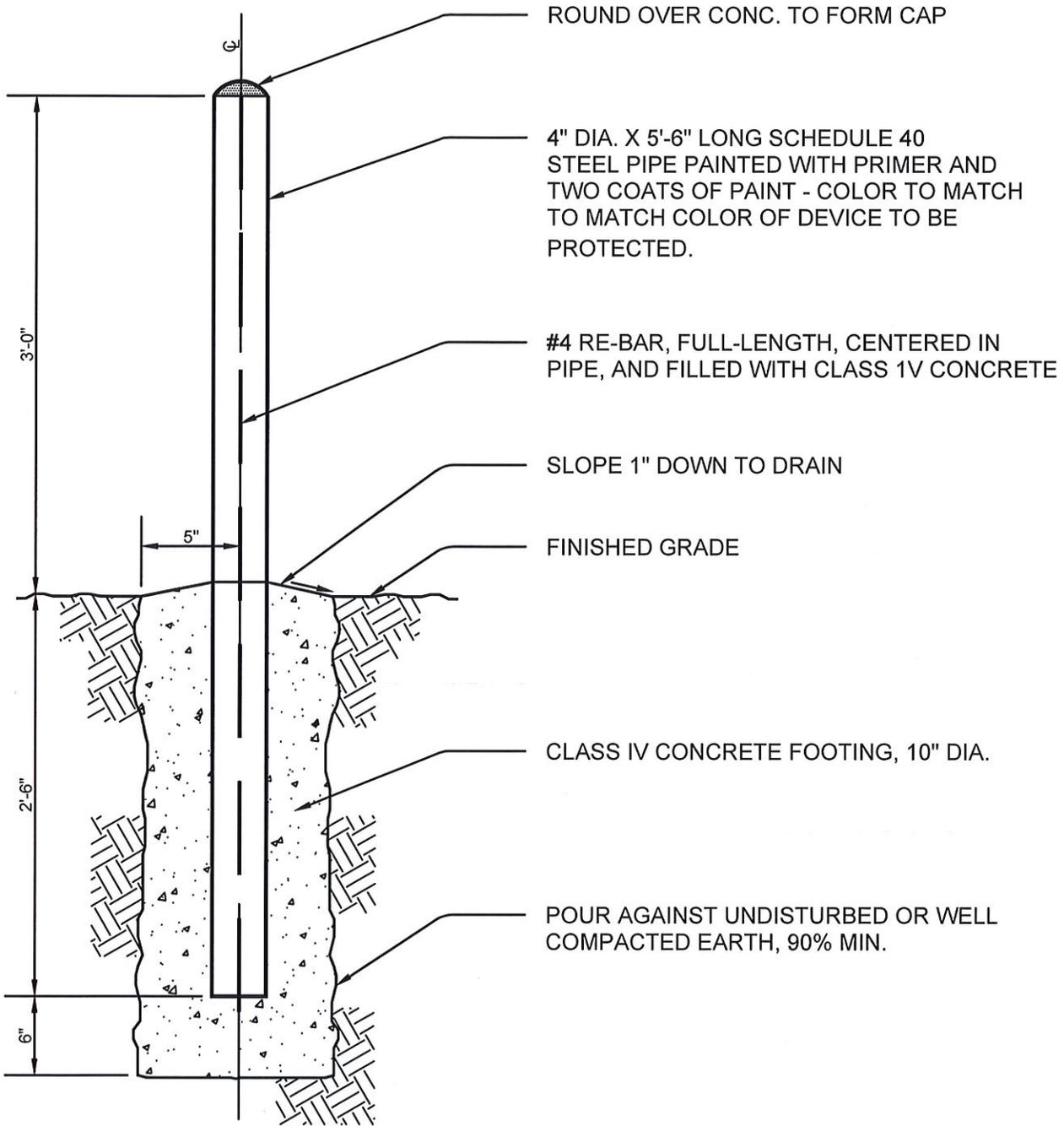
MATTHEW H. LITCHFIELD, P.E. RCE58097

DATE

**VALVE AND VALVE BOX
INSTALLATION DETAIL**

DRAWING NUMBER

W-11



NOTE:

LOCATION SHALL BE AS SHOWN ON PLAN VIEW, OR AS DIRECTED IN THE FIELD BY THE DISTRICT INSPECTOR OR ENGINEER.

WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

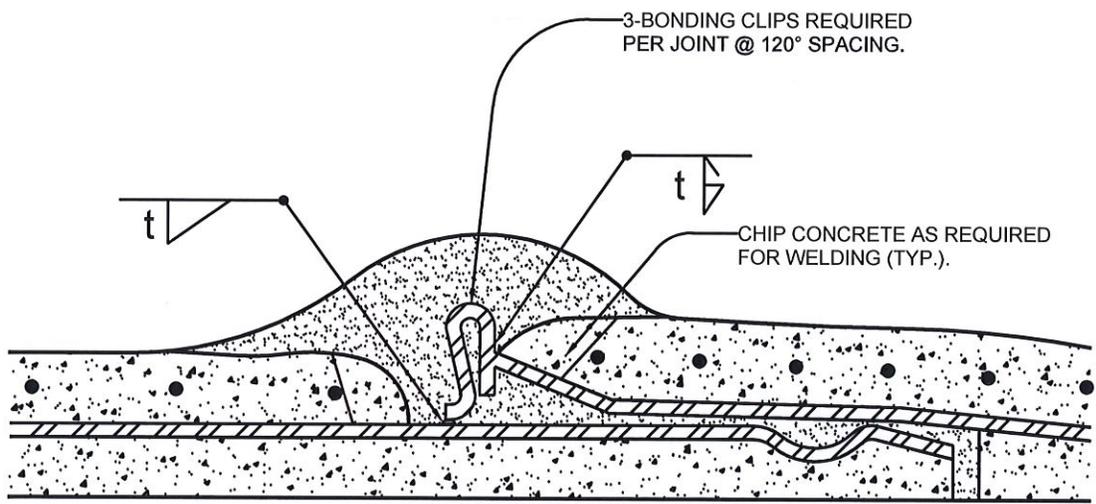
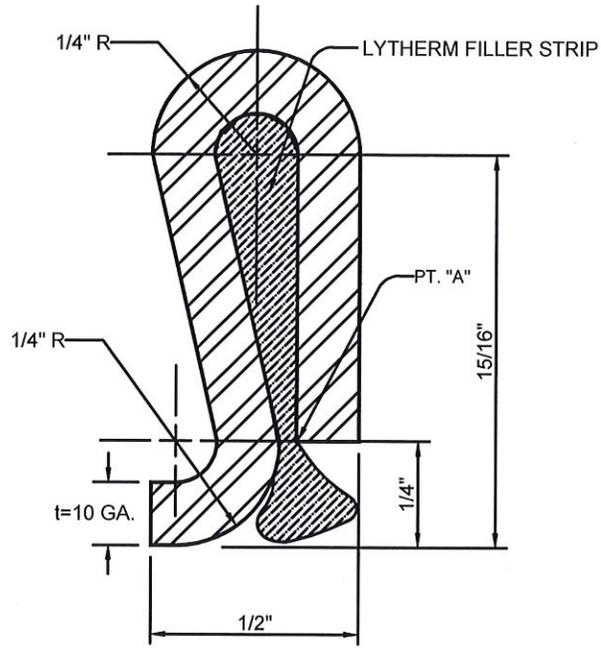
MATTHEW H. LITCHFIELD, P.E. RCE58097

DATE

GUARD POST
INSTALLATION DETAIL

DRAWING NUMBER

W-12



FIELD INSTALLATION

NOTES:

1. STEEL BONDING CLIP:
 MATERIAL SPECIFICATION: ASTM A366 (COMMERCIAL QUALITY).
 CUT LENGTH: 2-1/2" ± 1/16"
 WIDTH: 1-1/4" ± 1/16"
2. LYTHERM FILLER STRIP TO BE 1" x 1-1/2" WIDE TO OVERLAP SIDES OF CLIP.
3. CRIMP BONDING CLIP OVER FILLER AT "A" TO COMPRESS FILLER.

WEST VALLEY WATER DISTRICT

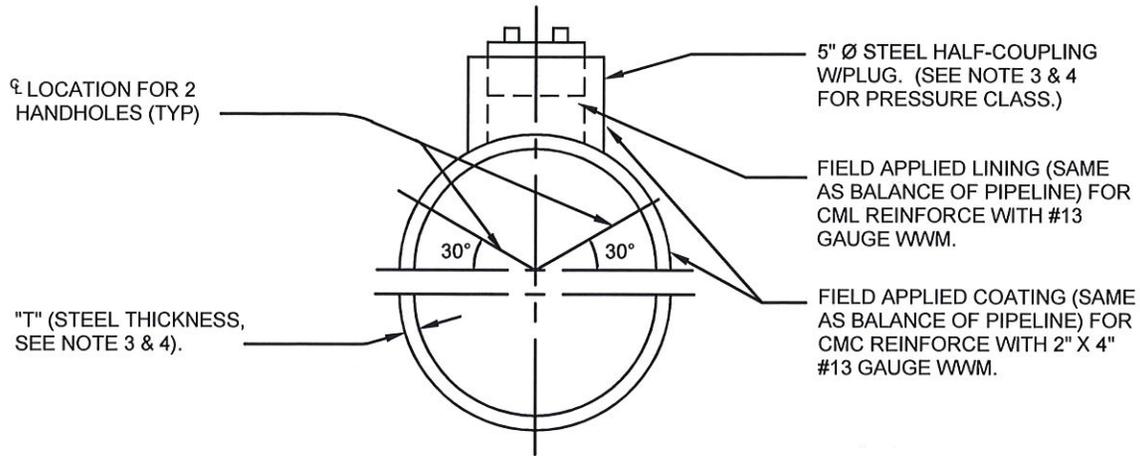
APPROVED: 

MATTHEW H. LITCHFIELD, P.E. RCE58097 09/07/2016 DATE

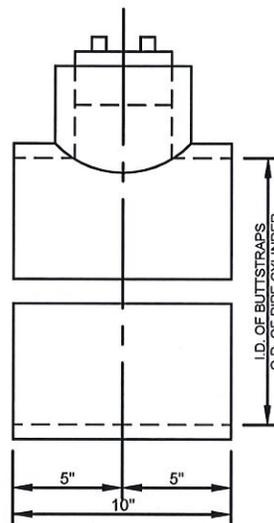
BONDING CLIP DETAIL

DRAWING NUMBER

W-13



END VIEW



SIDE VIEW

NOTES:

1. 1 HANDHOLE REQUIRED FOR 4" Ø PIPE THROUGH 18" Ø PIPE.
2. 2 HANDHOLES REQUIRED FOR 20" Ø PIPE THROUGH 30" Ø PIPE.
3. UP TO CLASS 200 PIPELINES:
 "T"=3/16" FOR 4" Ø THROUGH 24" Ø.
 "T"=1/4" FOR 30" Ø
 5"-BLACK, HALF-COUPLING, CLASS 150, CRANE OR APPROVED EQUAL.
 5"-BLACK, CORED, BAR PLUG, CLASS 150, CRANE OR APPROVED EQUAL.
4. GREATER THAN CLASS 200 THROUGH CLASS 350 PIPELINES:
 "T"=3/16" FOR 4" Ø THROUGH 14" Ø.
 "T"=1/4" FOR 16" Ø THROUGH 20" Ø.
 "T"=5/16" FOR 24" Ø.
 "T"=3/8" FOR 30" Ø.
 5"+BLACK, HALF-COUPLING, CLASS 300, CRANE OR APPROVED EQUAL.
 5"+BLACK, SOLID, BAR PLUG, CLASS 300, CRANE OR APPROVED EQUAL.
5. SEAL THREADS WITH A NON-TOXIC COMPOUND.

WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

MATTHEW H. LITCHFIELD, P.E. RCE58097

DATE

BUTT STRAP DETAIL

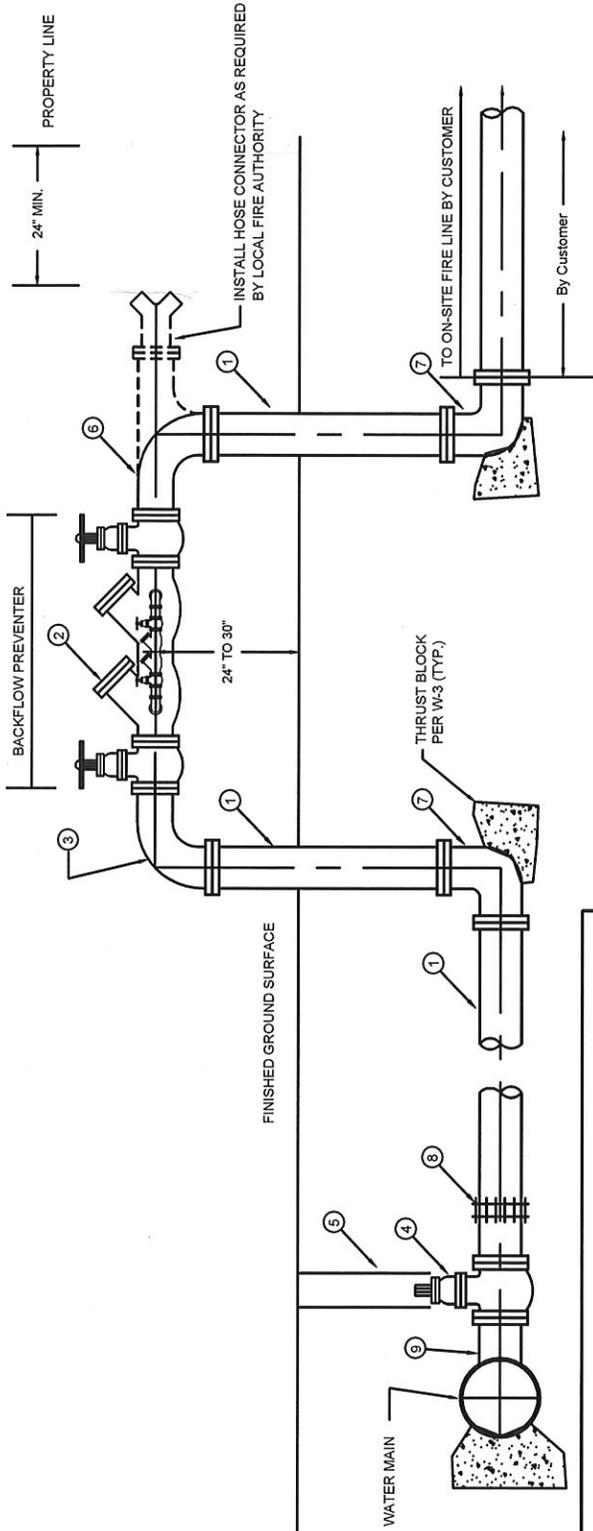
DRAWING NUMBER

W-14

FIRE SERVICE
INSTALLATION DETAIL

WEST VALLEY WATER DISTRICT

APPROVED: *[Signature]* 09/07/2016
DATE
MATTHEW H. LITCHFIELD, P.E. RCE58097



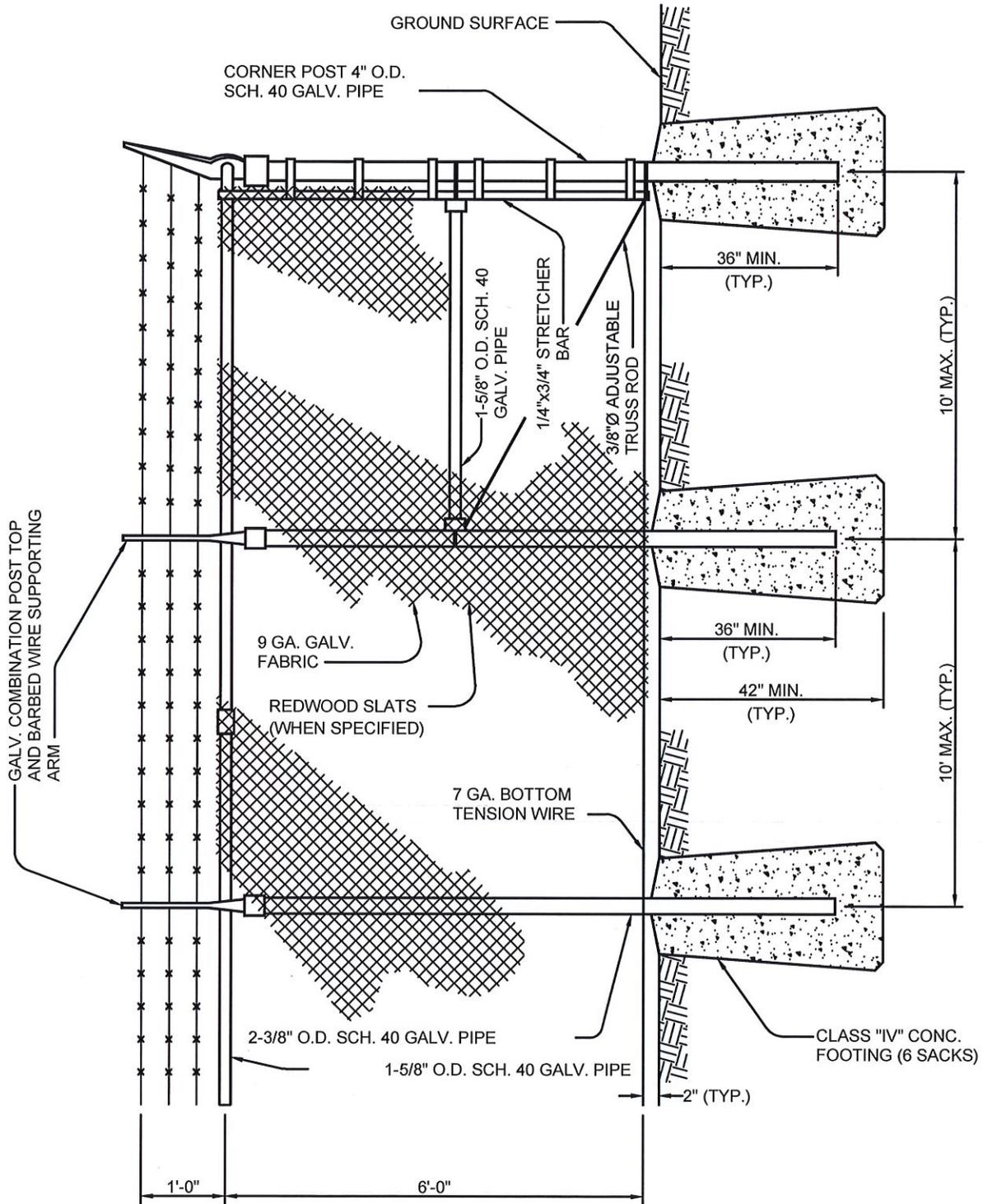
NOTES

1. 24" MINIMUM CLEARANCE REQUIRED AROUND THE DEVICE
2. DEPENDING ON THE RIGHT-OF-WAY, DEVICE MAY HAVE TO BE INSTALLED PARALLEL TO PROPERTY LINE
3. PAINT THE DEVICE IN GREEN COLOR PER SPECIFICATION

ITEM	DESCRIPTION
①	BRANCH PIPELINE (SIZE = SIZE OF BACKFLOW PREVENTER + 2") SCHEDULE 40 STEEL PIPE WRAPPED WITH TWO LAYERS OF 10 MILLS PVC TAPE
②	DOUBLE CHECK/ DETECTOR CHECK BACKFLOW PREVENTER, FEBCO, WILKIN OR APPROVED EQUAL. SIZE AS CALLED FOR ON THE DRAWING
③	FLANGED 90° REDUCING ELBOW
④	GATE VALVE WITH 2" OPERATING NUT (SIZE = LINE SIZE)
⑤	8" VALVE BOX AND COVER PER STANDARD DRAWING W-11
⑥	FLANGED 90° REDUCING ELBOW OR FLANGED TEE WHEN HOSE CONNECTOR IS REQUIRED
⑦	FLANGED 90° ELBOW OR WELDED ELBOW
⑧	FLEXIBLE COUPLING OR FLANGED COUPLING ADAPTOR
⑨	FLANGED TEE

NOTES:

1. DIAMETER OF CONCRETE FOOTING SHALL BE 3 TIMES O.D. OF POST OR 8" MINIMUM.
2. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND SHALL BE APPROVED BY THE DISTRICT.



WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

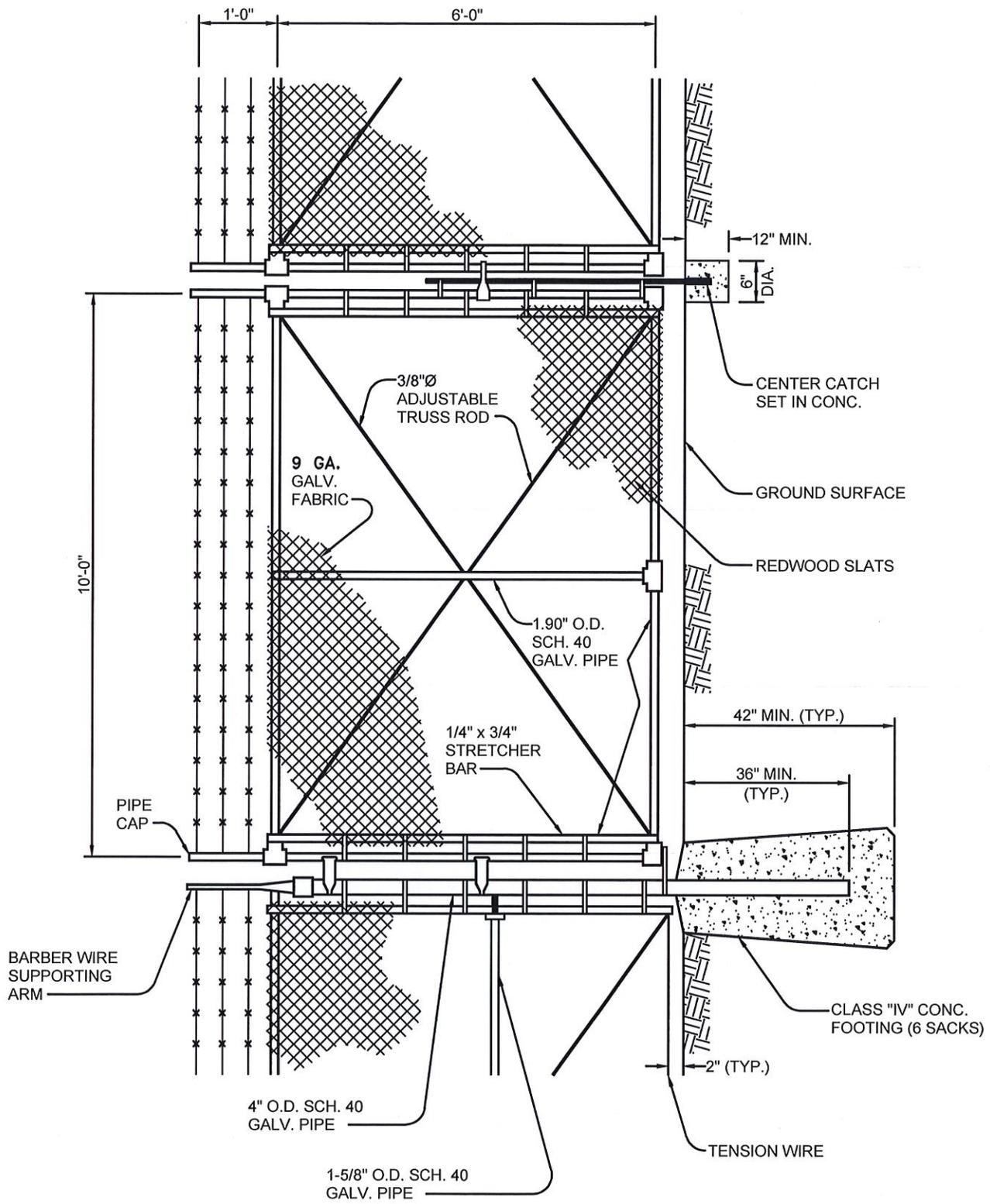
MATTHEW H. LITCHFIELD, P.E. RCE58097

DATE

CHAIN LINK FENCE DETAIL

DRAWING NUMBER

W-16



WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

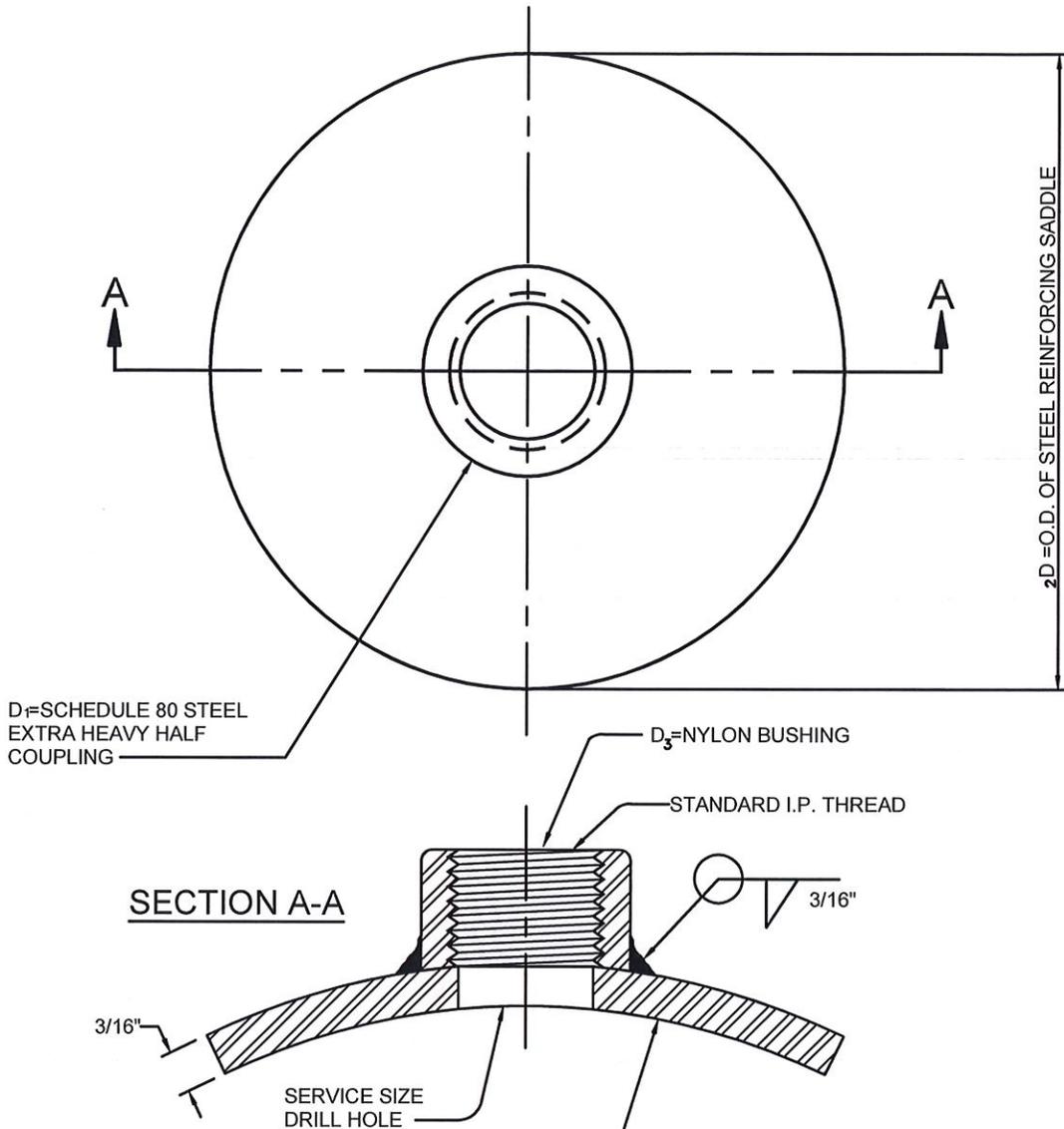
MATTHEW H. LITCHFIELD, P.E. RCE58097

DATE

CHAIN LINK FENCE GATE DETAIL

DRAWING NUMBER

W-17



NOTES:

1. USE DOUBLE-PASS WELDS FOR FABRICATION & FIELD WELDS.
2. SADDLE CURVATURE TO BE FORMED TO MEET WWWD PIPE DIAMETERS
3. WHEN INSTALLED, OUTLET TO BE COATED WITH SAME COATING AS PIPE.
4. I.P. X I.P. NYLON BUSHING (USE I.P. X M.J. CORP. STOP).

