SECTION 15000

General piping system and appurtenances

# GENERAL

## DESCRIPTION

### This Section describes the general requirements and procedures for piping systems (pressure pipe and gravity sewer pipe) and appurtenances that apply to a number of other complimentary Specification Sections. This Section includes, but is not limited to: connections to existing piping, joint restraint systems, flexible couplings, grooved end or shoulder couplings, bolts, nuts, gaskets, polyethylene wrap, warning/identification tape, tracer wire, gate well and extension stems, temporary above ground piping (high line), field touch up, abandonment and removal of existing facilities, and salvage.

### The items are listed in this Section to avoid repetition in Sections elsewhere.

## REFERENCE STANDARDS

### The publications listed below form part of this specification to the extent referenced and are referred to in the text by the basic designation only. Reference shall be made to the latest edition of said standards unless otherwise called for.

#### ANS181.1 - Unified Inch Screw Threads

#### ANSI 81.2 - Gages and Gaging for Unified Inch Screw Threads

#### ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel

#### ASTM A 47/A 47M - Standard Specification for Ferritic Malleable Iron Castings

#### ASTM A 53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc - Coated Welded and Seamless

#### ASTM A 108 - Standard Specification for Steel Bars, Carbon, Cold Finished, Standard Quality

#### ASTM A 183 - Standard Specification for Carbon Steel Track Bolts and Nuts

#### ASTM A 283/A 283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates, Shapes and Bars

#### ASTM A 307 - Standard Specification for Carbon Steel Bolts and Studs

#### ASTM A 325/A 325M - Standard Specification for High-Strength Bolts for Structural Steel Joints

#### ASTM A 510/A 510M - Standard Specification for General Requirements for Wire Rods and Course Round Wire, Carbon Steel

#### ASTM A 512 - Standard Specification for Cold-Drawn 8uttweld Carbon Steel Mechanical Tubing

#### ASTM A 536 - Standard Specification for Ductile Iron Castings

#### ASTM A 568/A 568M - Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality and Cold Rolled

#### ASTM D 2000 - Standard Classification System for Rubber Products in Automotive Applications

#### ASTM F 593 - Specifications for Stainless Steel Bolts, Hex Cap Screws, and Studs

#### ASTM F 594 - Specification for Stainless Steel Nuts

#### AWWA C105 - Polyethylene Encasement for Ductile-Iron Pipe Systems

#### AWWA C111 - Rubber Gasket Joints for Ductile-Iron Pressure Pipe and Fittings

#### AWWA C200 - Steel Water Pipe -150 mm (6") and Larger

#### AWWA C203 - Coal- Tar Protective Coatings and Linings for Steel Water Pipelines - Enamel and Tape -Hot Applied

#### AWWA C213 - Fusion-Bonded Epoxy Coating for Interior and Exterior of Steel Water Pipelines

#### AWWA C606 - Grooved and Shouldered Joints

#### AWWA C900 - PVC Pressure Pipe, 100 mm (4") Through 300 mm (12") for Water Distribution

#### AWWA M11 - Steel Pipe -A Guide for Design and Installation

#### AWWA - Guidelines for Distribution of Non-potable Water California Administrative Code, Title 22

#### NSF - National Sanitation Foundation

#### SSPWC - Standard Specifications for Public Works Construction ("Greenbook")

## RELATED WORK SPECIFIED ELSEWHERE

### DISTRICT Standard Drawings

### Section 01000 – General Requirements

### Section 01410 – Testing and Inspection

### Section 02223 – Trenching, Backfilling and Compacting

### Section 15044 – Hydrostatic Testing and Flushing of Pressure Pipelines

### Section 15057 – Copper Tubing, Brass and Bronze Pipe Fittings

### Section 15056 – Ductile Iron Pipe and Fittings

### Section 15100 – Valves

## SUBMITTALS

### Submit shop drawings in accordance with Standard Specification Section 01300.

#### Submit manufacturer’s catalog data and descriptive literature for the following items including but not limited to joint restraint system, polyethylene encasement, warning/identification tape, tracer wire, gate wells, flexible couplings, victaulic couplings, bolts, nuts, gaskets and valve stem extensions. Show dimensions, materials of construction by specification reference, linings and coatings.

#### When a high line is required to perform the construction, submit a highline plan to DISTRICT. Plan shall include all piping, locations of fittings, details for connection to existing water system, 24-hour number for person responsible to maintain the high line and any traffic control required to construct the high line.

#### Submit manufacturer’s affidavit of compliance with the referenced standards.

#### Descriptive information regarding proposed thrust restraint methods and materials, including sizing calculations for thrust blocks or restrained lengths of pipe adjacent to bends and fittings.