SADDLE DIMENSIONS			
SERVICE SIZE	D ₁	D ₂	D ₃
1"	2"	5"	1-1/2"
1-1/2"	2-1/2"	6"	2"
2"	3"	7"	2-1/2"

WEST VALLEY WATER DISTRICT

APPROVED: 

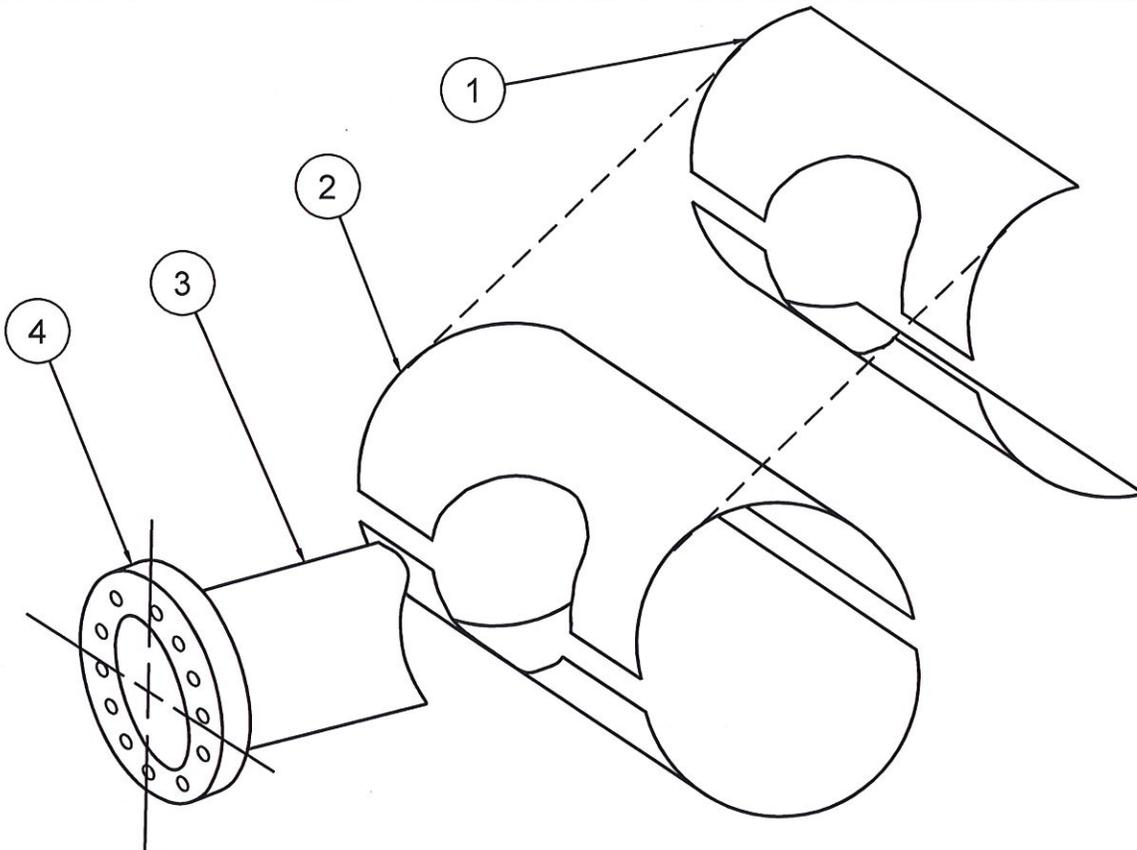
MATTHEW H. LITCHFIELD, P.E. RCE58097

09/07/2016 DATE

1" THROUGH 2"

DRAWING NUMBER

W-18

**NOTES:**

- 1 USE COLLAR REINFORCEMENT WHEN OUTLET TO MAIN RATIO IS 50% OR LESS.
- 2 USE WRAPPER REINFORCEMENT WHEN OUTLET TO MAIN RATIO IS GREATER THAN 50%.
- 3 SCHEDULE 40 STEEL OUTLET NOZZLE SHOULD BE POSITIONED AND WELDED ON TO WATER MAIN PRIOR TO WELDING ON THE REQUIRED REINFORCEMENT.
- 4 FLANGE SHALL BE ATTACHED WITH BOLT HOLES CENTERED ABOUT THE VERTICAL AXIS OF THE PIPE UNLESS OTHERWISE NOTED.
- 5 REINFORCEMENT DESIGN IS BASED ON THE STEEL AREA REMOVED FROM THE MAIN LINE AND THE OPERATING PRESSURE OF THE SYSTEM.
- 6 JOB SPECIFICATIONS/DETAILS FOR REINFORCEMENT SHALL GOVERN IF IN EXCESS OF NOTES 1, 2 AND 3 ABOVE.
- 7 ALL METAL SURFACES SHALL BE PAINTED PER SPECIFICATIONS. OUTLET TO BE COATED WITH SAME COATING AS PIPE.

WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

MATTHEW H. LITCHFIELD, P.E. RCE58097

DATE

**TAPPING OUTLET FOR STEEL PIPE
3" AND LARGER**

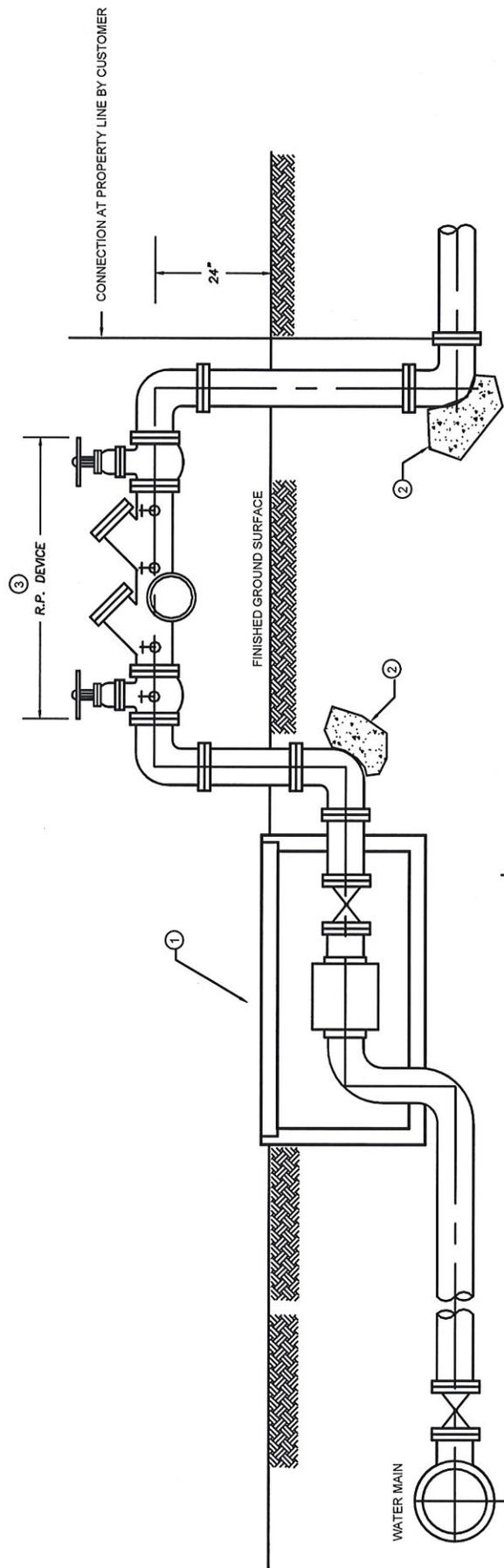
DRAWING NUMBER

W-19

**BACKFLOW PREVENTER (R. P.)
INSTALLATION DETAIL**

WEST VALLEY WATER DISTRICT

APPROVED: *[Signature]* 09/07/2016
DATE
MATTHEW H. LITCHFIELD, P.E. RCE58097

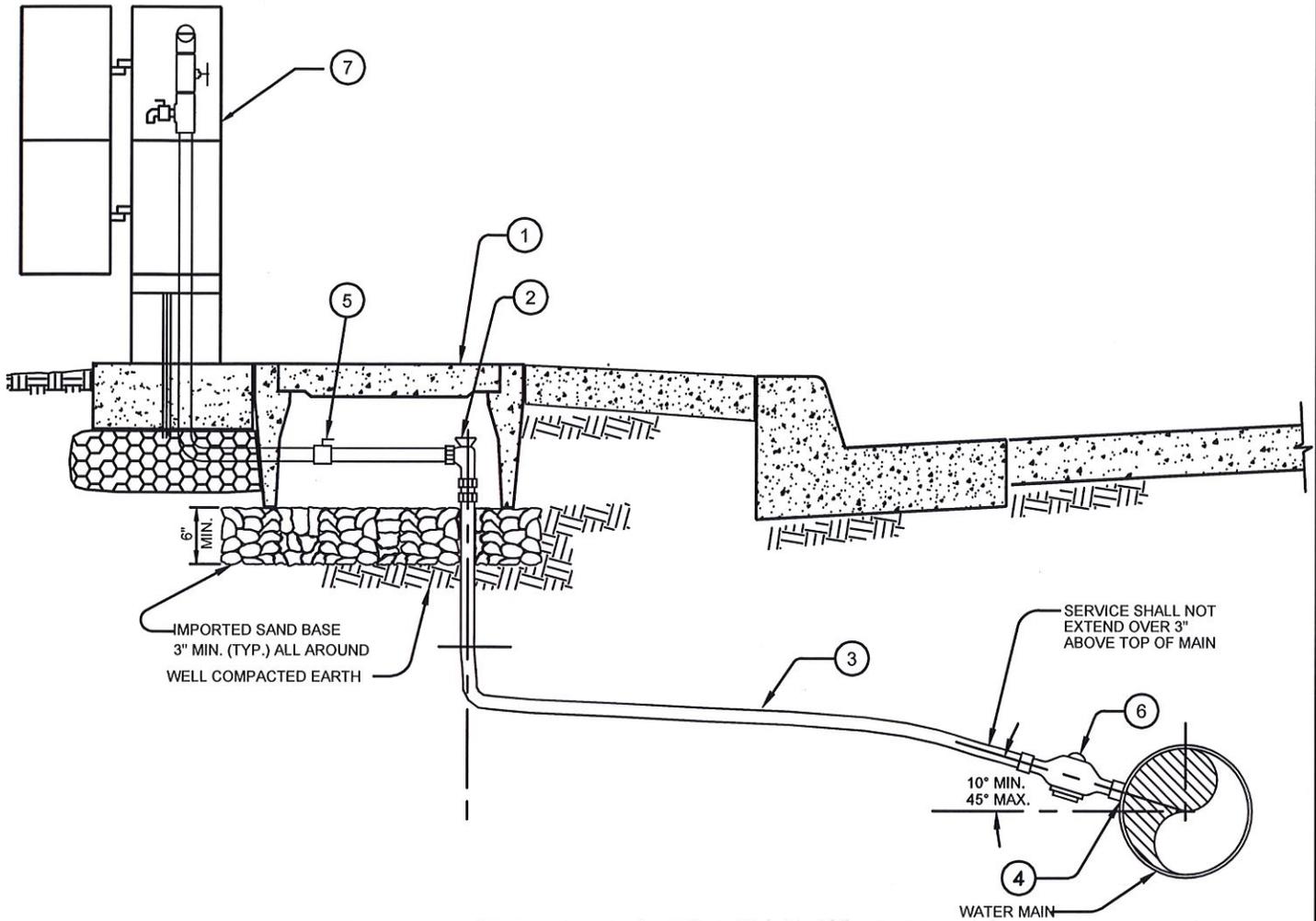


ITEM	DESCRIPTION
①	WATER METER AND METER BOX PER STANDARD DRAWING NO. W-4, W-5A, W-5B, W-9A, W-9B, W-10A & W-10B
②	CONCRETE THRUST BLOCK PER STANDARD DRAWING W-3
③	REDUCED PRESSURE (R.P.) PRINCIPAL BACKFLOW PREVENTER PER SPECIFICATIONS, SIZE AS INDICATED ON THE PLAN

- NOTES:
1. NO CONNECTIONS OR TEES BETWEEN WATER METER AND R.P. DEVICES
 2. INSTALL R.P. DEVICE AT PROPERTY LINE, DEPENDING ON RIGHT-OF-WAY. R.P. DEVICE MAY BE INSTALLED PARALLEL TO PROPERTY LINE
 3. INSTALLATION SHALL BE APPROVED BY THE DISTRICT
 4. R.P. DEVICE SHALL BE APPROVED BY USC PER HEALTH SERVICE DEPARTMENT'S REQUIREMENT
 5. MINIMUM 24" CLEARANCE REQUIRED AROUND THE R.P. DEVICE
 6. R.P. DEVICE SHALL BE MINIMUM 24" ABOVE FINISH GROUND
 7. EACH R.P. DEVICE SHALL BE PROVIDED WITH TEST COCKS, SIZE AS LISTED BELOW:
FOR 3/4" TO 2" DEVICE, USE 1/4" COCKS
FOR 2-1/2" TO 4" DEVICE, USE 1/2" COCKS
FOR 6" AND LARGER DEVICE, USE 3/4" COCKS

WATER SERVICE LATERAL AND METER INSTALLATION
PER STD. DWG. W-4, W-5A, W-5B, W-9A
W-9B, W-10A, & W-10B

WATER MAIN



DESCRIPTION

	DESCRIPTION
1	METER BOX AND COVER PURCHASED FROM THE DISTRICT
2	1" INVERTED KEY ANGLE METER VALVE, THREAD X PACK JOINT, PER STD. DWG. W-4
3	1" COPPER WATER SERVICE, TYPE "K", SOFT TEMPER, PER ASTM B-88.
4	1" I.P.T. DOUBLE STRAP SERVICE SADDLE PER STD. DWG. W-4
5	1" BRASS BALL VALVE, PER STD DWG. W-4
6	1" Ø BALL CORP. STOP, I.P.T., INLET X PACK JOINT OUTLET PER STD. DWG. W-4
7	SAMPLING STATION, ECLIPSE NO. 88-WC FOR WARM CLIMATES OR APPROVED EQUAL

WEST VALLEY WATER DISTRICT

APPROVED:

09/07/2016

MATTHEW H. LITCHFIELD, P.E. RCE58097

DATE

SAMPLE STATION DETAIL

DRAWING NUMBER

W-21

**PRESSURE REGULATION STATION
DETAIL SINGLE VALVE INSTALLATION
INSTALLATION FOR 2" AND LARGER**

WEST VALLEY WATER DISTRICT

APPROVED:



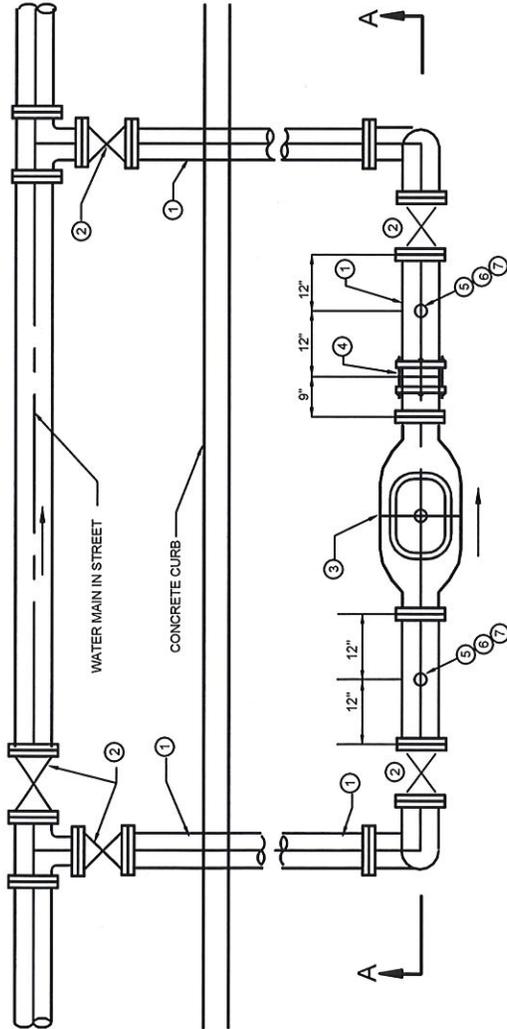
MATTHEW H. LITCHFIELD, P.E. RCE58097
09/07/2016
DATE

ITEM	QTY	DESCRIPTION
①	--	SCH. 40 STEEL PIPE, SAME SIZE AS VALVE. SEE PLAN FOR SIZE. WRAPPED WITH 2 LAYERS 10 MILS THICKNESS PVC TAPE
②	5	RESILIENT SEAT GATE VALVE AND VALVE BOX PER W-11, SAME SIZE AS PIPELINE.
③	1	PRESSURE REDUCING VALVE, SIZE AS INDICATED ON PLAN. (CLAYTON 90G-01KC)
④	1	VICTAULIC COUPLING
⑤	2	1" SCH. 40 GALVANIZED STEEL COUPLING WELDED TO PIPE.
⑥	2	1"Ø X 4" LONG SCH. 40 GALV. IRON PIPE THREADED BOTH ENDS.
⑦	2	1"Ø BALL VALVE, INSIDE I.P.T. X INSIDE I.P.T. WITH BUSHING AND PRESSURE GAGE
⑧	1	18" X 18" X 12" CONCRETE FOOTING

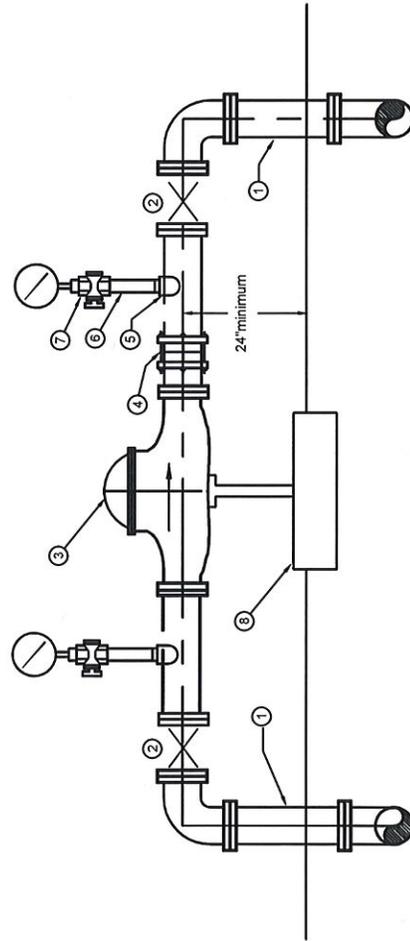
NOTES:

1. VALVE SHALL HAVE APPROVED PIPE SUPPORT.
2. INSTALL SINGLE VALVE PRV STATION 18" BEHIND SIDEWALK ENCLOSE PRV STATION WITH 6-FOOT HIGH CHAIN LINK FENCE PER STANDARD NO. W-16 AND W-17 PROVIDE 3'-0" ACCESS GATE
3. SIZE FENCE ENCLOSURE TO PROVIDE MINIMUM 30" CLEARANCE PRESSURE REGULATOR

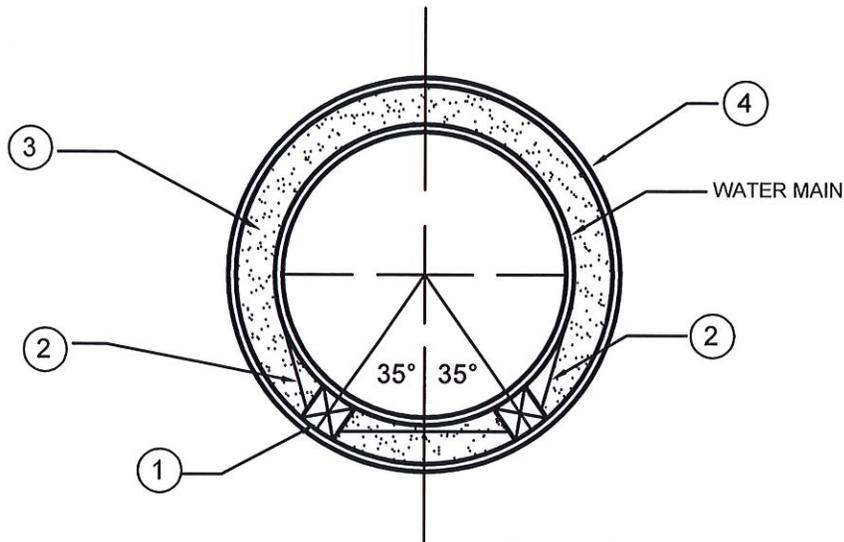
FOR ABOVE GROUND INSTALLATION



PLAN VIEW



SECTION A-A



ITEM	DESCRIPTION
①	4" X 4" ROUGH REDWOOD SKID, CUT TO BEAR ON CONDUCTOR TUBE
②	3/4" WIDE X 0.045" THICK STAINLESS STEEL BAND
③	BLOWN SAND
④	STEEL CONDUCTOR TUBE PER SPECIFICATION SECTION 4.3

NOTE:

1. MINIMUM 4" CLEARANCE IS REQUIRED BETWEEN INNER WALL OF CONDUCTOR TUBE AND OUTER WALL OF WATER MAIN
2. THE INSIDE DIAMETER OF CONDUCTOR TUBE SHALL BE THE OUTER DIAMETER OF WATER MAIN PLUS 12" OR 28" MINIMUM.
3. THE MINIMUM WALL THICKNESS OF CONDUCTOR TUBE SHALL BE 1/4" FOR 28" AND SMALLER; 1/2" FOR 30" TO 38"; 3/4" FOR 40" TO 72" DIAMETER.

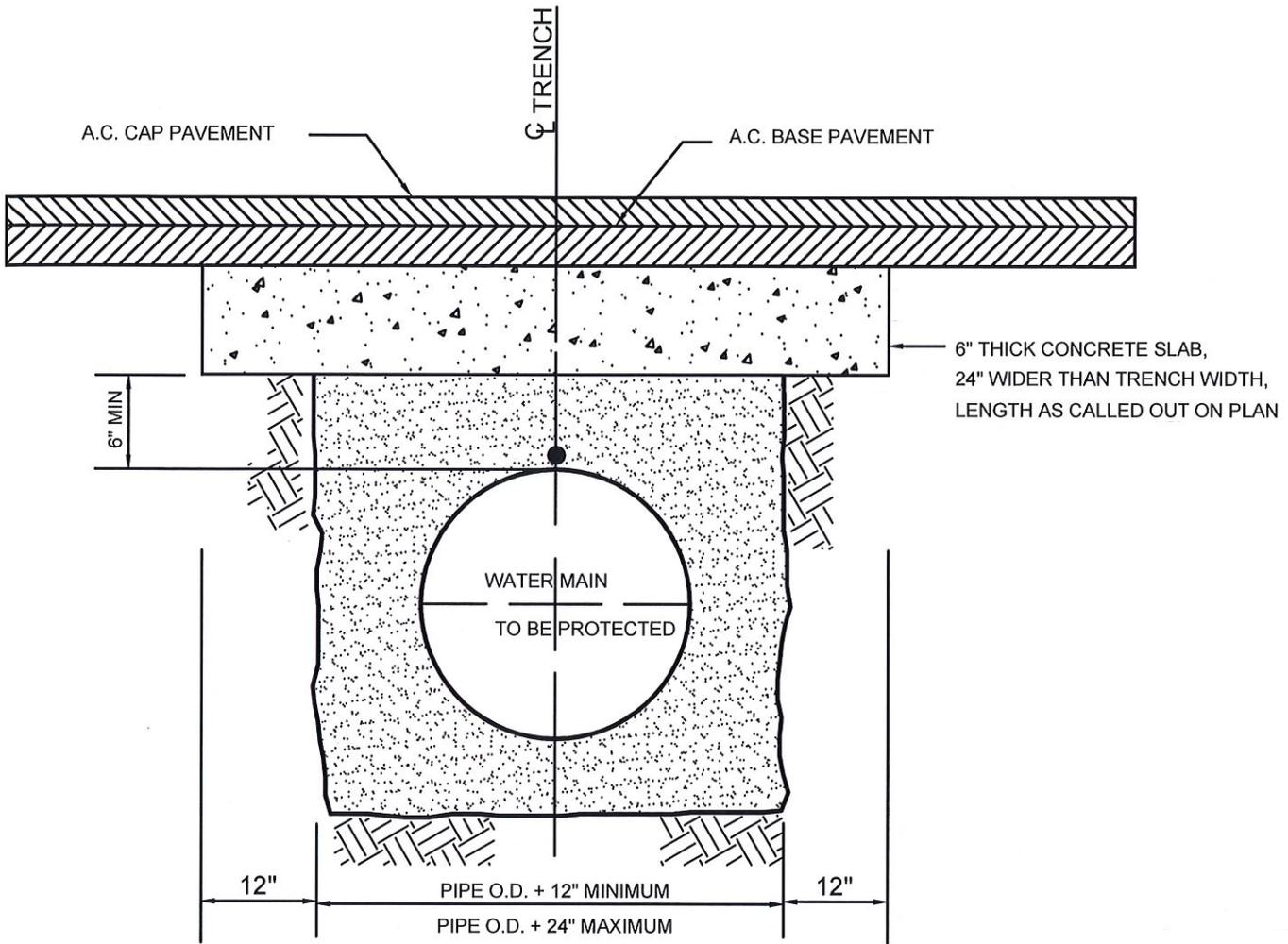
WEST VALLEY WATER DISTRICT

APPROVED: 

MATTHEW H. LITCHFIELD, P.E. RCE58097 09/07/2016 DATE

CONDUCTOR TUBE DETAIL

DRAWING NUMBER
W-23



NOTES:

1. CONCRETE BLANKET SHALL BE INSTALLED AT LOCATIONS WHERE PIPE LINE HAS LESS THAN 30 INCHES OF COVER.
2. REFER TO STD. DWG. W-1 FOR TYPICAL TRENCH CONSTRUCTION REQUIREMENT
3. REPLACE A.C. PAVEMENT AND ROAD BASE IN ACCORDANCE WITH EXCAVATION PERMIT.

WEST VALLEY WATER DISTRICT

APPROVED: *[Signature]*

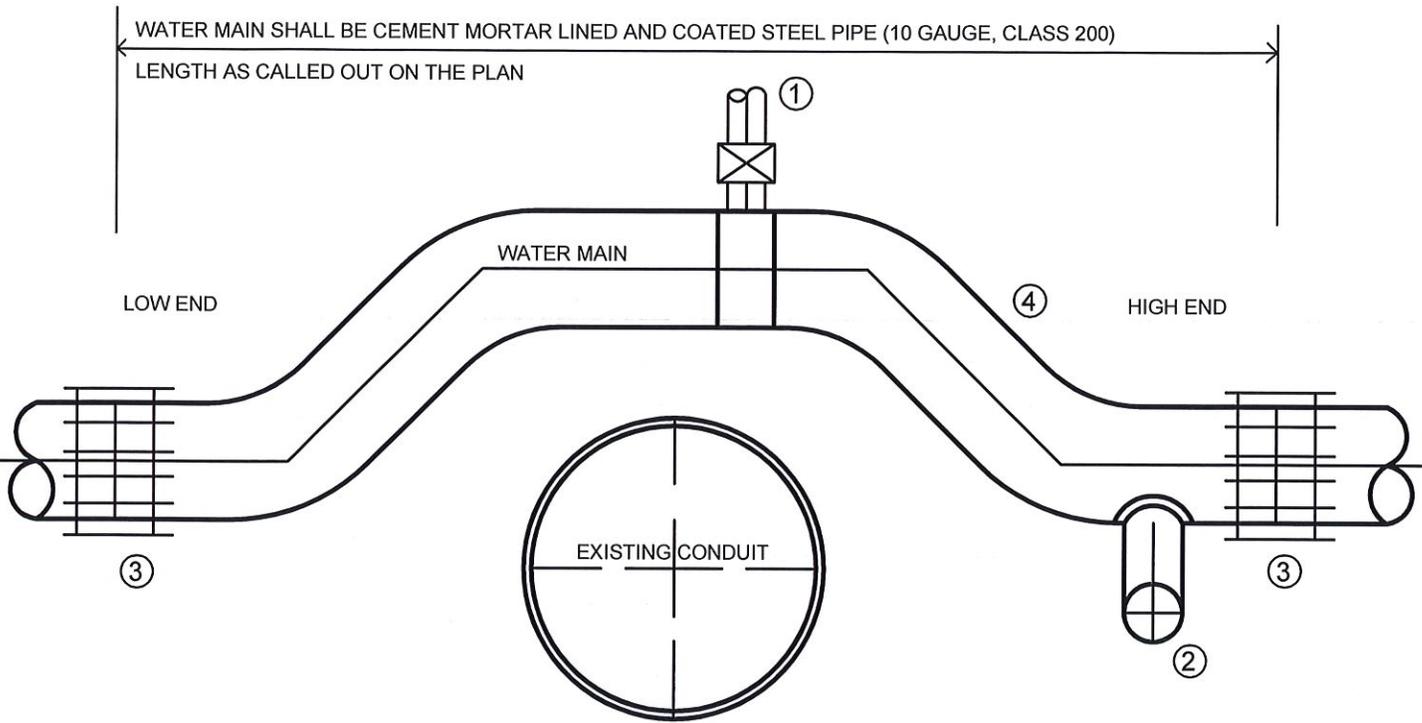
MATTHEW H. LITCHFIELD, P.E. RCE58097

09/07/2016
DATE

CONCRETE BLANKET DETAIL

DRAWING NUMBER

W-24



ITEM	DESCRIPTION
①	COMBINATION AIR VALVE PER STANDARD DWG. W-6 AT HIGHEST POINT
②	BLOW-OFF ASSEMBLY PER STANDARD DWG. W-7 AT LOWEST POINT
③	FLEXIBLE COUPLING
④	CEMENT MORTAR LINED AND COATED STEEL PIPE (10 GAUGE, CLASS 200)

NOTE:

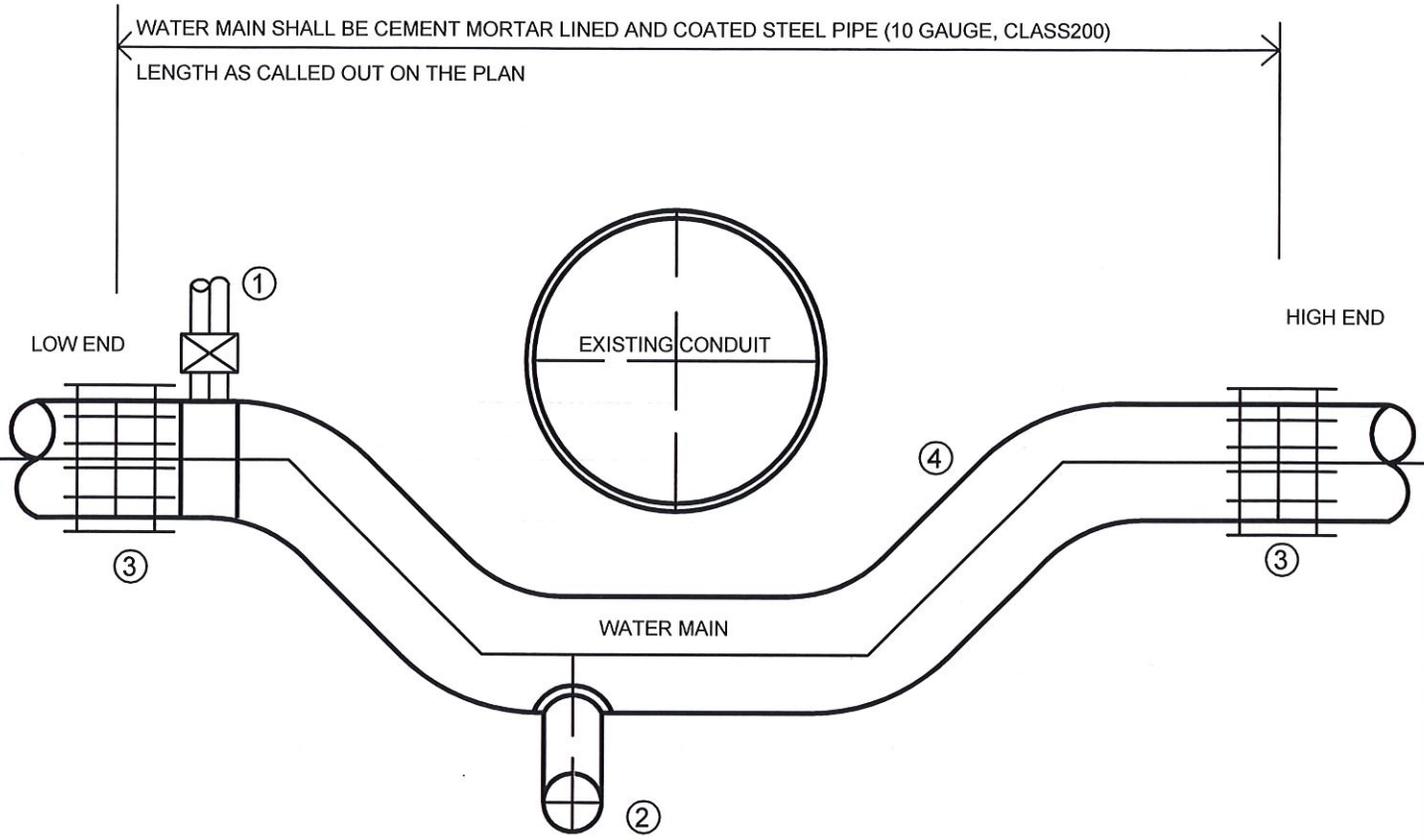
1. MINIMUM 12" CLEARANCE IS REQUIRED BETWEEN OUTER WALL OF WATER MAIN AND OUTER WALL OF CONFLICTING UTILITY
2. SIPHON SHALL BE ONE-PIECE CONSTRUCTION
3. INSTALL CONCRETE THRUST BLOCK PER STANDARD DRAWING W-3

WEST VALLEY WATER DISTRICT

APPROVED:  09/07/2016
 MATTHEW H. LITCHFIELD, P.E. RCE58097 DATE

SIPHON DETAIL

DRAWING NUMBER
 W-25



ITEM	DESCRIPTION
①	COMBINATION AIR VALVE PER STANDARD DWG. W-6 AT HIGHEST POINT
②	BLOW-OFF ASSEMBLY PER STANDARD DWG. W-7 AT LOWEST POINT
③	FLEXIBLE COUPLING
④	CEMENT MORTAR LINED AND COATED STEEL PIPE (10 GAUGE, CLASS 200)

NOTE:

1. MINIMUM 12" CLEARANCE IS REQUIRED BETWEEN OUTER WALL OF WATER MAIN AND OUTER WALL OF CONFLICTING UTILITY
2. INVERTED SIPHON SHALL BE ONE-PIECE CONSTRUCTION
3. INSTALL CONCRETE THRUST BLOCK PER STANDARD DRAWING W-3

WEST VALLEY WATER DISTRICT

APPROVED: 

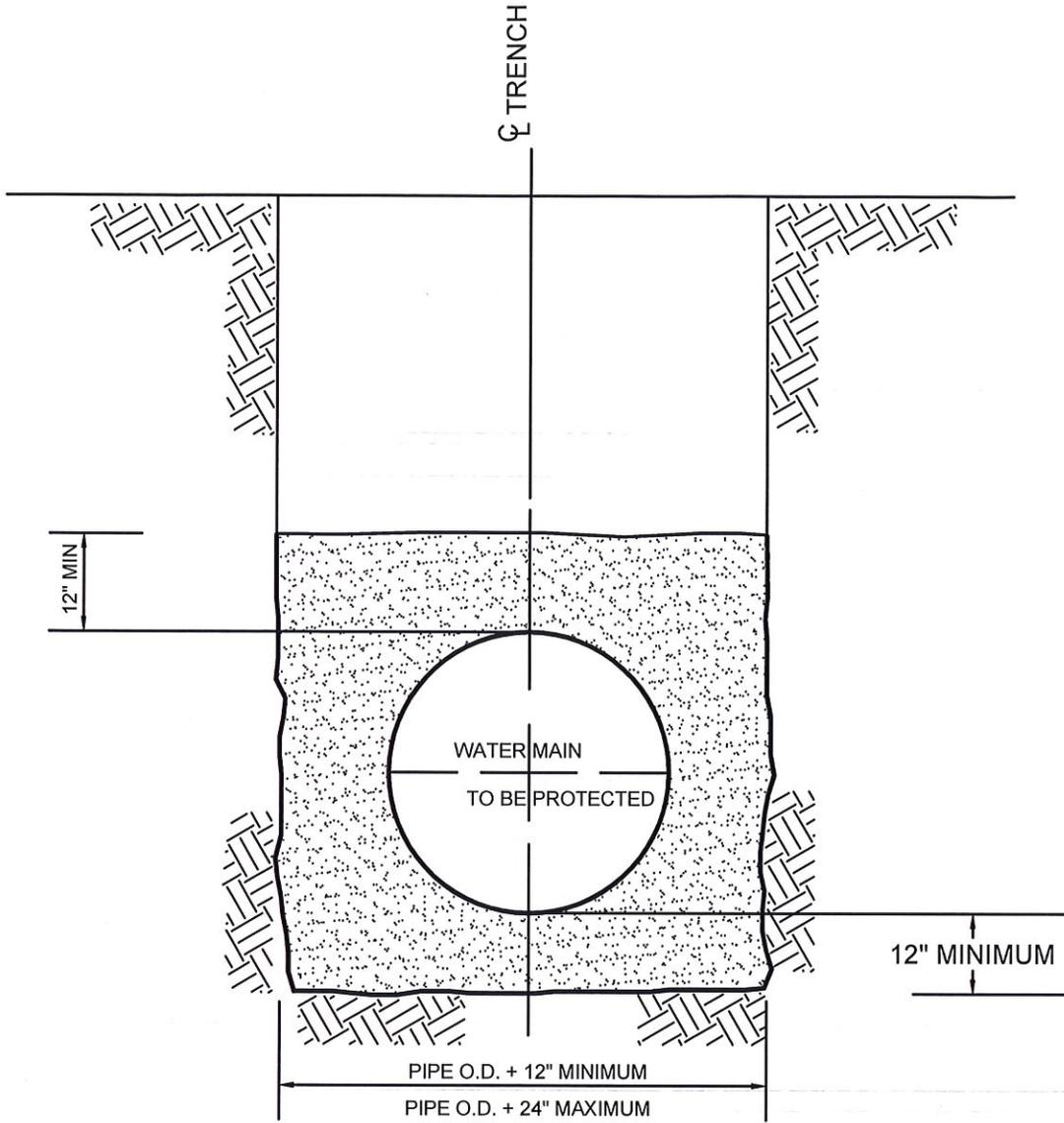
MATTHEW H. LITCHFIELD, P.E. RCE58097

09/07/2016 DATE

INVERTED SIPHON DETAIL

DRAWING NUMBER

W-26



NOTES:

1. CONCRETE ENCASEMENT SHALL BE INSTALLED AT LOCATIONS WHERE PIPE LINE IS RESIDENTIAL EASEMENT
2. REFER TO STD. DWG. W-1 FOR TYPICAL TRENCH CONSTRUCTION REQUIREMENT
3. WATER MAIN SHALL BE CEMENT MOTAR LINED AND COATED STEEL PIPE PER SPECIFICATIONS WITH ALL WELDED JOINTS WITHIN EASEMENT

WEST VALLEY WATER DISTRICT

APPROVED: 

MATTHEW H. LITCHFIELD, P.E. RCE58097

09/07/2016
DATE

CONCRETE ENCASEMENT DETAIL

DRAWING NUMBER

W-27

EXHIBIT C

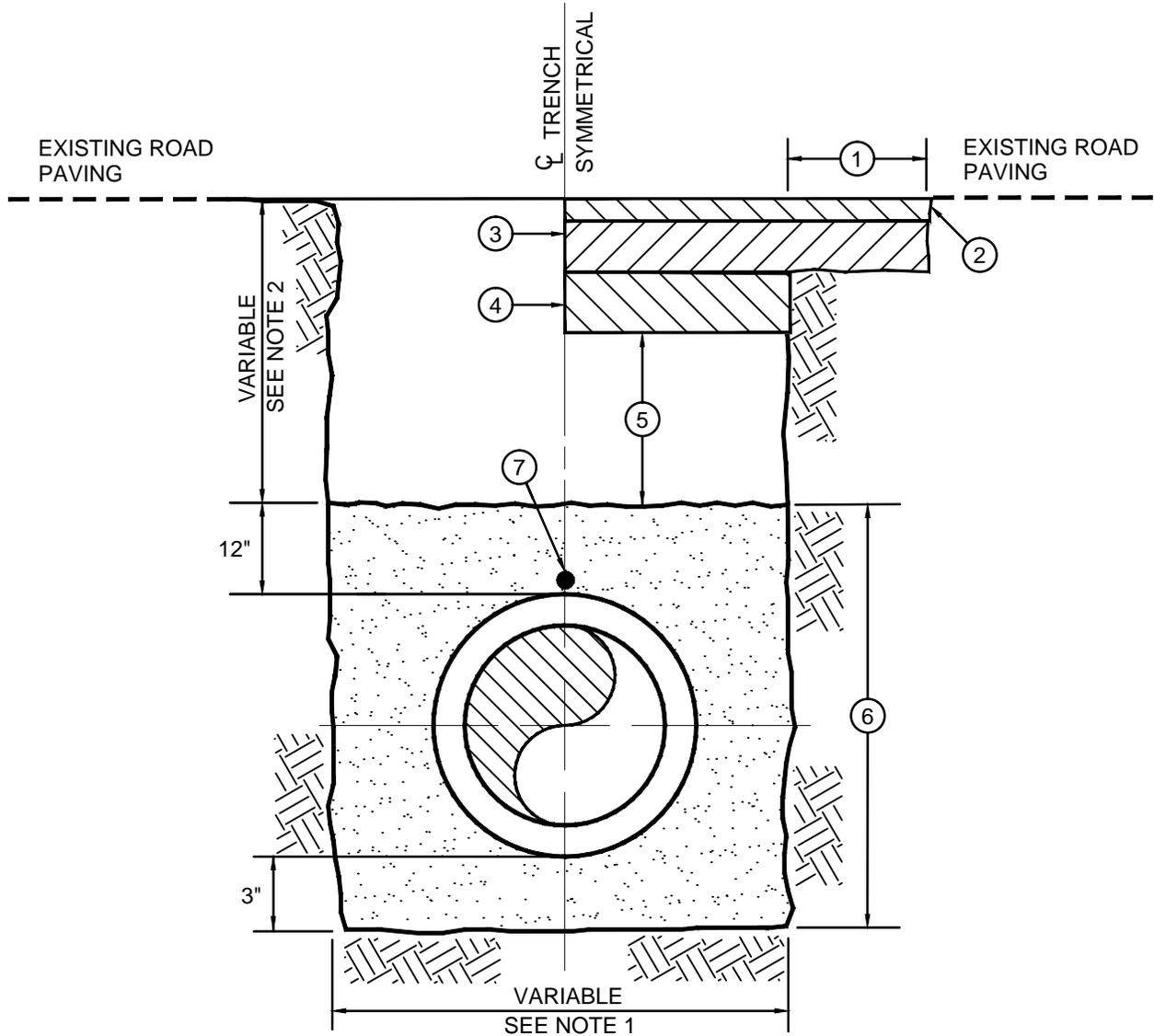


DISTRICT DRAWINGS



INDEX OF STANDARD DRAWINGS

<u>DRAWINGS NO.</u>	<u>TITLE</u>
W-1	Typical Trench Detail
W-2	Fire Hydrant Assembly
W-3A, B, C & D	Concrete Thrust Block Details
W-4	Water Service Detail – ¾” and 1” Meter
W-5	Water Service Detail – 1 1/2” and 2” Meter
W-6A & B	Air Valve Installation
W-7A & B	4” and 6” Blow-Off Assembly
W-8A & B	2” and 4” Dead-End Flush-Out
W-9	Water Service Detail – 3” and Larger Meters
W-10	Temporary Hydrant Meter Assembly
W-11	Valve and Valve Box Installation Detail
W-12	Guard Post Installation Detail
W-13	Bonding Clip Detail
W-14	Butt Strap Detail
W-15	Fire Service Installation Detail
W-16	Chain Link Fence Detail
W-17	Chain Link Fence Gate Detail
W-18	Tapping Outlet for Steel Pipe – 1” and 2”
W-19	Tapping Outlet for Steel Pipe – 3” and Larger
W-20	Backflow Preventer (R.P.) Installation Detail
W-21	Sample Station Detail
W-22	Pressure Regulation Station Detail
W-23	Conductor Tube
W-24	Concrete Blanket
W-25	Siphon Detail
W-26	Inverted Siphon Detail
W-27	Concrete Encasement
W-28	New Lateral Installation – 3” and Larger
W-29	Water Service Abandonment
W-30	Restrained Joint Detail



ITEM DESCRIPTION:

- ① SAWCUT OR COLD PLANE 12" FROM TRENCH CUTS.
- ② 1" TO 1 1/2" AC CAP PAVEMENT.
- ③ 3" AC BASE PAVEMENT.
- ④ CLASS 2 ROAD BASE (6" MIN).
- ⑤ TRENCH TO BE BACKFILLED IN LAYERS NOT EXCEEDING 3' IN DEPTH PER DISTRICT SPECIFICATIONS. SEE NOTE 5 FOR MATERIAL.
- ⑥ BACKFILL TO 12" OVER TOP OF PIPE USING GRANULAR MATERIAL WITH A SAND EQUIVALENT 30.
- ⑦ LOCATOR WIRE.

NOTES:

- 1. WIDTH OF TRENCH: MIN. = PIPE O.D. + 12", MAX. = PIPE O.D. + 16".
- 2. REPLACE A.C. PAVEMENT AND ROAD BASE IN ACCORDANCE WITH CITY OF COUNTY EXCAVATION PERMIT.
- 3. FLOW LINE GRADE SHALL BE PER PLAN.
- 4. LOCATOR WIRE TO BE SECURED TO PIPE WITH TAPE, DOUBLE WRAPPED AROUND PIPE WITH TWO PER JOINT.
- 5. EXCAVATED/NATIVE MATERIAL CAN BE USED FOR BACKFILL WHEN APPROVED BY THE DISTRICT. WHEN EXCAVATED MATERIAL CANNOT BE USED, BACKFILL WITH CLASS 2 BASE OR 3" MINUS SCREENED MATERIAL.
- 6. SAND BEDDING SHALL BE UNIFORM BEARING FOLLOWING THE CURVATURE OF THE PIPE.
- 7. A MINIMUM 90% COMPACTION RATING IS REQUIRED IN SAND BEDDING AND 95% IN BASE BACKFILL.
- 8. ALL PIPE SHALL BE WRAPPED IN POLYETHYLENE PROTECTIVE WRAPPING PER DISTRICT SPECIFICATIONS.