#### List of piping identification labels and color schemes.

## LINING CONTAMINATION PREVENTION

### Volatile organic compounds present in the linings of items in contact with potable water or recycled water shall not exceed concentrations allowed by the latest requirements of the State Office of Drinking Water and Department of Health Services. Some products and materials may also require proof of NSF certification on the lining materials to be used.

## JOINT RESTRAINT SYSTEM

### Joint restraint systems may be used for PVC and ductile iron pipe with prior authorization of the DISTRICT. Joint restraint systems shall be used in the place of, or in conjunction with, concrete thrust blocks as directed. Contractor shall submit shop drawings, calculations, and catalog data for joint restraint systems in accordance with Section 01300.

## POLYETHYLENE ENCASEMENT

### Polyethylene encasement shall be used for all ferrous metal materials not otherwise protectively coated and as specified hereafter. Polyethylene wrap shall be used for all buried ductile iron valves and fittings.

## WARNING/IDENTIFICATION TAPE

### Warning/identification tape shall be used to identify location of underground utilities and to act as a warning against accidental dig-ins of buried utilities. Warning/identification tape shall be used on all underground water and recycled water mains, casings, force mains, sewer mains, and all related appurtenances. Warning/identification tape shall also be used on cathodic protection wiring systems and tracer wire brought into and out of access ports.

## TRACER WIRE

### Tracer wire shall be used on all buried water, recycled water mains and sewer force mains for the purpose of providing a continuous signal path used to determine pipe alignment after installation. Tracer wire is not required in installation of gravity sewer mains. Reference Standard Drawing W-35.

## GATE WELLS

### Gate Wells shall be used for buried valves 2" and larger, unless otherwise indicated on the Standard Drawings.

## PIPE TAPPING

### All pipe tap (wet tap) connections to existing pressure pipelines, whether for mainline extensions, temporary lines or service laterals, shall be incorporated into the design plans only upon written authorization by the DISTRICT. The Contractor shall provide materials and labor to excavate, pour thrust block, backfill, compact, and repair pavement as indicated in this Section.

## TEMPORARY ABOVEGROUND PIPE (HIGH LINE)

### High line piping, where shown on the Approved Plans or required by the DISTRICT Engineer, shall be furnished, installed, disinfected, connected, maintained, and removed by the Contractor. The contractor shall provide a submittal to the DISTRICT showing pipe layout, tie-in details, materials, sizing and flow calculations, schedule and duration of use for each segment, and disinfection for all high line piping. The developer/contractor shall have submitted their completed Notice of Intent to the Santa Ana Region Regional Water Quality Control Board in accordance with Section 15044 prior to ordering materials. The submittal shall be reviewed by the DISTRICT Engineer prior to ordering or delivery of any materials.

## PIPELINE IDENTIFICATION

### Marker posts shall be used for all pipelines, except gravity sewers constructed outside of the paved roadway and shoulder areas.

## CURB IDENTIFICATION

### The Contractor shall mark the location of all potable water, recycled water and sewer laterals at the curb crossing by stamping the face of the curb in 50mm (2") high letters as described below:

#### Potable water laterals shall be stamped with a letter "W".

#### Recycled water laterals shall be stamped with a letter "RW".

#### Sewer laterals to be stamped with a letter "S".

# MATERIALS

## JOINT RESTRAINT SYSTEM

### Joint restraint systems for PVC pipe, when authorized for use, shall be ductile-iron and shall consist of a split-ring restraint with machined (not cast) serrations on the inside diameter, a back-up ring, and connecting bolts.

### Joint restraint system for ductile iron pipe shall be in accordance with the Approved Materials List.

## FLEXIBLE PIPE COUPLINGS

### Flexible pipe couplings shall be in accordance with the Approved Materials List and as described below:

#### Steel Couplings shall have middle rings made of steel conforming to ASTM A 36/A 36M, A 53 (Type E or S), or A 512 having a minimum yield strength of 207 MPa (30,000 psi). Follower rings shall be ductile-iron per ASTM A 536, or steel per ASTM A 108, Grade 1018 or ASTM A 510, Grade 1018. Minimum middle ring length shall be 7" for pipe sized 6" through 24".

#### Sleeve bolts shall be made of stainless steel per ASTM A 193 and shall have a minimum yield strength of 276 MPa (40,000 psi), an ultimate yield strength of 414 MPa (60,000 psi), and shall conform to AWWA C111.

## GROOVED END OR SHOULDERED COUPLINGS FOR DUCTILE IRON OR STEEL PIPE

### Grooved end or shouldered couplings shall be in accordance with the Approved Materials List and as described below:

#### Use square-cut shouldered or grooved ends per AWWA C606. Grooved-end couplings shall be malleable iron per ASTM A 47, or ductile iron per ASTM A 536. Gaskets shall be per ASTM D 2000.