REVISIONS	
DATE	BY
09-2019	DAG
SCALE: NONE	

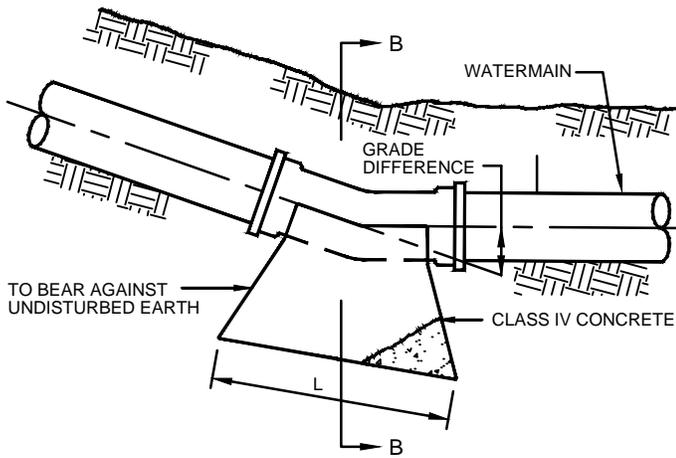


TYPICAL TRENCH DETAIL

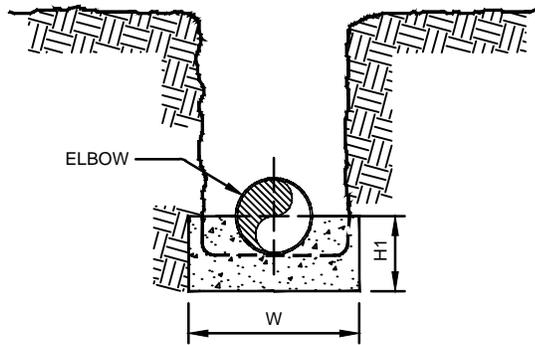
DRAWING NUMBER

W-1

VERTICAL BEARER BLOCK



ELEVATION



SECTION B-B

PIPE DIA.	W	H1	L	GRADE % DIFF.
8" & LESS	2'-6"	1'-0"	1'-6"	5 TO 15
8" & LESS	2'-6"	1'-0"	1'-6"	16 TO 25
8" & LESS	2'-6"	1'-0"	1'-6"	26 TO 35
8" & LESS	2'-6"	1'-0"	1'-6"	36 TO 45
8" & LESS	2'-6"	1'-0"	2'-0"	46 TO 55
10"	2'-6"	1'-0"	2'-0"	5 TO 15
10"	2'-6"	1'-0"	2'-0"	16 TO 25
10"	2'-6"	1'-0"	2'-0"	26 TO 35
10"	2'-6"	1'-0"	2'-0"	36 TO 45
10"	2'-6"	1'-0"	2'-0"	46 TO 55
12"	2'-6"	1'-3"	2'-0"	5 TO 15
12"	2'-6"	1'-3"	2'-0"	16 TO 25
12"	2'-6"	1'-3"	2'-0"	26 TO 35
12"	2'-6"	1'-3"	2'-0"	36 TO 45
12"	2'-6"	1'-3"	2'-6"	46 TO 55
16"	3'-0"	1'-6"	2'-0"	5 TO 15
16"	3'-0"	1'-6"	2'-0"	16 TO 25
16"	3'-0"	1'-6"	2'-0"	26 TO 35
16"	3'-0"	1'-6"	2'-0"	36 TO 45
16"	3'-0"	1'-6"	3'-0"	46 TO 55
18"	3'-0"	1'-6"	2'-0"	5 TO 15
18"	3'-0"	1'-6"	2'-0"	16 TO 25
18"	3'-0"	1'-6"	2'-6"	26 TO 35
18"	3'-0"	1'-6"	3'-0"	36 TO 45
18"	3'-0"	1'-6"	5'-0"	46 TO 55
20"	3'-6"	1'-6"	2'-0"	5 TO 15
20"	3'-6"	1'-6"	2'-0"	16 TO 25
20"	3'-6"	1'-6"	2'-6"	26 TO 35
20"	3'-6"	1'-6"	3'-0"	36 TO 45
20"	3'-6"	1'-6"	5'-0"	46 TO 55
24"	4'-0"	1'-8"	2'-0"	5 TO 15
24"	4'-0"	1'-8"	2'-6"	16 TO 25
24"	4'-0"	1'-8"	3'-0"	26 TO 35
24"	4'-0"	1'-8"	3'-6"	36 TO 45
24"	4'-0"	1'-8"	5'-0"	46 TO 55
30"	4'-6"	2'-0"	2'-0"	5 TO 15
30"	4'-6"	2'-0"	3'-0"	16 TO 25
30"	4'-6"	2'-0"	4'-0"	26 TO 35
30"	4'-6"	2'-0"	5'-0"	36 TO 45
30"	4'-6"	2'-0"	6'-6"	46 TO 55
36"	5'-6"	2'-0"	2'-0"	5 TO 15
36"	5'-6"	2'-0"	3'-6"	16 TO 25
36"	5'-6"	2'-0"	5'-0"	26 TO 35
36"	5'-6"	2'-0"	6'-6"	36 TO 45
36"	5'-6"	2'-0"	8'-0"	46 TO 55

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DATE	BY
09-2019	DAG
SCALE: NONE	

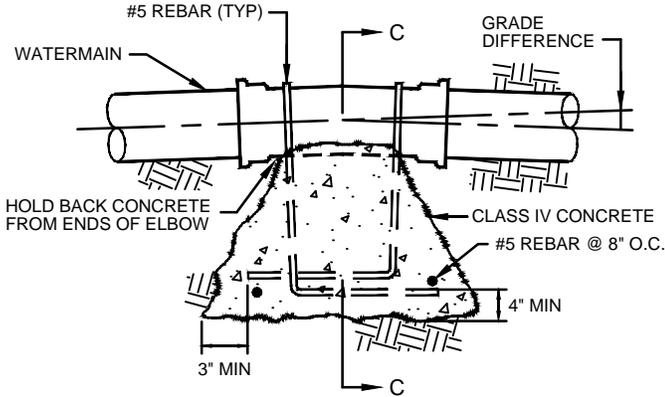


VERTICAL BEARER THRUST BLOCK FOR PIPELINES, CLASS 200 PSI MAX

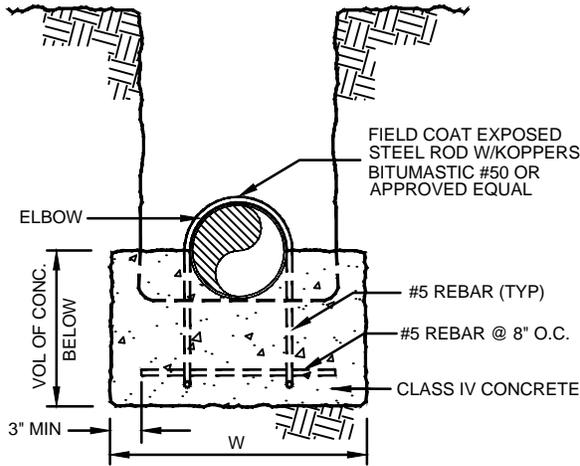
DRAWING NUMBER

W-3B

VERTICAL ANCHOR BLOCK



SECTIONAL ELEVATION



SECTION C-C

PIPE DIA.	W	VOLUME OF CONC (cu ft)	GRADE % DIFF.
6" & LESS	2'-6"	7.6	5 TO 15
6" & LESS	2'-6"	11.4	16 TO 25
6" & LESS	2'-6"	15.2	26 TO 35
6" & LESS	2'-6"	22.8	36 TO 45
6" & LESS	2'-6"	31.0	46 TO 55
8"	2'-6"	10.3	5 TO 15
8"	2'-6"	15.5	16 TO 25
8"	2'-6"	20.6	26 TO 35
8"	2'-6"	31.0	36 TO 45
8"	2'-6"	41.3	46 TO 55
10"	3'-0"	27.6	5 TO 15
10"	3'-0"	36.8	16 TO 25
10"	3'-0"	55.3	26 TO 35
10"	3'-0"	73.7	36 TO 45
10"	3'-0"	92.1	46 TO 55
12"	3'-6"	30.0	5 TO 15
12"	3'-6"	45.0	16 TO 25
12"	3'-6"	67.5	26 TO 35
12"	3'-6"	75.0	36 TO 45
12"	3'-6"	97.5	46 TO 55
16"	4'-0"	48.0	5 TO 15
16"	4'-0"	72.0	16 TO 25
16"	4'-0"	84.0	26 TO 35
16"	4'-0"	130.0	36 TO 45
16"	4'-0"	168.0	46 TO 55
18"	4'-0"	81.0	5 TO 15
18"	4'-0"	108.0	16 TO 25
18"	4'-0"	135.0	26 TO 35
18"	4'-0"	192.5	36 TO 45
18"	4'-0"	270.0	46 TO 55
20"	4'-3"	108.0	5 TO 15
20"	4'-3"	162.0	16 TO 25
20"	4'-3"	189.0	26 TO 35
20"	4'-3"	216.0	36 TO 45
20"	4'-3"	297.0	46 TO 55
24"	4'-6"	120.0	5 TO 15
24"	4'-6"	150.0	16 TO 25
24"	4'-6"	210.0	26 TO 35
24"	4'-6"	270.0	36 TO 45
24"	4'-6"	330.0	46 TO 55
30"	5'-0"	168.0	5 TO 15
30"	5'-0"	294.0	16 TO 25
30"	5'-0"	378.0	26 TO 35
30"	5'-0"	462.0	36 TO 45
30"	5'-0"	546.0	46 TO 55
36"	5'-6"	196.0	5 TO 15
36"	5'-6"	a	16 TO 25
36"	a	490.0	26 TO 35
36"	5'-6"	637.0	36 TO 45
36"	5'-6"	784.0	46 TO 55

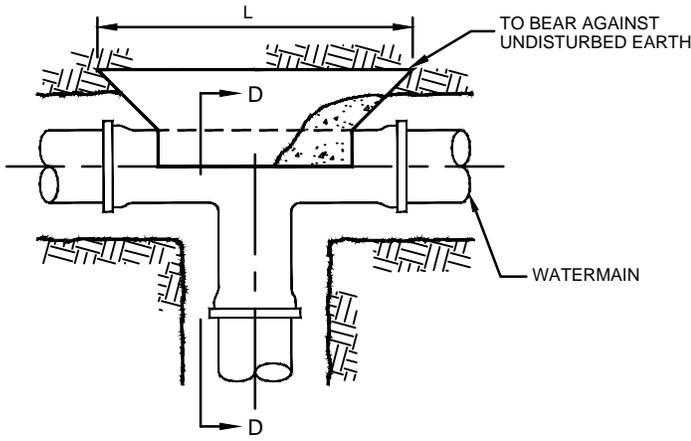
REVISIONS	
DATE	BY
09-2019	DAG
SCALE: NONE	



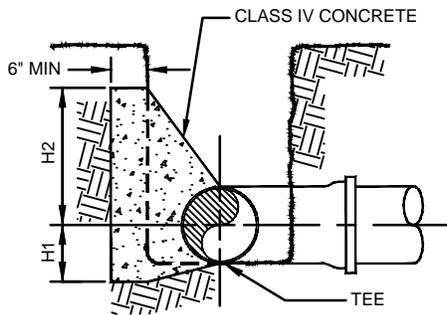
VERTICAL ANCHOR THRUST BLOCK FOR PIPELINES, CLASS 200 PSI MAX

DRAWING NUMBER

W-3C



PLAN

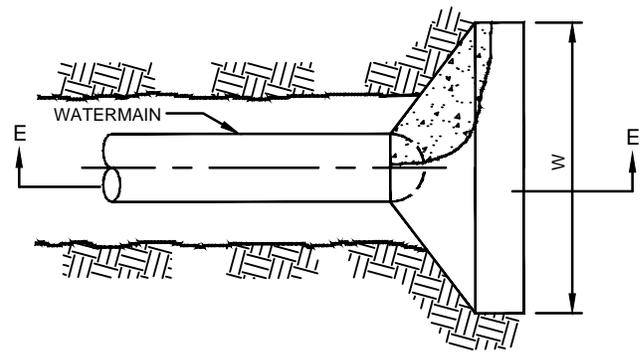


SECTION D-D

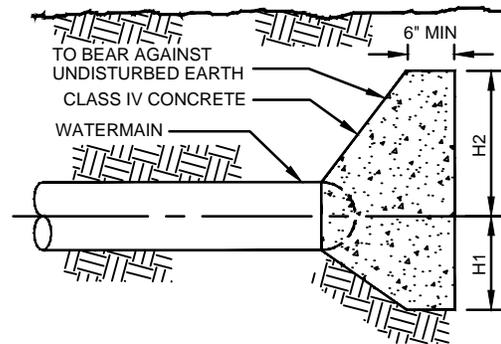
*PIPE DIA.	H1	H2	L
4"	1'-0"	1'-0"	3'-6"
6"	1'-0"	1'-0"	4'-0"
8"	1'-0"	2'-3"	4'-0"
10"	1'-0"	2'-6"	4'-0"
12"	1'-0"	3'-0"	5'-0"
16"	1'-4"	3'-0"	4'-0"
18"	1'-6"	3'-0"	4'-0"
20"	1'-8"	3'-6"	4'-0"
24"	2'-0"	4'-0"	5'-0"
30"	2'-6"	4'-6"	4'-0"
36"	3'-0"	5'-0"	4'-0"

* USE OUTLET PIPE DIAMETER

TEE THRUST BLOCK



PLAN



SECTION E-E

PIPE DIA.	H1	H2	L
4"	1'-0"	1'-0"	3'-6"
6"	1'-0"	1'-0"	4'-0"
8"	1'-0"	2'-3"	4'-0"
10"	1'-0"	2'-6"	4'-0"
12"	1'-0"	3'-0"	5'-0"
16"	1'-4"	3'-0"	4'-0"
18"	1'-6"	3'-0"	4'-0"
20"	1'-8"	3'-6"	4'-0"
24"	2'-0"	4'-0"	5'-0"
30"	2'-6"	4'-6"	4'-0"
36"	3'-0"	5'-0"	4'-0"

END THRUST BLOCK

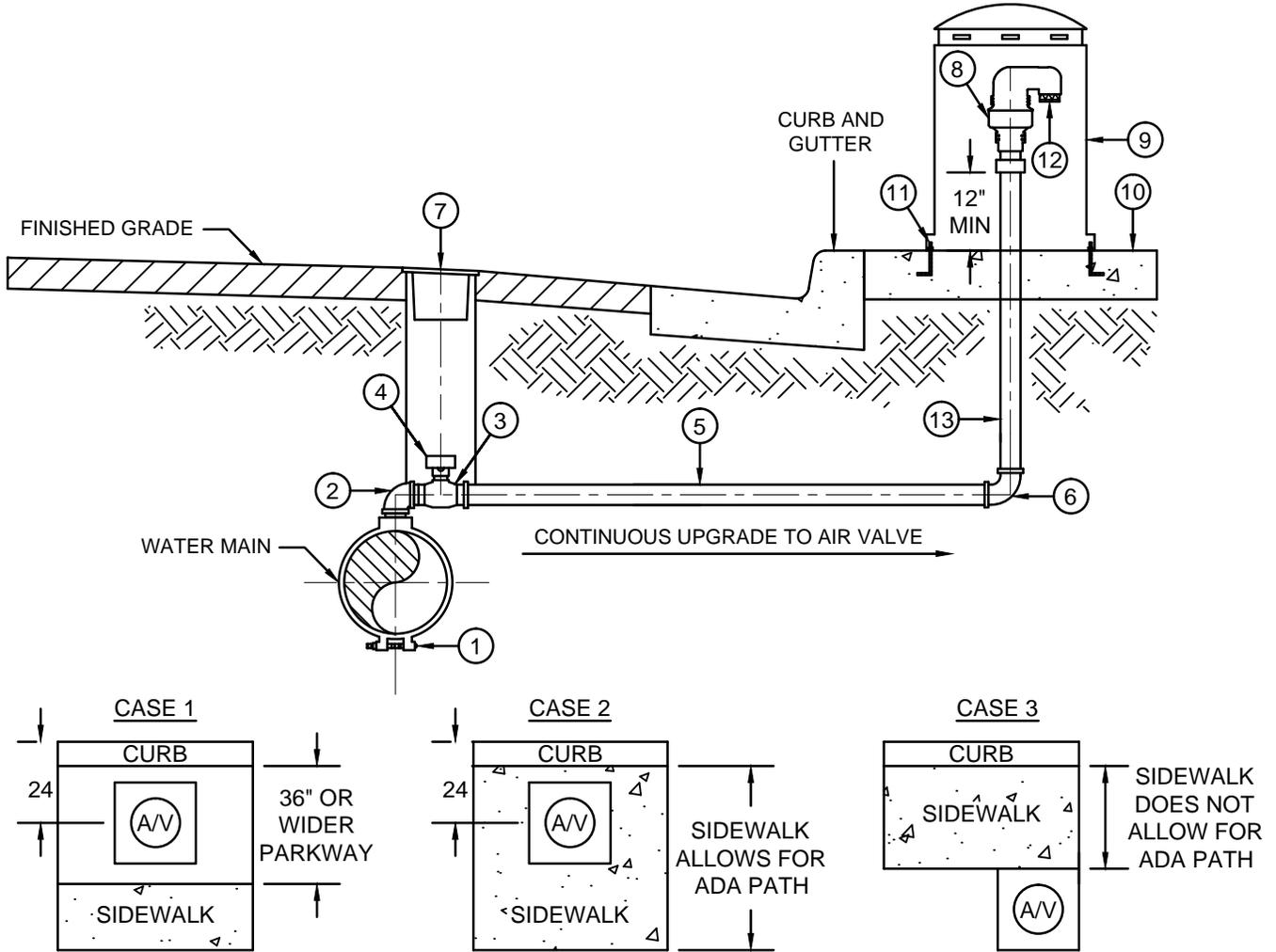
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DATE	BY
09-2019	DAG
SCALE: NONE	



TEE AND END THRUST BLOCKS FOR PIPELINES, CLASS 200 PSI MAX

DRAWING NUMBER

W-3D



ITEM DESCRIPTION:

- ① PIPE SIZE, SERVICE SADDLE PER DISTRICT STANDARD W-4 OR W-5.
- ② 1" OR 2" 90° ELBOW (M.I.P X F.I.P).
- ③ 1" OR 2" CURB BALL VALVE PER DISTRICT STANDARD W-4 OR W-5.
- ④ 2" BRASS OPERATING NUT PER DISTRICT STANDARD W-5 (2" AIR VALVE ONLY).
- ⑤ 1" OR 2" TYPE-K SOFT COPPER.
- ⑥ 1" OR 2" 90° ELBOW (P.J X F.I.P).
- ⑦ VALVE RISER AND COVER PER DISTRICT STANDARD W-11 (2" AIR VALVE ONLY).
- ⑧ 1" A.R.I D-040-C OR 2" D-060-C COMBINATION AIR VALVE.
- ⑨ PIPELINE PRODUCTS, VCAS-1830 POLYETHYLENE ENCLOSURE (SANDSTONE COLOR).
- ⑩ 3' X 3' X 6" CLASS IV CONCRETE PAD. TOP OF PAD SHALL MATCH TOP OF CURB OR SIDEWALK.
- ⑪ 3 - 1/2" CONCRETE ANCHORS WITH STAINLESS FENDER WASHERS.
- ⑫ AIR VENT/EXHAUST SCREEN.
- ⑬ 1" OR 2" THREADED BRASS PIPE.

NOTES:

- 1. AIR VALVES INSTALLED IN AREAS WITHOUT CURBS SHALL HAVE GUARD POSTS PER DISTRICT STANDARD W-12.
- 2. ASSEMBLY SHALL BE LOCATED IN EASEMENTS AND RIGHT-OF-WAYS AND 7' FROM BCR OR DRIVEWAY APPROACHES.
- 3. PIPE THREADS SHALL BE CLEAN AND SHARP AND SEALED WITH AN APPROVED JOINT COMPOUND.
- 4. 8" AND SMALLER PIPE REQUIRES - 1" AIR VALVE. 12" PIPE REQUIRES - 2" AIR VALVE.

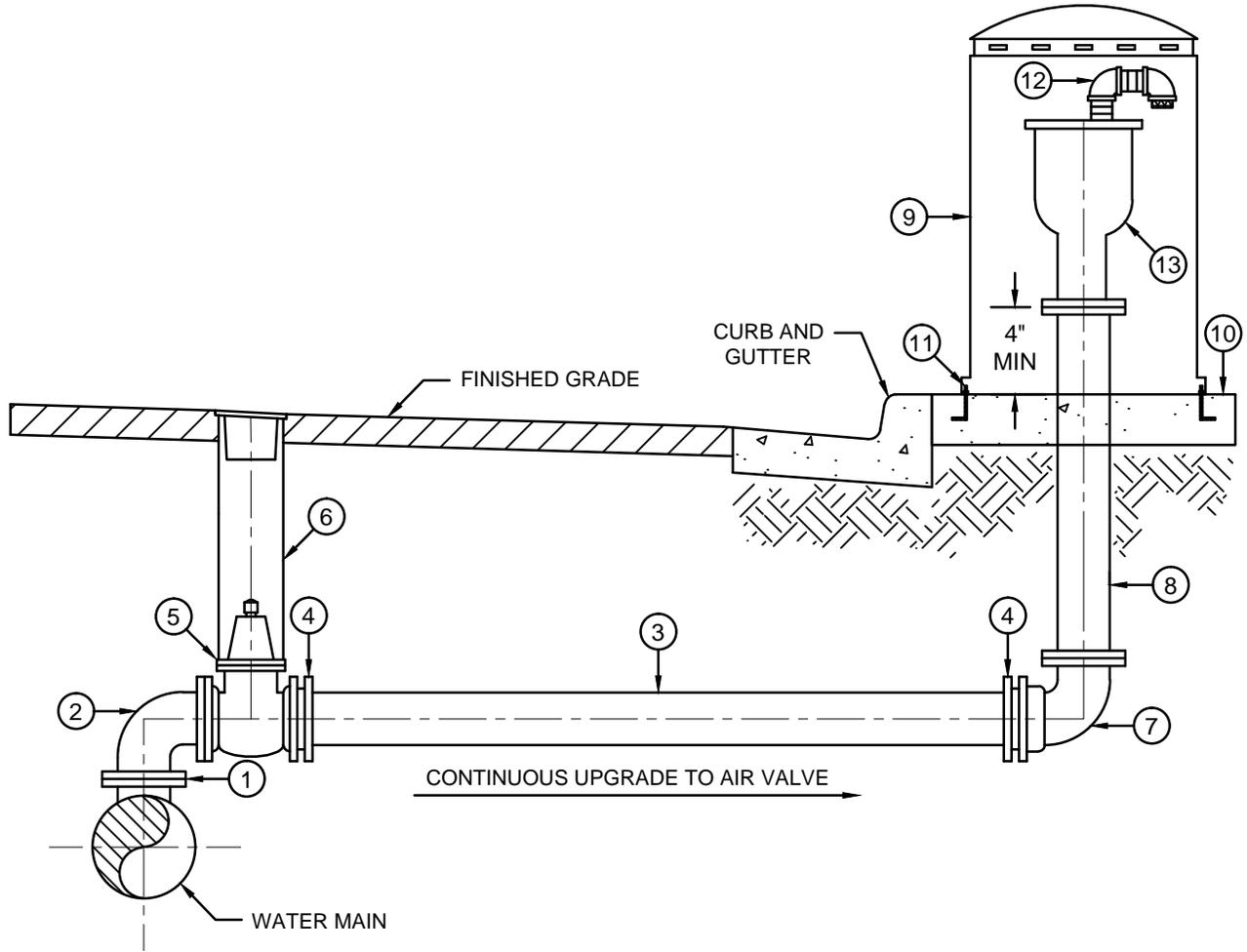
REVISIONS	
DATE	BY
09-2019	DAG
SCALE: NONE	



1" AND 2" AIR VALVE INSTALLATION DETAIL

DRAWING NUMBER

W-6A



ITEM DESCRIPTION:

- ① D.I TEE, MAIN SIZE X 4" OR 6" FLG.
- ② 4" OR 6" D.I 90° ELBOW, FLG.
- ③ 4" OR 6" D.I PIPE, PRESSURE CLASS 350, 18" MIN.
- ④ RESTRAINT DEVICE. SEE DISTRICT STANDARD W-30 AND DISTRICT SPECIFICATIONS FOR REQUIREMENTS.
- ⑤ 4" OR 6" RESILIENT-SEATED GATE VALVE (FLG X M.J.), PER DISTRICT STANDARD W-11.
- ⑥ VALVE RISER AND COVER. PER DISTRICT STANDARD W-11
- ⑦ 4" OR 6" D.I 90° ELBOW, (FLG X M.J.).
- ⑧ 4" OR 6" D.I. or SCH. 40 STEEL SPOOL, FLG. ORDER TO FIT.
- ⑨ PIPELINE PRODUCTS, VCAS-2436 POLYETHYLENE ENCLOSURE (SANDSTONE COLOR).
- ⑩ 3' X 3' X 6" CLASS IV CONCRETE PAD. TOP OF PAD SHALL MATCH TOP OF CURB OR SIDEWALK.
- ⑪ 3 - 1/2" CONCRETE ANCHORS WITH STAINLESS FENDER WASHERS.
- ⑫ 2 - GALV. THREADED NIPPLES, 2 - GALV. 90° ELBOWS AND EXHAUST SCREEN. ORIENTED TO CLEAR ASSEMBLY.
- ⑬ 4" OR 6" COMBINATION AIR RELEASE VALVE. SEE DISTRICT SPECIFICATIONS FOR APPROVED MODELS.

NOTES:

1. AIR VALVES INSTALLED IN AREAS WITHOUT CURBS SHALL HAVE GUARD POSTS PER DISTRICT STANDARD W-12.
2. ASSEMBLY SHALL BE LOCATED IN EASEMENTS AND RIGHT-OF-WAYS AND 7' FROM BCR OR DRIVEWAY APPROACHES.
3. SEE DISTRICT STANDARD W-6A FOR APPROVED LOCATIONS.
4. ALL ABOVE GROUND FLANGES SHALL HAVE 1/16" RING TYPE GASKETS.
5. 14" TO 24" PIPE REQUIRES - 4" AIR VAC. PIPE LARGER THAN 24" REQUIRES - 6" AIR VAC.

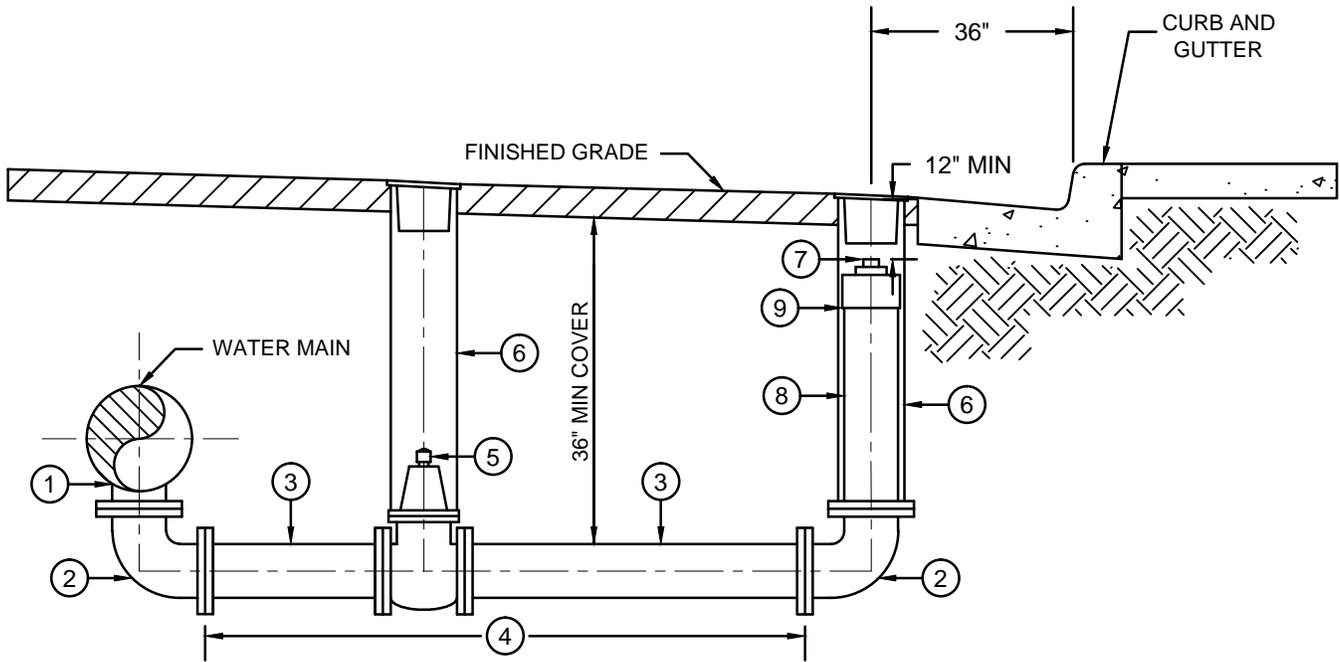
REVISIONS	
DATE	BY
09-2019	DAG
SCALE: NONE	



4" AND 6" AIR VALVE INSTALLATION DETAIL

DRAWING NUMBER

W-6B



ITEM DESCRIPTION:

- ① D.I TEE, MAIN SIZE X 4" OR 6" FLG.
- ② 4" OR 6" SCH. 40 STEEL - 90° ELBOW (FLG. X FLG.).
- ③ 4" OR 6" SCH. 40 STEEL PIPE, 18" MIN (FLG. X FLG.).
- ④ 8 MILL POLYWRAP AND LOCATING WIRE PER DISTRICT SPECIFICATIONS.
- ⑤ 4" OR 6" RESILIENT-SEATED GATE VALVE (FLG. X FLG.) PER DISTRICT STANDARD W-11.
- ⑥ VALVE RISER AND COVER. PER DISTRICT STANDARD W-11
- ⑦ MALE PVC PLUG, PER NSF 61.
- ⑧ 2" OR 4" SCH 40. STEEL PIPE, 18" MIN (FLG. X THREADED).
- ⑨ 4" OR 6" GALVANIZED IRON PIPE COUPLING WITH METAL THREADS. COUPLER SHALL BE WELDED TO RISER.

NOTES:

- 1. 4" BLOW-OFF REQUIRED FOR 6" - 12" WATER MAIN AND 6" BLOW-OFF REQUIRED FOR 12" AND LARGER WATER MAIN.
- 2. SIZE OF PIPE, VALVE, AND FITTINGS SHALL CONFORM TO THE SIZE OF THE BLOW-OFF REQUIRED.

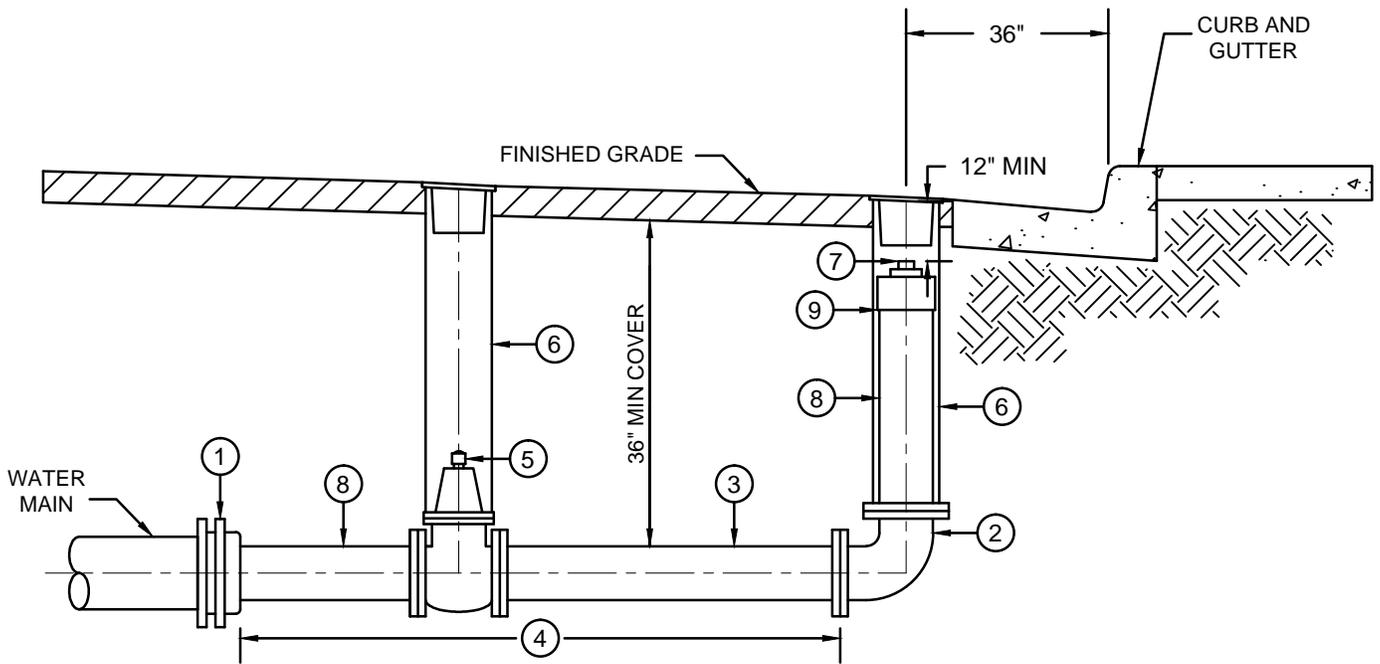
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09-2019	DAG
SCALE: NONE	



4" AND 6" BLOW-OFF ASSEMBLY

DRAWING NUMBER

W-7A



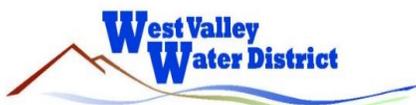
ITEM DESCRIPTION:

- ① D.I RESTRAINED PLUG OR M.J CAP, MAIN SIZE X 2" OR 4" THREADED OUTLET
- ② 2" OR 4" SCH. 40 STEEL - 90° ELBOW (FLG. X FLG.).
- ③ 2" OR 4" SCH. 40 STEEL PIPE, 18" MIN (FLG. X FLG.).
- ④ 8 MILL POLYWRAP AND LOCATING WIRE PER DISTRICT SPECIFICATIONS.
- ⑤ 2" OR 4" RESILIENT-SEATED GATE VALVE (FLG. X FLG.), PER DISTRICT STANDARD W-11.
- ⑥ VALVE RISER AND COVER. PER DISTRICT STANDARD W-11
- ⑦ MALE PVC PLUG, PER NSF 61.
- ⑧ 2" OR 4" SCH 40. STEEL PIPE, 18" MIN (FLG. X THREADED).
- ⑨ 2" OR 4" GALVANIZED IRON PIPE COUPLING WITH METAL THREADS. COUPLER SHALL BE WELDED TO RISER.

NOTES:

- 1. 2" FLUSH-OUT REQUIRED FOR 6" AND SMALLER WATER MAIN.
- 2. 4" FLUSH-OUT REQUIRED FOR 8" AND LARGER WATER MAIN.
- 3. SIZE OF PIPE, VALVE, AND FITTINGS SHALL CONFORM TO THE SIZE OF THE FLUSH-OUT REQUIRED.

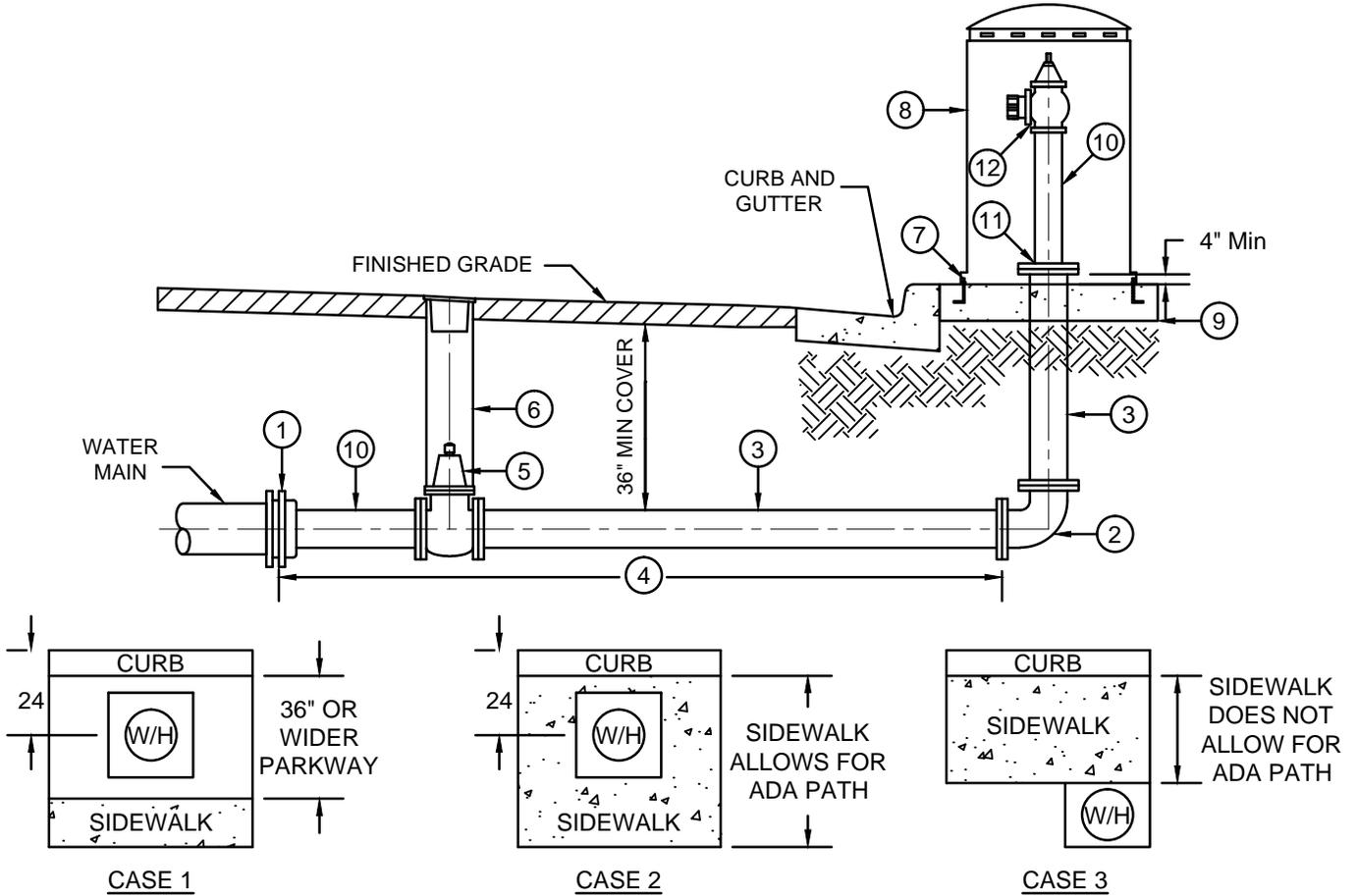
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09-2019	DAG
SCALE: NONE	



2" & 4" DEAD-END FLUSH-OUT

DRAWING NUMBER

W-8A



ITEM DESCRIPTION:

- ① D.I RESTRAINED PLUG OR M.J CAP, MAIN SIZE X 4" THREADED OUTLET
- ② 4" SCH. 40 STEEL - 90° ELBOW (FLG. X FLG.).
- ③ 4" SCH. 40 STEEL PIPE, 18" MIN (FLG. X FLG.).
- ④ 8 MILL POLYWRAP AND LOCATING WIRE PER DISTRICT SPECIFICATIONS.
- ⑤ 4" RESILIENT-SEATED GATE VALVE (FLG. X FLG.), PER DISTRICT STANDARD W-11.
- ⑥ VALVE RISER AND COVER. PER DISTRICT STANDARD W-11
- ⑦ 3 - 1/2" CONCRETE ANCHORS WITH STAINLESS FENDER WASHERS.
- ⑧ PIPELINE PRODUCTS, VCAS-2436 POLYETHYLENE ENCLOSURE (SANDSTONE COLOR).
- ⑨ 3' X 3' X 6" CLASS IV CONCRETE PAD.
- ⑩ 4" SCH 40. STEEL PIPE, 18" MIN (FLG. X THREADED).
- ⑪ 3/4" HEX HEAD BREAK OFF BOLTS, ZINC PLATED WITH 1/16" RING TYPE GASKET.
- ⑫ 4" X 2-1/2" JONES WHARF HEAD (J-344HP) WITH CAP AND CHAIN. SEE NOTES 3 THROUGH 7.

NOTES:

- 1. 4" FLUSH-OUT REQUIRED FOR 8" AND LARGER WATER MAIN.
- 2. SIZE OF PIPE, VALVE, AND FITTINGS SHALL CONFORM TO THE SIZE OF THE FLUSH-OUT REQUIRED.
- 3. WHARF HEAD ASSEMBLIES SHALL ONLY BE INSTALLED ON 4" FLUSH-OUTS WHEN APPROVED BY THE DISTRICT.
- 4. USE CASE 1 - 3 WHEN LOCATION IS NOT SPECIFIED ON PLAN OR IN FIELD.
- 5. A WHARF HEAD SHALL NOT BE USED IN PLACE OF A FIRE HYDRANT FOR FIRE SUPPRESSION REQUIREMENTS.
- 6. WHARF HEAD ASSEMBLIES SHALL BE PAINTED SAFETY YELLOW PER DISTRICT SPECIFICATIONS.
- 7. LATERAL VALVE SHALL REMAIN IN THE CLOSED POSITION WHEN INSTALLED.

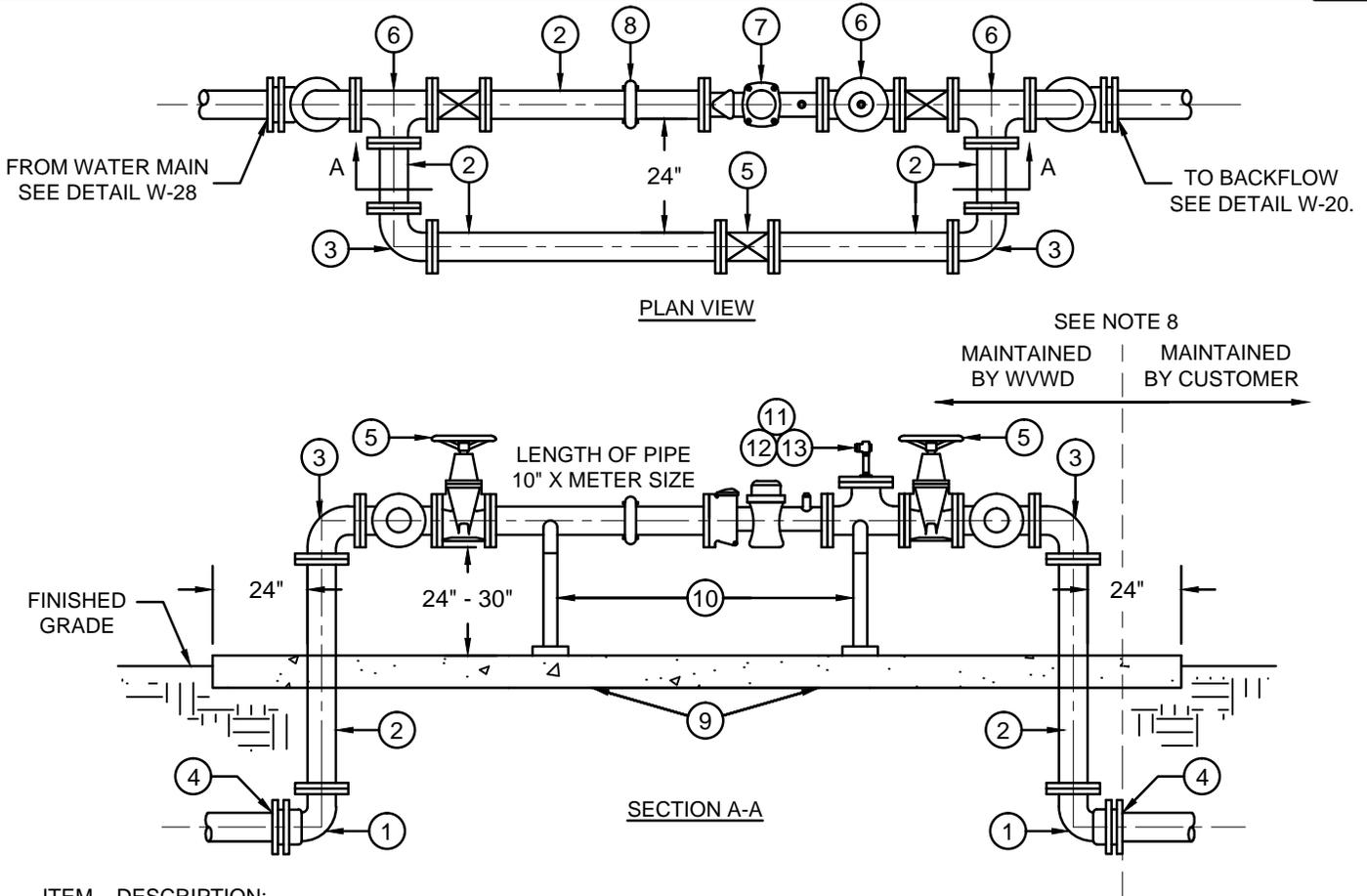
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09-2019	DAG
SCALE: NONE	



4" DEAD-END FLUSH-OUT

DRAWING NUMBER

W-8B



ITEM DESCRIPTION:

- ① D.I 90° ELBOW (FLG. X M.J.).
- ② D.I OR SCH. 40 STEEL PIPE (FLG. X FLG.), ORDER TO FIT.
- ③ D.I OR SCH. 40 STEEL - 90° ELBOW (FLG. X FLG.)
- ④ RESTRAINT DEVICE. SEE DISTRICT STANDARD W-30 AND DISTRICT SPECIFICATIONS FOR REQUIREMENTS.
- ⑤ RESILIENT-SEATED GATE VALVE WITH HAND WHEEL AND NRS, FLG.
- ⑥ D.I OR SCH. 40 STEEL TEE, FLG.
- ⑦ COMPOUND OR TURBINE METER TO BE FURNISHED BY DISTRICT.
- ⑧ VICTAULIC COUPLING.
- ⑨ 4" THICK CLASS IV CONCRETE PAD.
- ⑩ ADJUSTABLE PIPE SADDLE SUPPORT.
- ⑪ D.I BLIND FLANGE WITH 2" THREADED OUTLET.
- ⑫ 2" X 6" LONG GALVANIZED NIPPLE. THREADED AT BOTH ENDS.
- ⑬ 2" BALL VALVE - F.I.T. WITH 360° TURN. FORD B11-777M-NL OR MUELLER B-20200-3N. WITH 2" BRASS PLUG.

NOTES:

1. DIAMETER OF PIPING, FITTINGS AND VALVES, BELOW AND ABOVE GROUND MUST MATCH METER SIZE.
2. PAINT METER ASSEMBLY HUNTER GREEN PER DISTRICT SPECIFICATIONS.
3. 24" MINIMUM CLEARANCE REQUIRED AROUND METER ASSEMBLY.
4. METER ASSEMBLY SHALL BE INSTALLED ABOVE GROUND AND PARALLEL TO PROPERTY LINE.
5. METER ASSEMBLY SHALL BE INSTALLED AWAY FROM SIDEWALK AND NOT OBSTRUCT THE PATH OF TRAVEL.
6. METER ASSEMBLY SHALL BE INSTALLED WITHIN RIGHT-OF-WAY OR WITHIN AN EASEMENT DEDICATED TO WVWD.
7. ALL ABOVE GROUND FLANGES SHALL HAVE 1/16" RING TYPE GASKETS.
8. CONNECTION TO OR INSTALLATION OF CUSTOMER PIPING SHALL BE DONE BY PRIVATE CONTRACTOR, UNLESS SPECIFIED BY DISTRICT. CUSTOMER IS RESPONSIBLE FOR ALL PIPING, FITTINGS, BACKFLOWS AND OTHER APPURTENANCES AFTER BOTTOM 90° ELBOW.

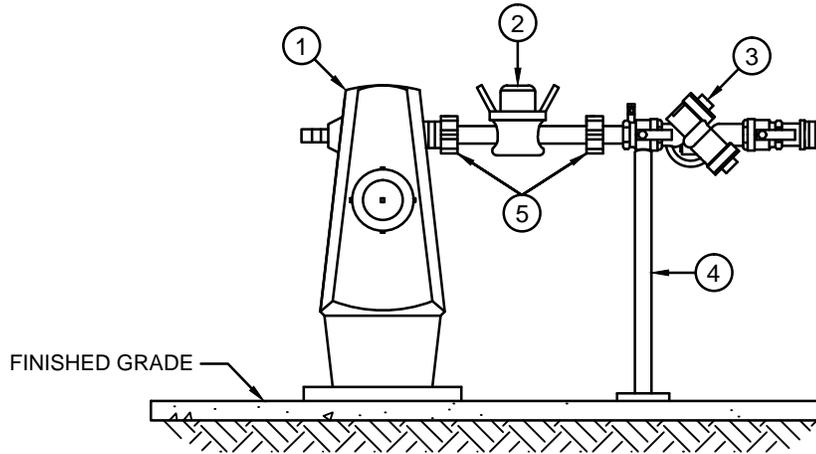
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WATER SERVICE DETAIL 3" & LARGER METERS

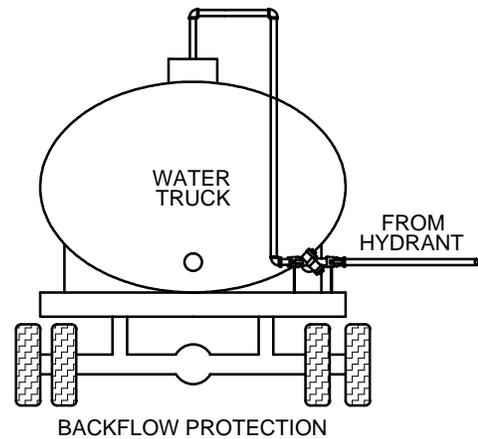
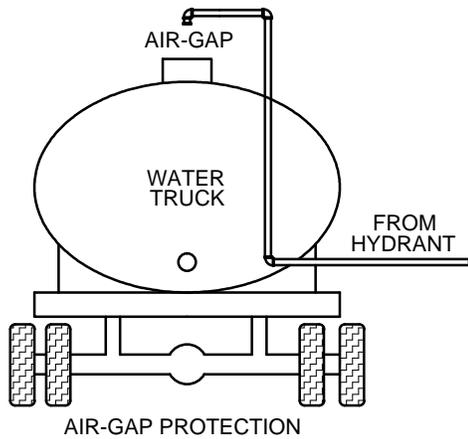
DRAWING NUMBER

W-9



ITEM DESCRIPTION:

- ① DISTRICT HYDRANT WITH 4" AND 2-1/2" OUTLETS.
- ② 4" OR 2-1/2" CONSTRUCTION METER WITH HYDRANT THREAD OUTLET (PROVIDED BY DISTRICT).
- ③ 4" OR 2-1/2" RP BACKFLOW DEVICE WITH HYDRANT THREAD OUTLET (PROVIDED BY DISTRICT IF AVAILABLE).
- ④ PIPE SUPPORT (PROVIDED BY DISTRICT IF AVAILABLE).
- ⑤ CLAM SHELL LOCKING DEVICE OR LOCKING CHAIN (PROVIDED BY DISTRICT).



WATER TRUCKS AND TANKS

WATER TRUCKS AND TANKS WILL NOT BE ALLOWED TO OPERATE UNLESS THEY ARE FILLED FROM THE TOP WITH AN APPROPRIATE AIR-GAP SEPARATION AND PROPER PIPING MATERIALS AS APPROVED BY THE DISTRICT. THE AIR-GAP SEPARATION SHALL BE A MINIMUM OF TWICE (2X) THE DIAMETER OF THE WATER SUPPLY LINE ABOVE THE WATER TANK. WATER TANKS AND TRUCKS MAY ALSO BE REQUIRED TO HAVE A FLOW CONTROL VALVE OR ADDITIONAL BACKFLOW PROTECTION AT THE INLET CONNECTION AS REQUIRED BY THE DISTRICT.

NOTES:

1. INSTALLATION AND RELOCATION OF CONSTRUCTION METER SHALL BE DONE BY DISTRICT STAFF.
2. ANY CONNECTION TO A DISTRICT HYDRANT WITHOUT A METER IS NOT PERMITTED.
3. APPLICANTS WHO PROVIDE THEIR OWN BACKFLOW SHALL HAVE THE DISTRICT TEST AND CERTIFY THE DEVICE PRIOR TO BEGINNING WATER SERVICE. USE OF PRIVATE BACKFLOWS MUST BE APPROVED BY THE DISTRICT.
4. APPLICANT IS RESPONSIBLE FOR LOSS OR DAMAGE TO HYDRANT, METER, BACKFLOW AND/OR FITTINGS REGARDLESS OF CAUSE.

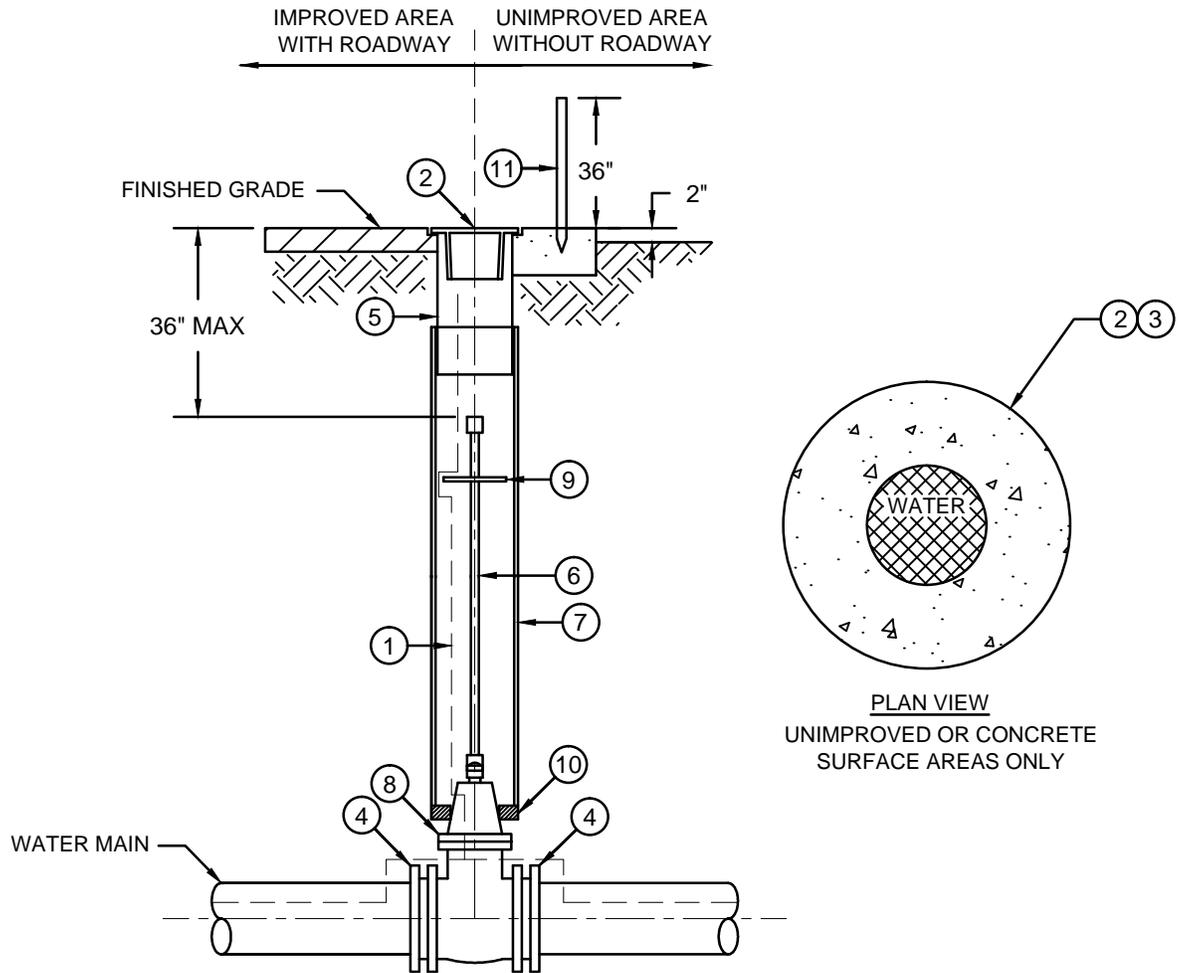
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09-2019	DAG
SCALE: NONE	



**TEMPORARY HYDRANT
METER ASSEMBLY**

DRAWING NUMBER

W-10



ITEM DESCRIPTION:

- ① LOCATING WIRE.
- ② 8" CAST IRON COVER MARKED "WATER". ALHAMBRA FOUNDRY NO-29608, OR APPROVED EQUAL.
- ③ 6" THICK X 20" DIAMETER CLASS IV CONCRETE COLLAR.
- ④ RESTRAINT DEVICE. SEE DISTRICT STANDARD W-30 AND DISTRICT SPECIFICATIONS FOR REQUIREMENTS.
- ⑤ 8" O.D. X 12 GA, GALVANIZED STEEL SLIP CAN. TOP SECTION SLIP CAN LENGTH IS 18" OR AS REQUIRED.
- ⑥ 1" DIAMETER BLACK PIPE ASTM-120 VALVE EXTENSION. WITH 2" SQ. OPERATING NUT.
- ⑦ 8" C900 OR SDR 35 PVC PIPE.
- ⑧ GATE VALVE OR BUTTERFLY VALVE PER AWWA C509 AND C504. TYPE, OUTLET, AND SIZE OF VALVE PER PLAN AND DISTRICT SPECIFICATIONS.
- ⑨ 6" X 1/4" STEEL DISK. TACK WELDED TO EXTENSION.
- ⑩ 2" X 4" X 1" REDWOOD BLOCK. (DO NO REST ON VALVE).
- ⑪ BLUE "CARSONITE" MARKER MARKED "WATER VALVE".

NOTES:

- 1. VALVE MARKER SHALL BE INSTALLED AS DIRECTED BY DISTRICT INSPECTOR IN UNIMPROVED AREAS.
- 2. VALVE EXTENSION REQUIRED WHERE DEPTH OF OPERATING NUT EXCEEDS 5-FEET.
- 3. FINAL RIM ELEVATION TO BE 1/8" TO 1/4" BELOW FINAL STREET GRADE.
- 4. VALVES SMALLER THAN 12" OR TAPPING VALVES SHALL BE GATE VALVES. VALVES 12" AND LARGER SHALL BE BUTTERFLY VALVES.

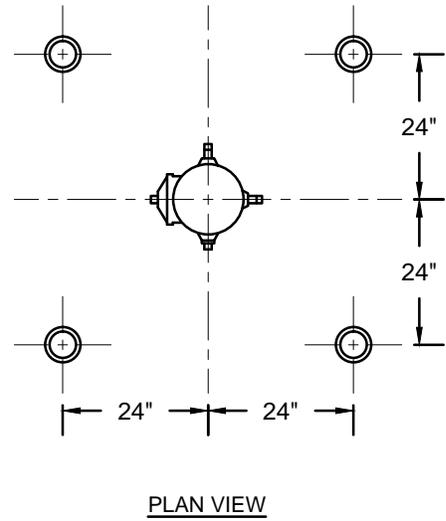
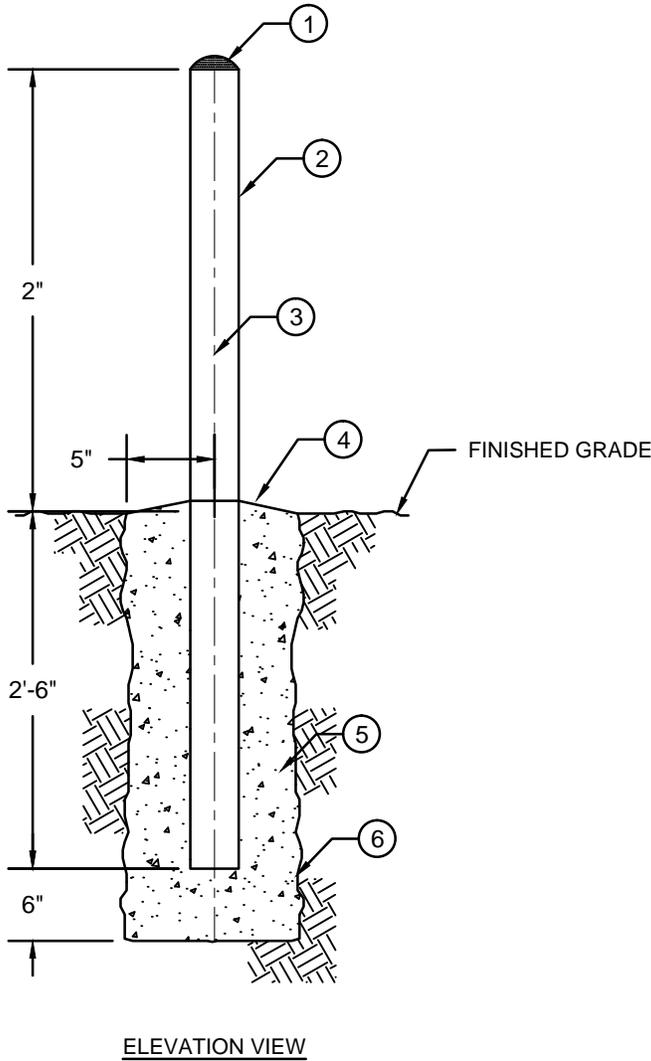
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DATE	BY
09-2019	DAG
SCALE: NONE	



**VALVE AND VALVE BOX
INSTALLATION DETAIL**

DRAWING NUMBER

W-11



ITEM DESCRIPTION:

- ① ROUND OVER CONCRETE TO FORM CAP.
- ② 4" X 5'-6" LONG SCH. 40 STEEL PIPE PAINTED SAFETY YELLOW PER DISTRICT SPECIFICATIONS
- ③ #4 RE-BAR, FULL-LENGTH, CENTERED IN PIPE, AND FILLED WITH CLASS 1V CONCRETE
- ④ SLOPE 1" DOWN TO DRAIN
- ⑤ CLASS IV CONCRETE FOOTING, 10" DIA.
- ⑥ POUR AGAINST UNDISTURBED OR WELL COMPACTED EARTH, 90% MIN.

NOTES:

- 1. LOCATION SHALL BE PER PLAN, OR AS DIRECTED IN THE FIELD BY THE DISTRICT INSPECTOR OR ENGINEER.

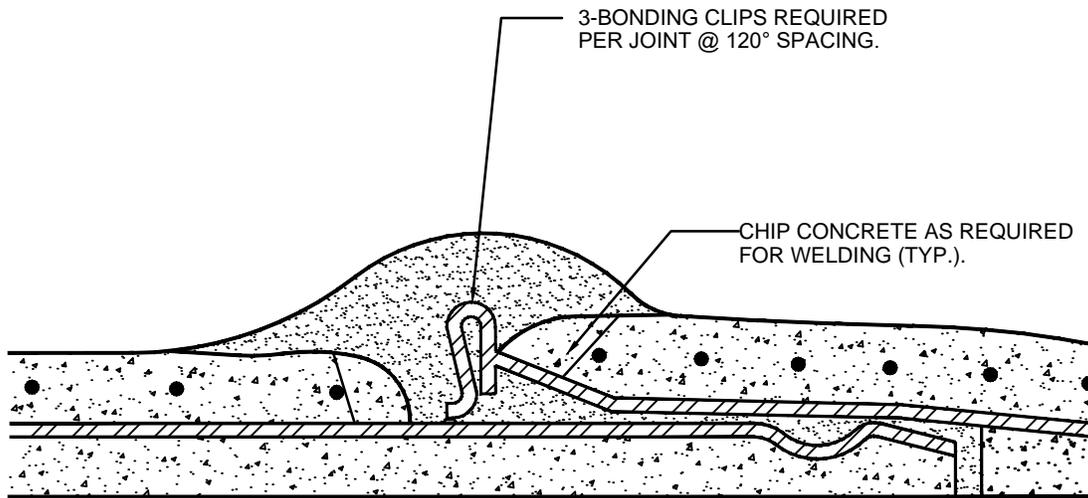
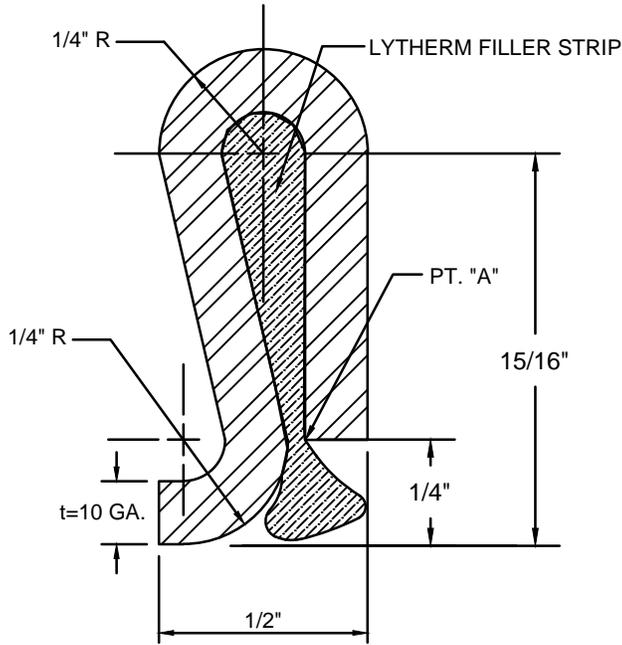
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**GUARD POST
INSTALLATION DETAIL**

DRAWING NUMBER

W-12



FIELD INSTALLATION

NOTES:

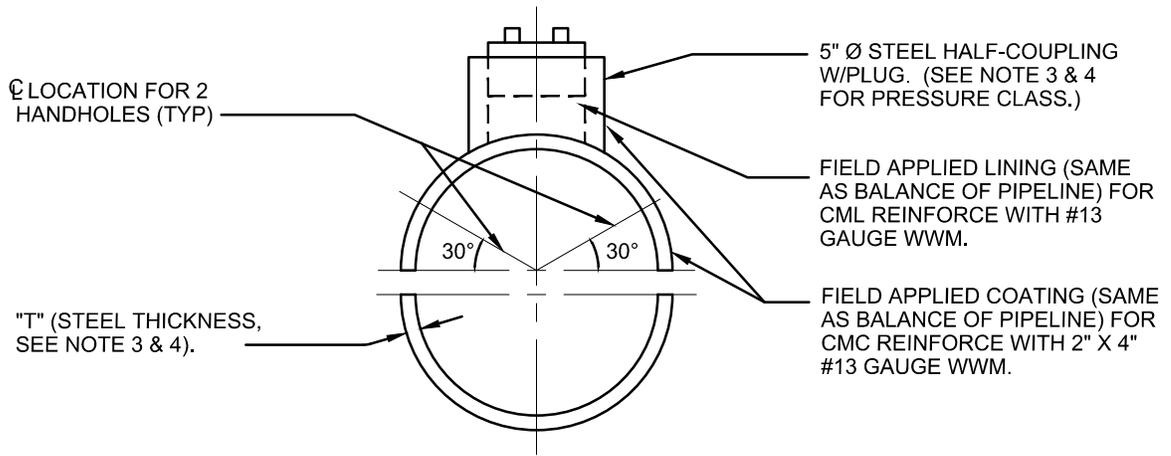
1. STEEL BONDING CLIP:
MATERIAL SPECIFICATION: ASTM A366 (COMMERCIAL QUALITY).
CUT LENGTH: $2-1/2 \pm 1/16$ "
WIDTH: $1-1/4 \pm 1/16$ "
2. LYTHERM FILLER STRIP TO BE 1" x 1-1/2" WIDE TO OVERLAP SIDES OF CLIP.
3. CRIMP BONDING CLIP OVER FILLER AT "A" TO COMPRESS FILLER.

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09-2019	DAG
SCALE: NONE	

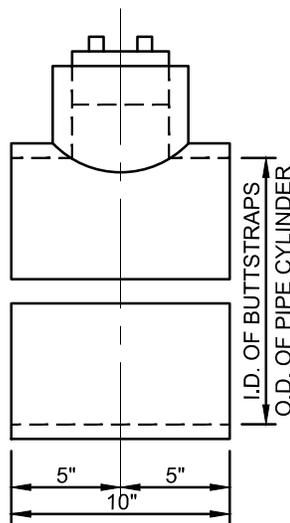


BONDING CLIP DETAIL

DRAWING NUMBER
W-13



END VIEW



SIDE VIEW

NOTES:

1. 1 HANDHOLE REQUIRED FOR 4" Ø PIPE THROUGH 18" Ø PIPE.
2. 2 HANDHOLES REQUIRED FOR 20" Ø PIPE THROUGH 30" Ø PIPE.
3. UP TO CLASS 200 PIPELINES
 "T"=3/16" FOR 4" Ø THROUGH 24" Ø.
 "T"=1/4" FOR 30" Ø
 5"-BLACK, HALF-COUPLING, CLASS 150, CRANE OR APPROVED EQUAL.
 5"-BLACK, CORED, BAR PLUG, CLASS 150, CRANE OR APPROVED EQUAL.
4. GREATER THAN CLASS 200 THROUGH CLASS 350 PIPELINES:
 "T"=3/16" FOR 4" Ø THROUGH 14" Ø.
 "T"=1/4" FOR 16" Ø THROUGH 20" Ø.
 "T"=5/16" FOR 24" Ø.
 "T"=3/8" FOR 30" Ø.
 5"+BLACK, HALF-COUPLING, CLASS 300, CRANE OR APPROVED EQUAL
 5"+BLACK, SOLID, BAR PLUG, CLASS 300, CRANE OR APPROVED EQUAL..
5. SEAL THREADS WITH A NON-TOXIC COMPOUND.

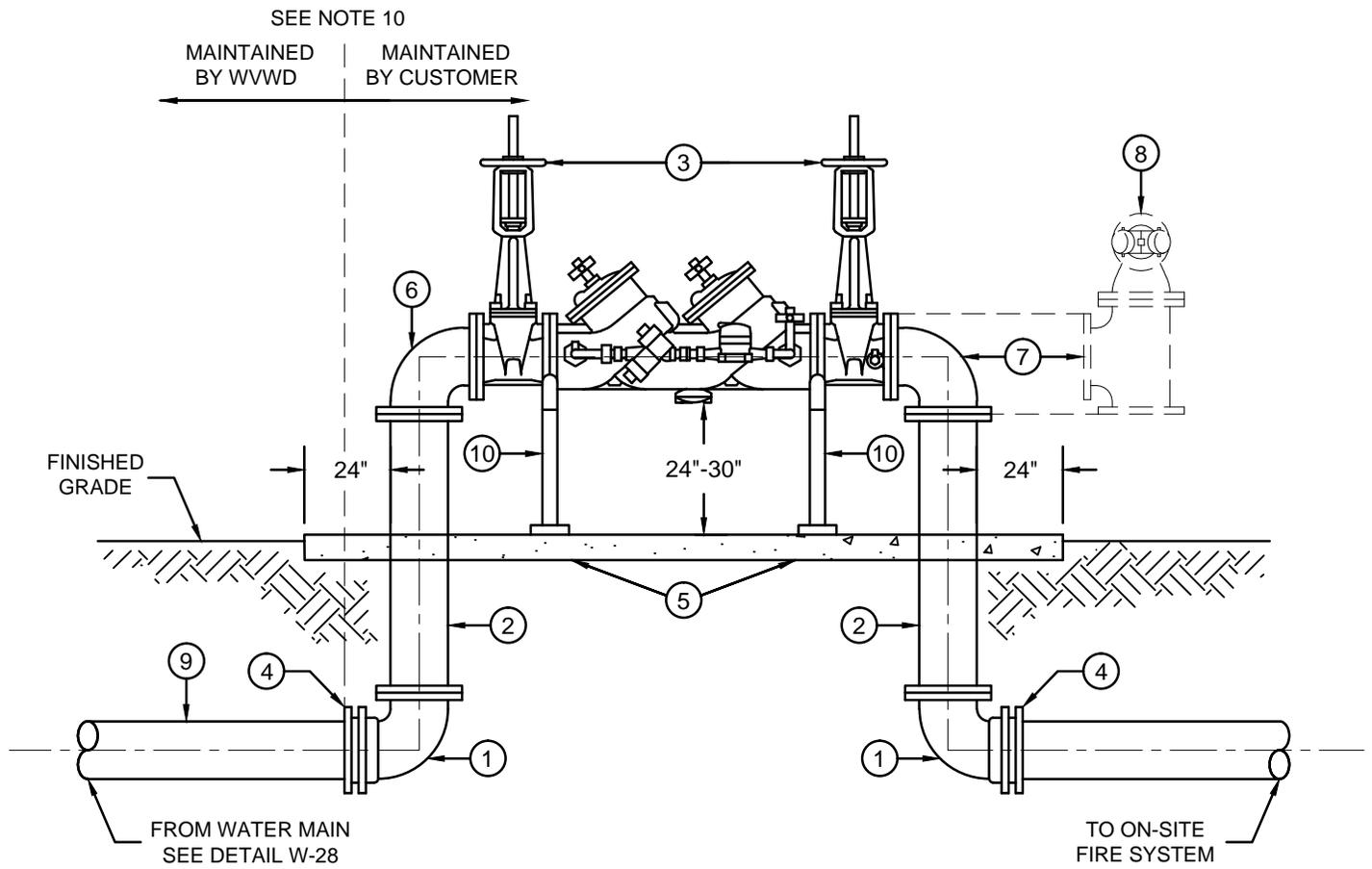
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09-2019	DAG
SCALE: NONE	



BUTT STRAP DETAIL

DRAWING NUMBER

W-14



ITEM DESCRIPTION:

- ① D.I 90° ELBOW (FLG. X M.J.).
- ② D.I OR SCH. 40 STEEL PIPE, FLG, ORDER TO FIT.
- ③ DOUBLE CHECK DETECTOR ASSEMBLY. SIZE AS INDICATED ON PLAN.
- ④ RESTRAINT DEVICE. SEE DISTRICT STANDARD W-30 AND DISTRICT SPECIFICATIONS FOR REQUIREMENTS.
- ⑤ 4" THICK CLASS IV CONCRETE PAD.
- ⑥ D.I OR SCH. 40 STEEL - 90° REDUCING ELBOW, FLG. INLET MUST BE 2" LARGER THAN OUTLET.
- ⑦ D.I OR SCH. 40 STEEL - 90° ELBOW, FLG. OR TEE, FLG (WHEN FDC IS REQUIRED).
- ⑧ FIRE DEPARTMENT CONNECTION (FDC). AS APPROVED BY FIRE AUTHORITY.
- ⑨ FIRE SERVICE LATERAL. SEE NOTE 2 FOR SIZING INSTRUCTIONS.
- ⑩ ADJUSTABLE PIPE SADDLE SUPPORT.

NOTES:

1. DCDA MUST BE USC CROSS-CONNECTION CONTROL HYDRAULIC RESEARCH STANDARDS APPROVED.
2. SERVICE LATERAL FROM DISTRICT MAIN TO 90° REDUCING ELBOW MUST BE 2" LARGER THAN SIZE OF DCDA.
3. PAINT DCDA ASSEMBLY HUNTER GREEN PER DISTRICT SPECIFICATIONS.
4. DEPENDING ON RIGHT-OF-WAY, ASSEMBLY MUST BE INSTALLED ABOVE GROUND AND PARALLEL TO PROPERTY LINE.
5. 24" MINIMUM CLEARANCE REQUIRED AROUND ENTIRE ASSEMBLY.
6. DCDA ASSEMBLY SHALL BE LOCATED 24" FROM PROPERTY LINE.
7. DCDA MUST BE TESTED AND CERTIFIED BEFORE WATER SERVICE CAN BE TURNED ON.
8. IF A FIRE PUMP IS USED ON-SITE, A BREAK TANK SHALL BE REQUIRED PER ARTICLE 8 OF DISTRICT REGULATIONS.
9. ALL ABOVE GROUND FLANGES SHALL HAVE 1/16" RING TYPE GASKETS.
10. INSTALLATION OF FIRE SERVICE AND DCDA SHALL BE DONE BY DISTRICT APPROVED CONTRACTOR. CUSTOMER IS RESPONSIBLE FOR ALL PIPING, FITTINGS, DCDA AND OTHER APPURTENANCES AFTER BOTTOM 90° ELBOW.

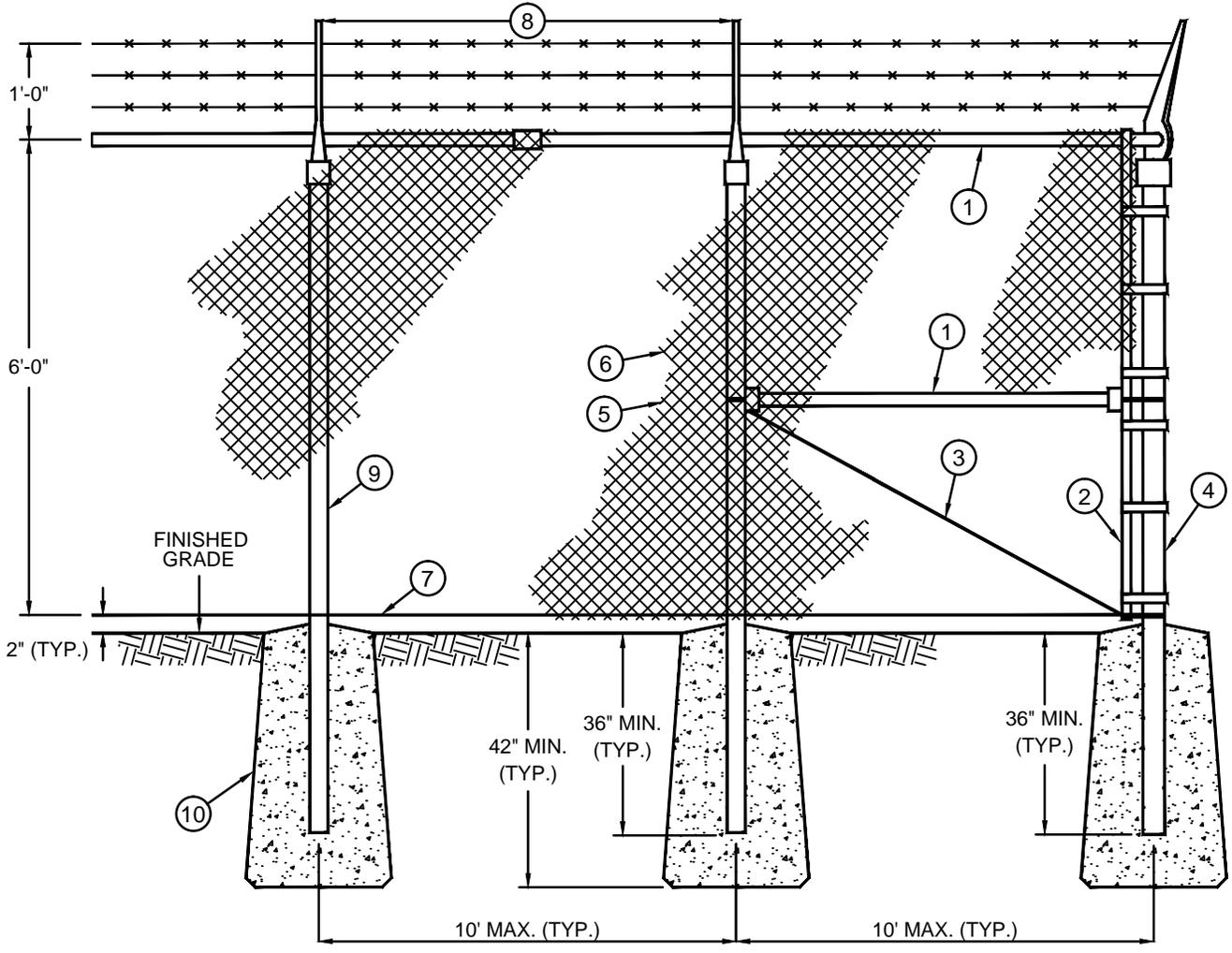
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SCALE: NONE	



FIRE SERVICE INSTALLATION DETAIL

DRAWING NUMBER

W-15



ITEM DESCRIPTION:

- ① 1-5/8" O.D. SCH. 40 GALVANIZED PIPE.
- ② 1/4" X 3/4" STRETCHER BAR.
- ③ 3/8" DIAMETER ADJUSTABLE TRUSS ROD.
- ④ CORNER POST 4" O.D. WITH SCH. 40 GALVANIZED PIPE.
- ⑤ REDWOOD SLATS, AS REQUIRED.
- ⑥ 9 GAUGE GALVANIZED FABRIC.
- ⑦ 7 GAUGE TENSION WIRE.
- ⑧ GALVANIZED COMBINATION POST TOP AND BARBED WIRE SUPPORTING ARM.
- ⑨ 2-3/8" O.D. SCH. 40 GALVANIZED PIPE.
- ⑩ CLASS IV CONCRETE FOOTING (6 SACKS).

NOTES:

1. DIAMETER OF CONCRETE FOOTING SHALL BE 3 TIMES O.D. OF POST OR 8" MINIMUM.
2. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND SHALL BE APPROVED BY THE DISTRICT.

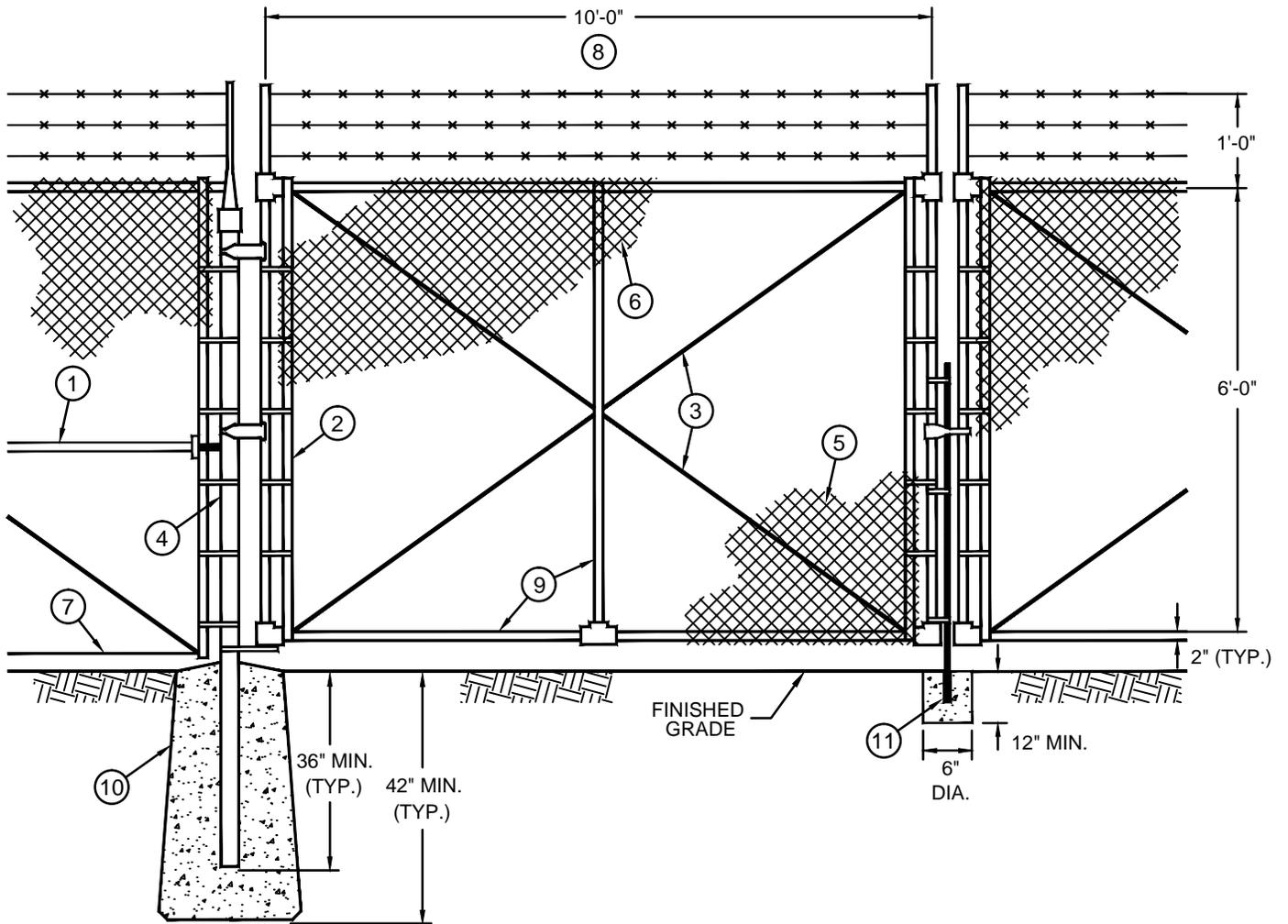
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SCALE: NONE	



CHAIN LINK FENCE DETAIL

DRAWING NUMBER

W-16



ITEM DESCRIPTION:

- ① 1-5/8" O.D. SCH. 40 GALVANIZED PIPE.
- ② 1/4" X 3/4" STRETCHER BAR.
- ③ 3/8" DIAMETER ADJUSTABLE TRUSS ROD.
- ④ 4" O.D. WITH SCH. 40 GALVANIZED PIPE.
- ⑤ REDWOOD SLATS, AS REQUIRED.
- ⑥ 9 GAUGE GALVANIZED FABRIC.
- ⑦ 7 GAUGE TENSION WIRE.
- ⑧ GALVANIZED COMBINATION POST TOP AND BARBED WIRE SUPPORTING ARM.
- ⑨ 1-9/10" O.D. SCH. 40 GALVANIZED PIPE.
- ⑩ CLASS IV CONCRETE FOOTING (6 SACKS).
- ⑪ CENTER CATCH SET IN CONCRETE.

NOTES:

1. DIAMETER OF CONCRETE FOOTING SHALL BE 3 TIMES O.D. OF POST OR 8" MINIMUM.
2. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND SHALL BE APPROVED BY THE DISTRICT.

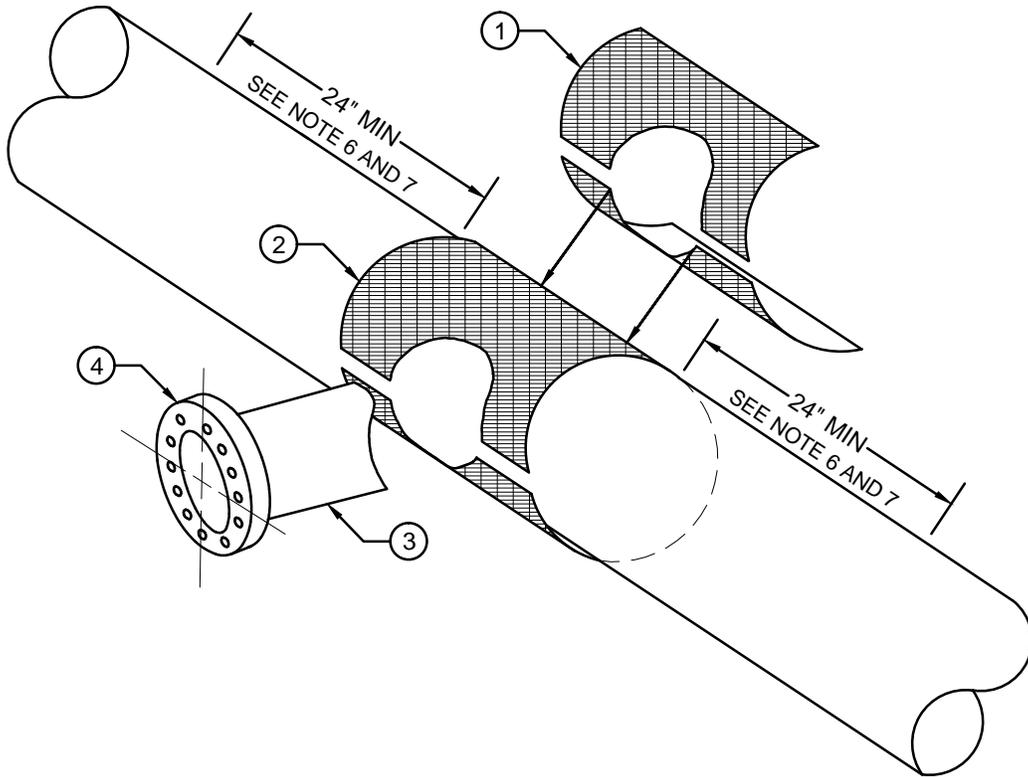
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SCALE: NONE	



**CHAIN LINK FENCE
GATE DETAIL**

DRAWING NUMBER

W-17



ITEM DESCRIPTION:

- ① PIPE COLLAR REINFORCEMENT (WHEN OUTLET TO MAIN RATIO IS 50% OR LESS). SEE NOTE 1.
- ② FULL PIPE WRAP REINFORCEMENT (WHEN OUTLET TO MAIN RATIO IS GREATER THAN 50%). SEE NOTE 1.
- ③ SCHEDULE 40 STEEL OUTLET NOZZLE (MAIN SIZE X LATERAL SIZE OUTLET).
- ④ FLANGE CONNECTION TO TAPPING VALVE. SEE DISTRICT STANDARD W-11 AND W-28 FOR NEW INSTALLATIONS.

NOTES:

1. REINFORCEMENT DESIGN IS BASED ON THE STEEL AREA REMOVED FROM THE MAIN LINE AND THE OPERATING PRESSURE OF THE SYSTEM. THE CONDITION, MATERIAL AND USE OF PIPE MAY REQUIRE ADDITIONAL REINFORCEMENT FOR THE SERVICE TAP. THE DISTRICT SHALL DETERMINE IN FIELD IF ADDITIONAL REINFORCEMENT IS REQUIRED.
2. JOB SPECIFICATIONS/DETAILS FOR REINFORCEMENT SHALL GOVERN IF IN EXCESS OF NOTES 1, 2 AND 3 ABOVE.
3. ALL METAL SURFACES SHALL BE PAINTED PER SPECIFICATIONS. OUTLET TO BE COATED WITH SAME COATING AS PIPE.
4. OUTLET NOZZLE SHOULD BE POSITIONED AND WELDED ON TO WATER MAIN PRIOR TO WELDING ON THE REQUIRED REINFORCEMENT AT A 90° PERPENDICULAR ANGLE TO THE WATER MAIN.
5. FLANGE SHALL BE ATTACHED WITH BOLT HOLES CENTERED ABOUT THE VERTICAL AXIS OF THE PIPE UNLESS OTHERWISE NOTED.
6. CONTRACTOR MUST EXPOSE 24" ON EITHER SIDE OF TAPPING SLEEVE TO ENSURE CLEARANCE FROM ADJACENT COLLARS AND PIPE JOINTS.
7. TAPPING SLEEVES MUST BE 24" APART FROM EACH OTHER ON THE SAME PIPE.

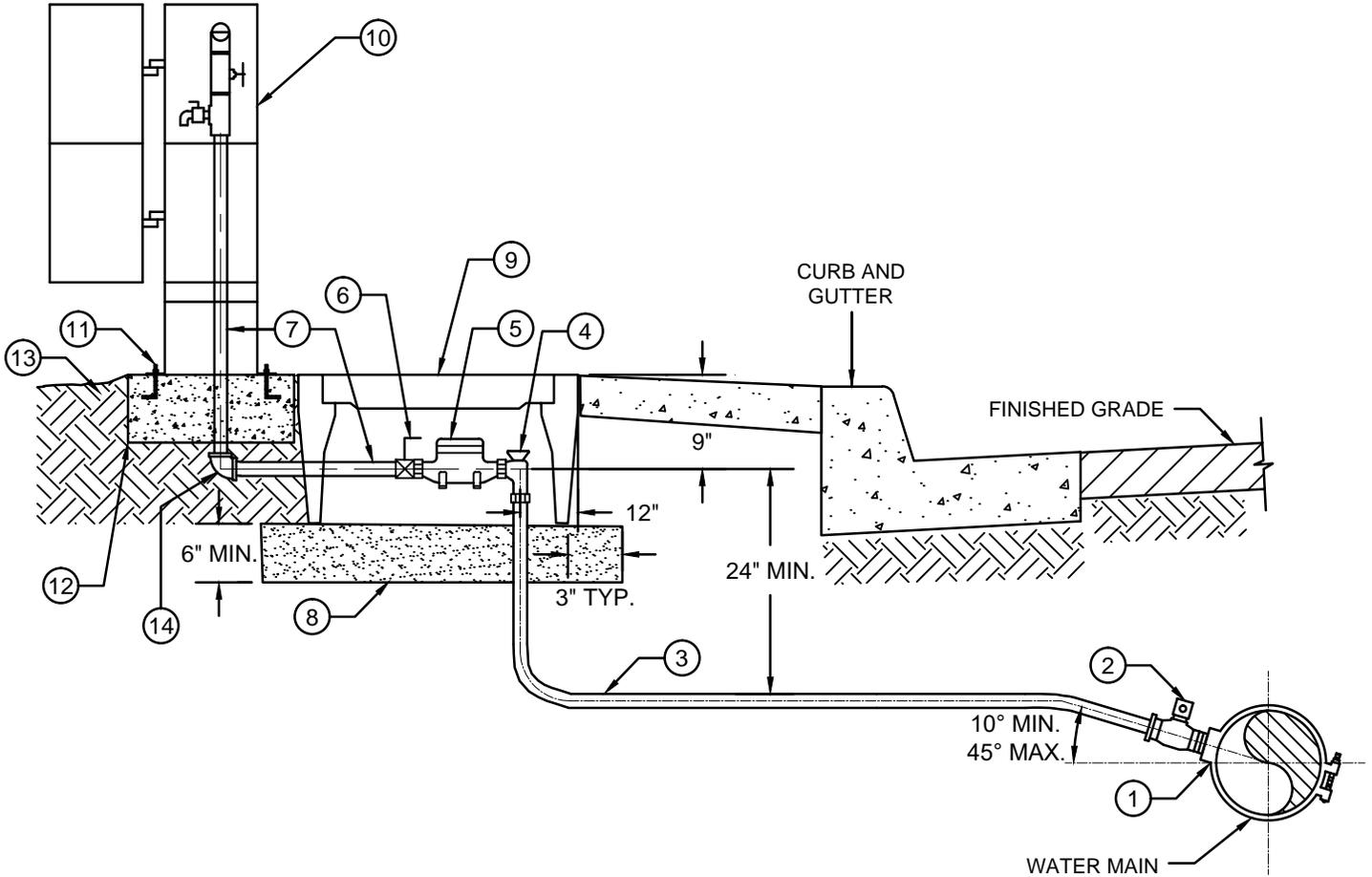
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09-2019	DAG
SCALE: NONE	



TAPPING OUTLET FOR STEEL PIPE 3" AND LARGER

DRAWING NUMBER

W-19



ITEM DESCRIPTION:

- ① DOUBLE STRAP SERVICE SADDLE WITH 1" I.P.T. OUTLET. FORD FS202, MUELLER DR2A, ROMAC 202S, AND SMITH BLAIR 313. WHERE STEEL PIPE IS INSTALLED, USE TAPPING OUTLET PER DISTRICT STANDARD W-18.
- ② 1" CORPORATION STOP (I.P.T X P.J.). FORD B84-444-NL-R OR MUELLER P25122N-3.
- ③ 1" COPPER WATER SERVICE, TYPE "K", SOFT TEMPER, PER ASTM B-88.
- ④ 1" OR 3/4" ANGLE METER VALVE (P.J X METER SWIVEL NUT). FORD BA43-444WR-NL OR MUELLER P24258N-3.
- ⑤ 1" OR 3/4" METER (SUPPLIED BY DISTRICT).
- ⑥ 1" OR 3/4" CUSTOMER BALL VALVE WITH HANDLE (SUPPLIED BY DISTRICT). FORD B13-444WR-NL OR MUELLER B24351-3.
- ⑦ 1" OR 3/4" BRASS THREADED PIPE (MALE).
- ⑧ IMPORTED SAND BASE.
- ⑨ METER BOX (SUPPLIED BY DISTRICT). OLDCASTLE PRECAST FL12 BOX.
- ⑩ AMERICAN-MC SAMPLE STATION (EZ-01 - 44" MODEL) COLOR RAL6017.
- ⑪ 4 - 304L STAINLESS STEEL #6 AND #10 FASTENERS.
- ⑫ 3' X 3' X 6" CLASS IV CONCRETE PAD. TOP OF PAD SHALL MATCH TOP OF CURB OR SIDEWALK.
- ⑬ COMPACTED BASE MATERIAL
- ⑭ 1" OR 3/4" ELBOW (P.J X F.I.T).

NOTES:

- 1. WATER SERVICE INSTALLATION FROM MAIN TO CUSTOMER VALVE SHALL BE PER DISTRICT STANDARD W-4.

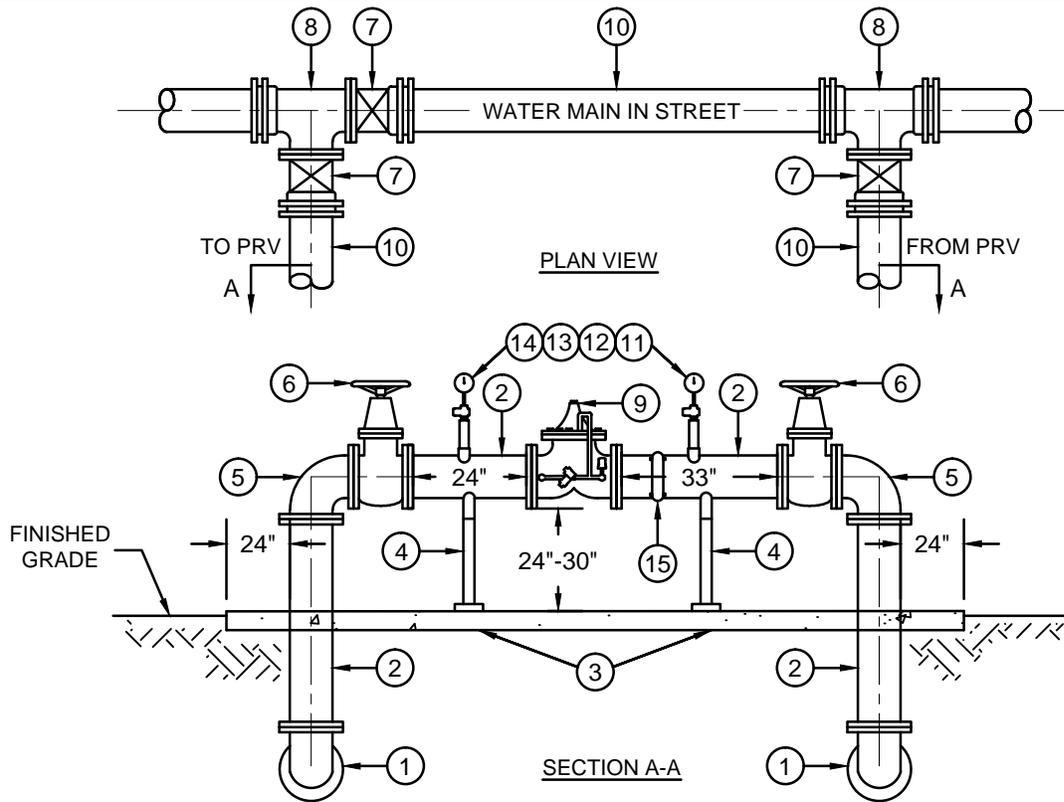
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DATE	BY
09-2019	DAG
SCALE: NONE	



SAMPLE STATION DETAIL

DRAWING NUMBER

W-21



ITEM DESCRIPTION:

- ① D.I 90° ELBOW (FLG. X M.J.).
- ② D.I OR SCH. 40 STEEL PIPE, FLG, ORDER TO FIT.
- ③ 4" THICK CLASS IV CONCRETE PAD.
- ④ ADJUSTABLE PIPE SADDLE SUPPORT.
- ⑤ D.I OR SCH 40 STEEL - 90° ELBOW, FLG.
- ⑥ RESILIENT-SEATED GATE VALVE WITH HAND WHEEL AND NRS, FLG.
- ⑦ RESILIENT-SEATED GATE VALVE (FLG. X M.J.) PER DISTRICT STANDARD W-11.
- ⑧ D.I TEE (FLG. X M.J. X M.J.) OR (FLG. X M.J X FLG.).
- ⑨ PRESSURE REDUCING VALVE WITH FLANGED CONNECTIONS. (CLA-VAL 90-01KC)
- ⑩ D.I PIPE, PER DISTRICT STANDARD W-28. SIZE INDICATED ON PLAN.
- ⑪ 1" X 4" LONG GALVANIZED NIPPLE THREADED AT BOTH ENDS.
- ⑫ 1" BALL VALVE - F.I.T. WITH 360° TURN. FORD B11-444M-NL OR MUELLER B-20200-3N.
- ⑬ 1" SCH. 40 STEEL COUPLING WELDED TO PIPE.
- ⑭ 1" X 1/4" BRASS BUSHING WITH PRESSURE GAUGE (CLA-VAL X141)
- ⑮ VICTAULIC COUPLING.

NOTES:

1. ALL PIPING AND FITTINGS SHALL MATCH THE SIZE OF THE PRV.
2. PRV STATION MUST BE 24" BEHIND SIDEWALK AND ABOVE GROUND.
3. WHEN SPECIFIED BY THE DISTRICT, PRV STATION SHALL BE ENCLOSED WITH 6' HIGH CHAIN LINK FENCE PER DISTRICT STANDARD W-16 AND W-17 WITH 3' ACCESS GATE.
4. PAINT PRV ASSEMBLY HUNTER GREEN PER DISTRICT SPECIFICATIONS.
5. 30" MINIMUM CLEARANCE REQUIRED AROUND ENTIRE ASSEMBLY.
6. ALL JOINTS, BENDS AND FITTINGS SHALL BE RESTRAINED WITH APPROVED RESTRAINT DEVICE. SEE DISTRICT STANDARD W-30 AND DISTRICT SPECIFICATIONS FOR REQUIREMENTS.
9. ALL ABOVE GROUND FLANGES SHALL HAVE 1/16" RING TYPE GASKETS.

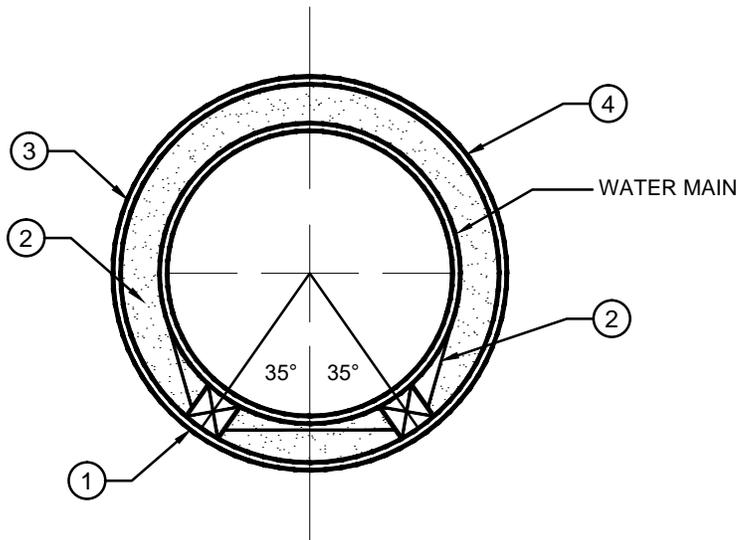
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SCALE: NONE	



PRESSURE REGULATION VALVE INSTALLATION DETAIL

DRAWING NUMBER

W-22



ITEM DESCRIPTION:

- ① 4" X 4" ROUGH REDWOOD SKID, CUT TO BEAR ON CONDUCTOR TUBE
- ② 3/4" WIDE X 0.045" THICK STAINLESS STEEL BAND
- ③ BLOWN SAND
- ④ STEEL CONDUCTOR TUBE (SEE DISTRICT SPECIFICATIONS AND NOTES FOR SIZING).

NOTES:

1. MINIMUM 4" CLEARANCE IS REQUIRED BETWEEN INNER WALL OF CONDUCTOR TUBE AND OUTER WALL OF WATER MAIN.
2. THE INSIDE DIAMETER OF THE CONDUCTOR TUBE SHALL BE THE OUTER DIAMETER OF WATER MAIN PLUS 12" MINIMUM.
3. THE MINIMUM WALL THICKNESS OF THE CONDUCTOR TUBE SHALL BE 1/4" FOR PIPE DIAMETERS 28" AND SMALLER; 1/2" FOR PIPE DIAMETERS 30" TO 38"; AND 3/4" FOR PIPE DIAMTERS 40" TO 72".

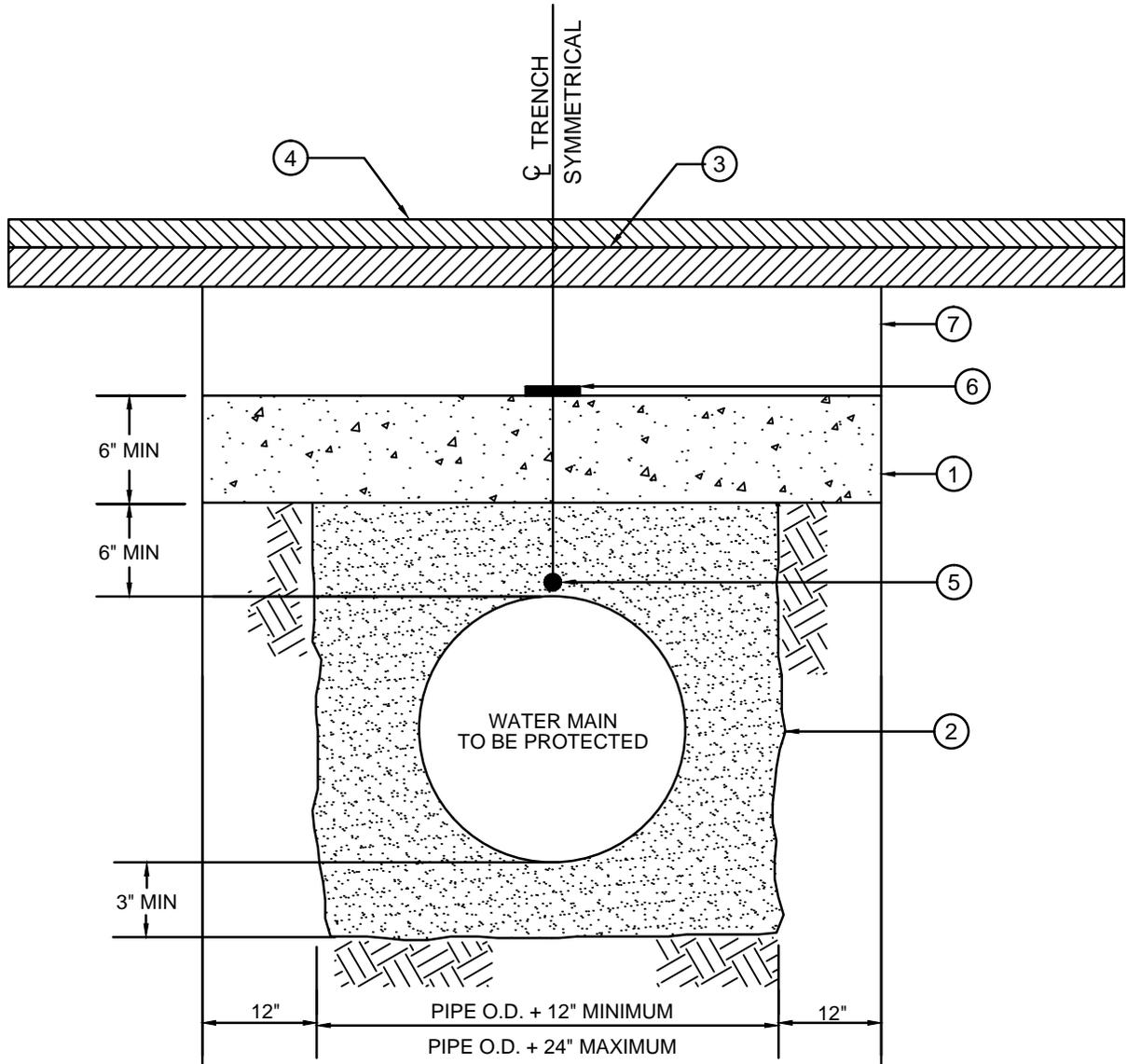
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CONDUCTOR TUBE DETAIL

DRAWING NUMBER

W-23



ITEM DESCRIPTION:

- ① TYPE IV CONCRETE BLANKET OR SLURRY BACKFILL (WHEN APPROVED BY THE DISTRICT).
- ② PIPE SAND BEDDING.
- ③ 3" AC BASE PAVEMENT.
- ④ 1" TO 1/2" AC CAP PAVEMENT.
- ⑤ LOCATOR WIRE
- ⑥ 6" WIDE BLUE WARNING TAPE ("CAUTION WATER LINE BELOW").
- ⑦ SEE DISTRICT STANDARD W-1 FOR BACKFILL REQUIREMENTS.

NOTES:

- 1. CONCRETE BLANKET SHALL ONLY BE USED WHEN APPROVED BY THE DISTRICT.
- 2. CONCRETE BLANKET SHALL BE INSTALLED AT LOCATIONS WHERE PIPE LINE HAS LESS THAN 30 INCHES OF COVER, AND EXTEND THE ENTIRE SHALLOW LENGTH OF PIPE.
- 3. REFER TO DISTRICT STANDARD W-1 FOR ALL TRENCH CONSTRUCTION AND BACKFILL REQUIREMENTS.

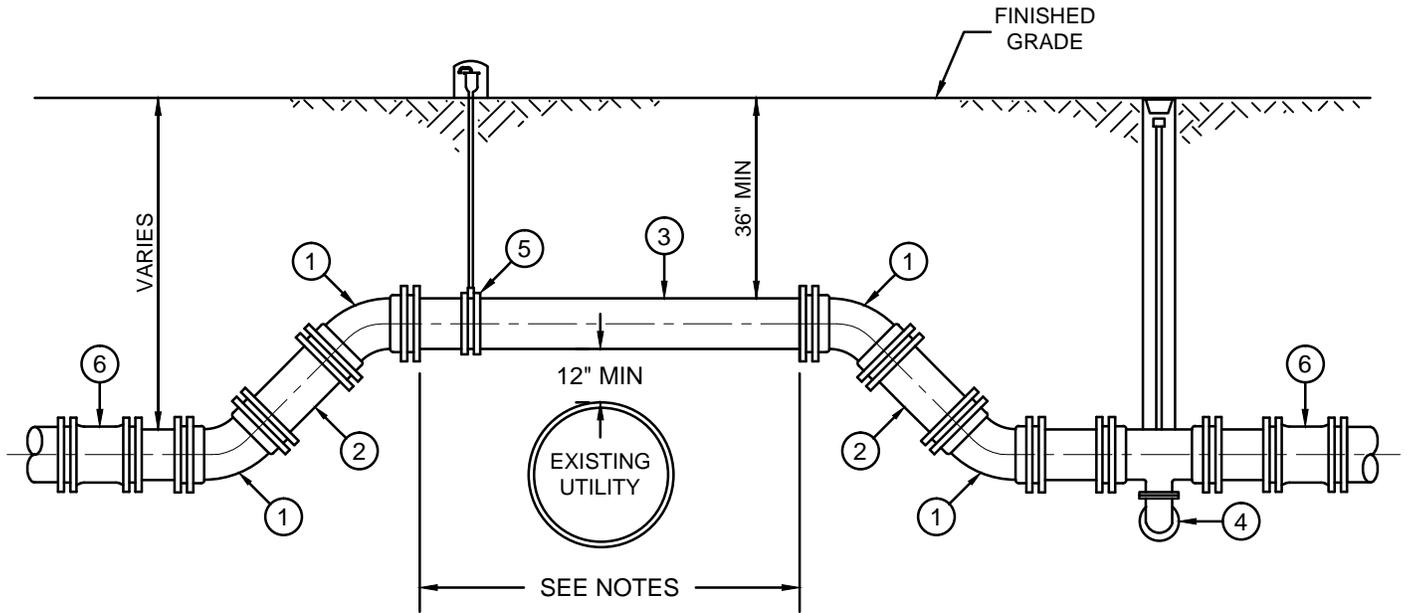
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SCALE: NONE	



CONCRETE BLANKET DETAIL

DRAWING NUMBER

W-24



ITEM DESCRIPTION:

- ① D.I 45° ELBOW, M.J.
- ② D.I PIPE, 18" MIN.
- ③ D.I PIPE, SEE NOTES 2 AND 3 FOR LENGTH REQUIREMENTS.
- ④ BLOW-OFF ASSEMBLY PER DISTRICT STANDARD W-7 AT LOWEST POINT.
- ⑤ COMBINATION AIR VALVE ASSEMBLY PER DISTRICT STANDARD W-6 AT HIGHEST POINT.
- ⑥ PIPE SIZE, RESTRAINED FLEX COUPLING (WHEN CUTTING INTO EXISTING PIPE).

NOTES:

1. USE OF SIPHON MUST BE APPROVED BY WVWD.
2. FOR CROSSING SEWER AND STORM DRAINS, MINIMUM PIPE LENGTH IS 9' CENTERED ON THE UTILITY. NO JOINTS IN PIPE.
3. FOR ALL OTHER UTILITIES, MINIMUM PIPE LENGTH IS 4' CENTERED ON THE UTILITY. NO JOINTS IN PIPE.
4. ALL JOINTS, BENDS AND FITTINGS SHALL BE RESTRAINED WITH APPROVED RESTRAINT DEVICE. SEE DISTRICT STANDARD W-30 AND DISTRICT SPECIFICATIONS FOR REQUIREMENTS.
5. MINIMUM 12" CLEARANCE IS REQUIRED BETWEEN OUTER WALL OF WATER MAIN AND OUTER WALL OF CONFLICTING UTILITY.
6. SEE DISTRICT STANDARD W-24 FOR CONCRETE BLANKETS WHEN 36" COVER CANNOT BE OBTAINED ON TOP OF PIPE OR WHEN 12" CLEARANCE CANNOT BE OBTAINED BETWEEN CONFLICTING UTILITY. CONCRETE BLANKETS CAN ONLY BE USED WHEN APPROVED BY DISTRICT ENGINEER.
7. FULLY WELDED CMLC SIPHON CAN BE USED WITH APPROVAL FROM DISTRICT ENGINEER.

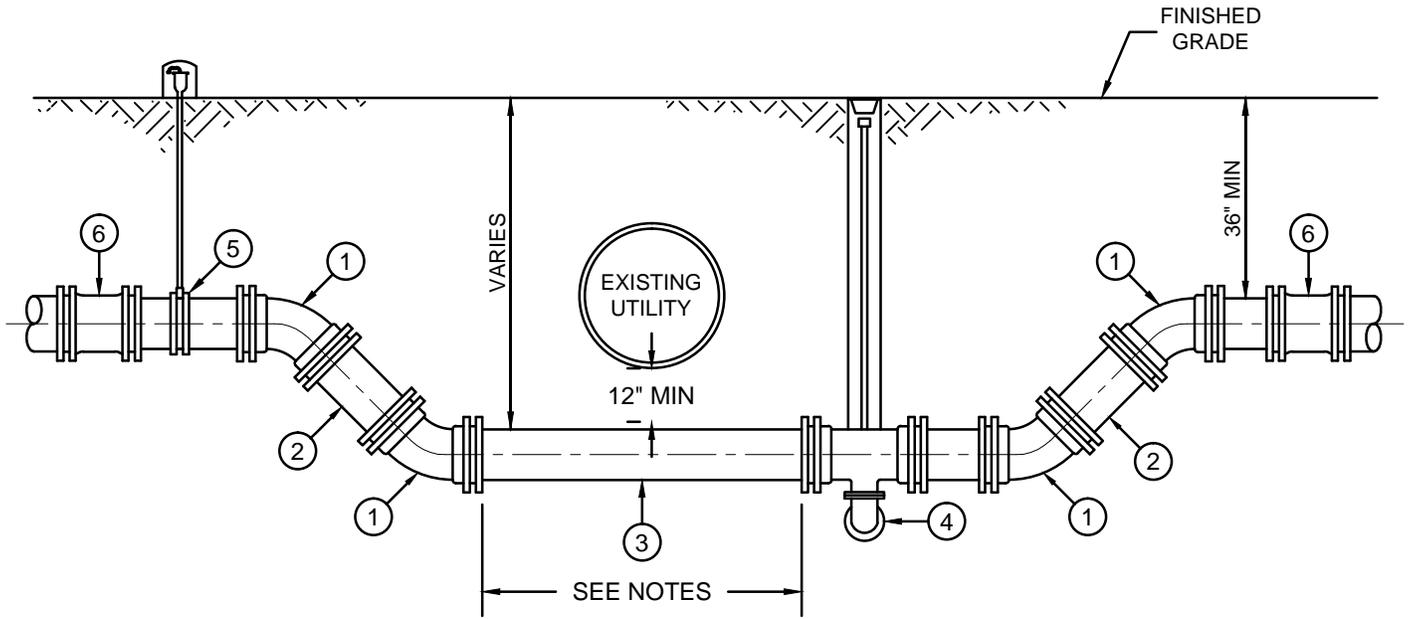
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SCALE: NONE	



SIPHON DETAIL

DRAWING NUMBER

W-25



ITEM DESCRIPTION:

- ① D.I 45° ELBOW, M.J.
- ② D.I PIPE, 18" MIN.
- ③ D.I PIPE, SEE NOTES 2 AND 3 FOR LENGTH REQUIREMENTS.
- ④ BLOW-OFF ASSEMBLY PER DISTRICT STANDARD W-7 AT LOWEST POINT.
- ⑤ COMBINATION AIR VALVE ASSEMBLY PER DISTRICT STANDARD W-6 AT HIGHEST POINT.
- ⑥ PIPE SIZE, RESTRAINED FLEX COUPLING (WHEN CUTTING INTO EXISTING PIPE).

NOTES:

- 1. USE OF INVERTED SIPHON MUST BE APPROVED BY WVWD.
- 2. FOR CROSSING SEWER AND STORM DRAINS, MINIMUM PIPE LENGTH IS ONE FULL STICK OF PIPE (18' FOR D.I) CENTERED ON THE UTILITY. NO JOINTS IN PIPE.
- 3. FOR ALL OTHER UTILITIES, MINIMUM PIPE LENGTH IS 4' CENTERED ON THE UTILITY. NO JOINTS IN PIPE.
- 4. ALL JOINTS, BENDS AND FITTINGS SHALL BE RESTRAINED WITH APPROVED RESTRAINT DEVICE. SEE DISTRICT STANDARD W-30 AND DISTRICT SPECIFICATIONS FOR REQUIREMENTS.
- 5. MINIMUM 12" CLEARANCE IS REQUIRED BETWEEN OUTER WALL OF WATER MAIN AND OUTER WALL OF CONFLICTING UTILITY.
- 6. SEE DISTRICT STANDARD W-24 FOR CONCRETE BLANKETS WHEN 36" COVER CANNOT BE OBTAINED ON TOP OF PIPE OR WHEN 12" CLEARANCE CANNOT BE OBTAINED BETWEEN CONFLICTING UTILITY. CONCRETE BLANKETS CAN ONLY BE USED WHEN APPROVED BY DISTRICT ENGINEER.
- 7. FULLY WELDED CMLC INVERTED SIPHON CAN BE USED WITH APPROVAL FROM DISTRICT ENGINEER.

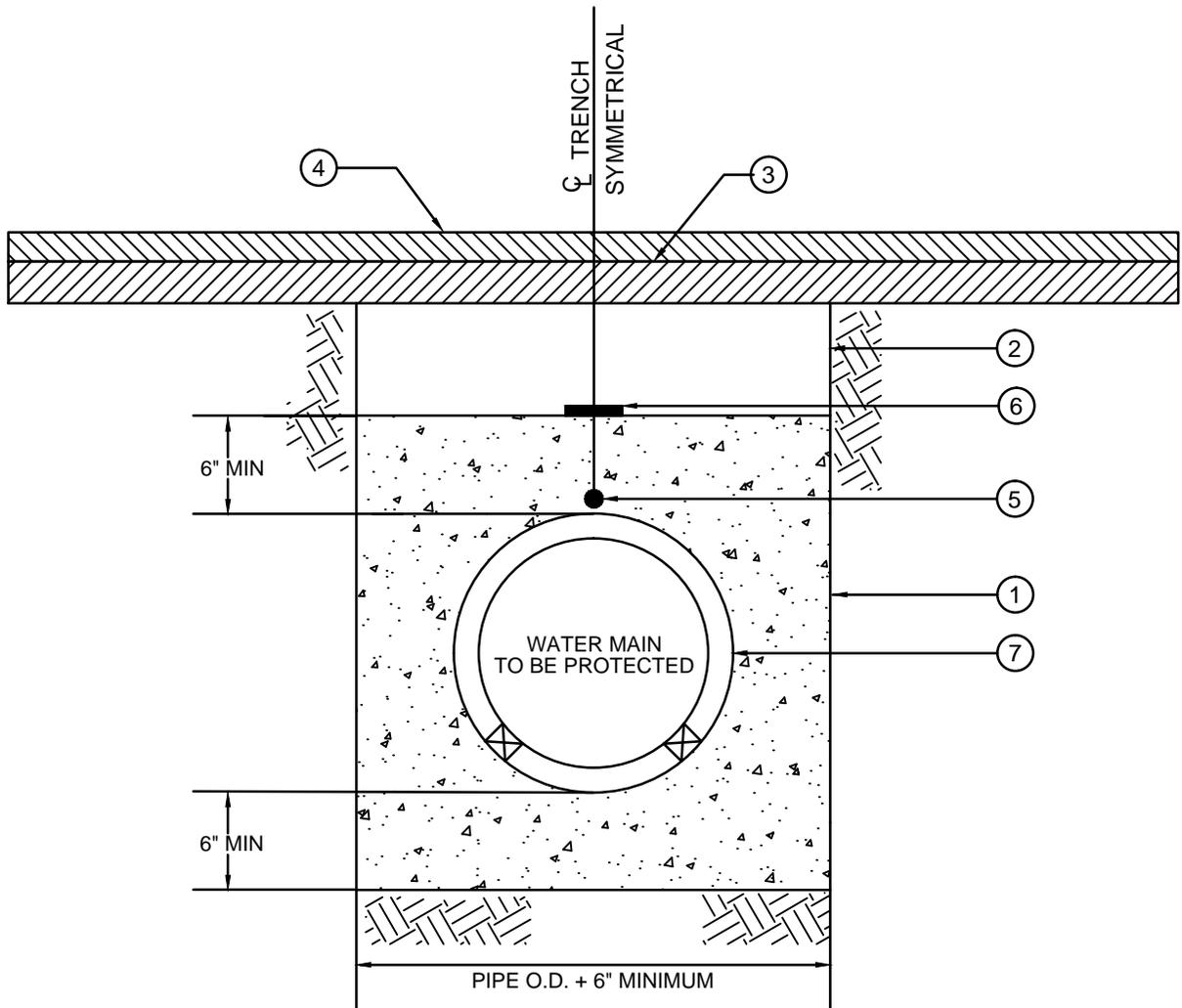
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INVERTED SIPHON DETAIL

DRAWING NUMBER

W-26



ITEM DESCRIPTION:

- ① TYPE IV CONCRETE ENCASEMENT.
- ② SEE DISTRICT STANDARD W-1 FOR BACKFILL REQUIREMENTS.
- ③ 3" AC BASE PAVEMENT.
- ④ 1" TO 1/2" AC CAP PAVEMENT.
- ⑤ LOCATOR WIRE
- ⑥ 6" WIDE BLUE WARNING TAPE ("CAUTION WATER LINE BELOW").
- ⑦ CONDUCTOR TUBE PER DISTRICT STANDARD W-23.

NOTES:

1. CONCRETE ENCASEMENT SHALL ONLY BE USED WHEN APPROVED BY THE DISTRICT.
2. CONCRETE ENCASED PIPE SHALL BE FULLY WELDED STEEL WITH NO JOINTS OR FITTINGS WITHIN THE ENCASEMENT. DUCTILE IRON MAY BE USED IF ENCASEMENT IS NOT USED ON BELL AND SPIGOT SECTION OR ON JOINTS AND FITTINGS.
3. CONCRETE ENCASEMENT SHALL BE INSTALLED AT LOCATIONS WHERE PIPE LINE HAS LESS THAN 30 INCHES OF COVER, AND EXTEND THE ENTIRE SHALLOW LENGTH OF PIPE.
4. REFER TO DISTRICT STANDARD W-1 FOR ALL TRENCH CONSTRUCTION AND BACKFILL REQUIREMENTS.

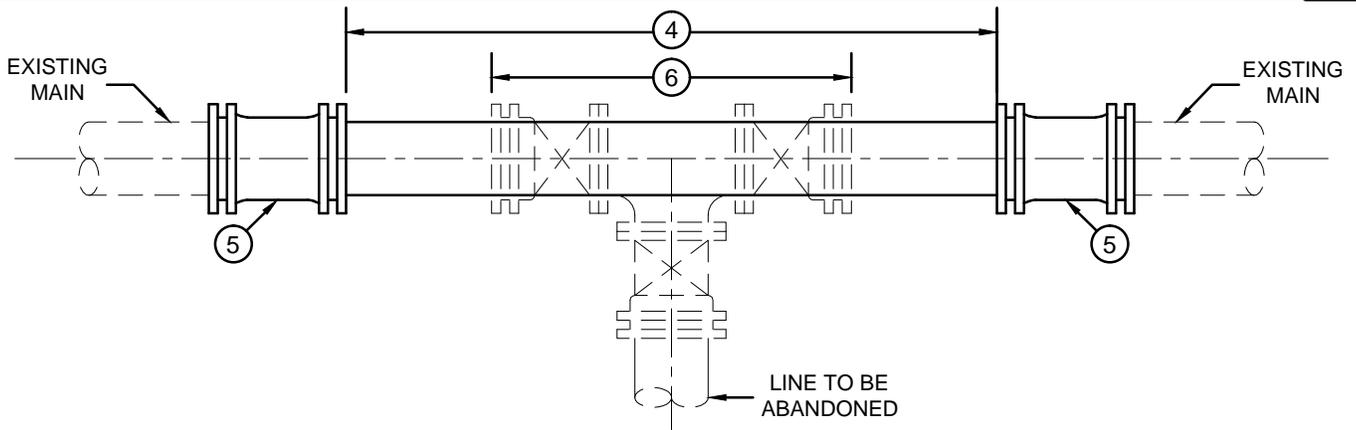
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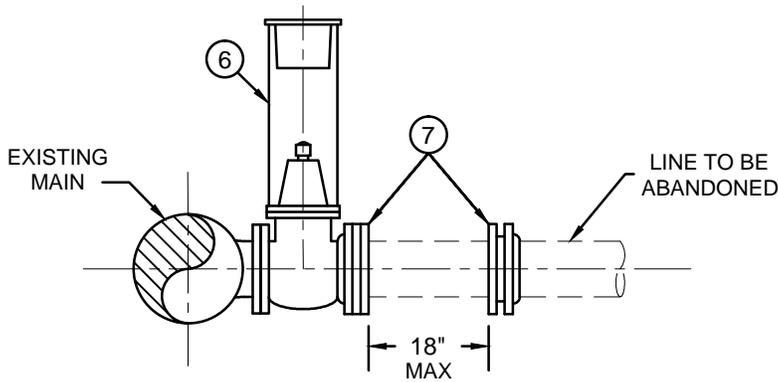
CONCRETE ENCASEMENT

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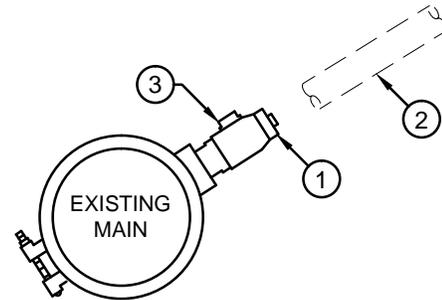
W-27



3" AND LARGER WATER SERVICE AND FITTING ABANDONMENT



3" AND LARGER ABANDONMENT AT VALVE



3/4" THROUGH 2" WATER SERVICE ABANDONMENT

ITEM DESCRIPTION:

- ① THREADED BRONZE CAP ON CORP STOP, FEMALE OR SOLDERED CAP.
- ② CUT AND REMOVE 12" OF SERVICE LATERAL.
- ③ CLOSE EXISTING CORP STOP.
- ④ INSTALL D.I PIPE, CUT TO FIT. (PIPE SIZE).
- ⑤ RESTRAINED FLEX COUPLING (PIPE SIZE).
- ⑥ CUT AND REMOVE EXISTING PIPE, VALVE, VALVE CAN, LID AND THRUST BLOCK AS REQUIRED.
- ⑦ D.I BLIND FLANGE AT VALVE OR M.J CAP ON 18" MAX PUB. SEE NOTE 6 FOR INSTRUCTIONS.

NOTES:

1. REMOVE APPURTENANCES AND RETURN METER AND BOX TO DISTRICT. FOR METERS REMOVED IN PARKWAY, BACKFILL WITH SELECT MATERIAL AND COMPACT TO = 85% DENSITY. FOR METERS REMOVED IN SIDEWALK, REPLACE SIDEWALK PER JURISDICTION'S STANDARDS TO NEAREST CONSTRUCTION JOINT.
2. DISTRICT ENGINEER OR INSPECTOR TO MAKE DETERMINATION OF APPROPRIATE MATERIALS TO USE AND HOW APPURTENANCES ARE ABANDONED.
3. IF EXISTING PIPE AND TEE ARE STEEL, USE FLEX COUPLINGS FOR RECONNECTION. IF EXISTING PIPE AND TEE ARE CAST OR DUCTILE IRON, USE D.I. M.J. SLEEVES OR FLEX COUPLINGS.
4. THIS STANDARD DRAWING MAY BE USED FOR IN-LINE VALVE REMOVAL OR OTHER IN-LINE APPURTENANCES AS DIRECTED BY THE DISTRICT.
5. POT HOLE EXISTING WATER SERVICES AND TEE CONNECTIONS PRIOR TO CUTTING PIPE.
6. AN EXISTING FLANGE VALVE MAY BE REMOVED AND A BLIND FLANGE INSTALLED IF APPROVED BY THE ENGINEER. WHEN EXISTING FLANGE BOLTS ARE IN POOR CONDITION AND/OR THE EXISTING TEE JOINTS ARE CAULKED, THEN REMOVAL OF TEE AND VALVE IS REQUIRED PER W-29.
7. REPAIR OR REPLACE A.C PAVEMENT AND ROAD BASE IN ACCORDANCE WITH EXCAVATION PERMIT. BACKFILL AND COMPACT PER DISTRICT STANDARD W-1.

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09-2019	DAG
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WATER SERVICE ABANDONMENT

DRAWING NUMBER

W-29