#### Bolts in exposed service shall conform to ASTM A 183, 69 MPa (10,000 psi) tensile strength.

## BOLTS, NUTS AND GASKETS FOR FLANGES

### Bolts and nuts shall be as indicated below and shall be selected from the Approved Materials List.

#### Stainless steel bolts and nuts shall be used for the installation of pipelines 24-inch diameter and larger and for submerged flanges. Bolts and nuts shall be Type 316 stainless steel conforming to ASTM A193, Grade B8M, Class 2 for bolts, and Grade 8M for nuts. Carbon steel bolts shall be ASTM A307 grade B course thread for flange joints in piping systems with ASTM A563 nuts for pipelines under 24-inch diameter and not submerged.

#### All bolt heads and nuts shall be hexagonal, except where special shapes are required. Bolts shall be of such length that not less than 1/4-inch or more than 1/2-inch shall project past the nut in tightened position.

#### All bolt and nut threads shall be thoroughly lubricated with an anti-seize compound.

#### Gaskets shall be asbestos free, drop in ring type, 1/8 inch thick, and shall be aramid fiber bound with nitrile. Gaskets shall be suitable for a water pressure of 500 psi at a temperature of 400 degrees F. Select materials from Approved Materials List.

## POLYETHYLENE ENCASEMENT

### Polyethylene encasement shall be as indicated below and shall be selected from the Approved Materials List. Polyethylene materials shall be kept out of direct sunlight exposure.

#### Polyethylene sleeves shall be used for the protection of buried ductile iron pipe and shall be a minimum of 8 mil thick polyethylene plastic in accordance with AWWA C105.

#### Polyethylene wrap shall be used for the protection of buried ferrous fittings and valves and shall be a minimum 8 mil thick polyethylene plastic in accordance with AWWA C105.

#### Polyethylene wrap and sleeves shall be used for the protection of buried ferrous fittings and valves and shall be clear or blue for use with potable water and purple for use with recycled water.

#### Polyethylene or vinyl adhesive tape a minimum of 50mm (2") wide or plastic tie straps shall be used to secure polyethylene encasement.

## WARNING/IDENTIFICATION TAPE

### Warning/identification tape shall be as indicated below and in accordance with the Approved Materials List.

#### Tape shall consist of one layer of aluminum foil laminated between two colored layers of inert plastic film (non-metallic) formulated for prolonged underground use that will not degrade when exposed to alkalies, acids and other destructive substances commonly found in soil. The lamination bond should be strong enough that the layers cannot be separated by hand.

#### Tape shall be puncture-resistant and shall have an elongation of two times its original length before tearing or separating.

#### Tape shall bear a continuous, printed message every 16- to 36- inches warning of the installation buried below. Tape shall be colored to identify the type of utility intended for identification. Printed message and tape color shall be as follows:

|  |  |
| --- | --- |
| **Printed Message** | **Tape Color** |
| Caution: Waterline Buried Below | Blue |
| Caution: Recycled Waterline Buried Below | Purple |
| Caution: Sewer Line Buried Below | Green |
| Caution: Cathodic Protection Cable Buried Below | Red |
| Caution: Electric Line Buried Below | Red |

#### Ink used to print messages shall be permanently fixed to tape and shall be black in color.

#### Tape shall be minimum 5 mil thick x 6" wide with a printed message on one side.

## TRACER WIRE

### Tracer wire shall be selected from the Approved Materials List.

## GATE WELLS

### Valve gate wells shall be furnished in accordance with the DISTRICT Standard Drawings.

### Valve gate well size and material shall be as follows:

|  |  |
| --- | --- |
| **Valve Size** | **Gate Well Size and Material** |
| 2" and smaller | 6" diameter SDR-35 PVC sewer pipe W-13 or C900 |
| Larger than 2" | 8" diameter SDR-35 PVC sewer pipe W-13 or C900 |

### PVC gate wells for use in potable water system applications PVC gate wells for use in recycled water system applications Gate well lids shall be furnished in accordance with the Approved Materials List.

#### Gate well lids shall be circular ductile-iron, and shall include a skirt for a close fit inside the upper portion of the gate well. Lids shall be cast with EVMWD and the word WATER for use on potable water systems, RECYCLED for use on recycled water systems or SEWER for use on sewer systems.

#### For valves greater than 2" use one of two types of lids as called for on the Standard Drawings.

### Marker posts shall be provided for gate wells not located in paved areas. Marker posts shall conform to the requirements of paragraph 2.11 of this section.

## VALVE STEM EXTENSIONS

### Stem extensions shall be furnished in accordance with the DISTRICT Standard Drawings.

## TEMPORARY ABOVEGROUND PIPE (HIGHLINE)

### High line piping layout, materials and appurtenances shall be as indicated on the final submittal from the shop drawing review process and shall comply with the Approved Materials List.

## PIPELINE IDENTIFICATION

### Marker posts shall be furnished with the following features:

#### Manufactured from composite materials.

#### EVMWD identification on one side.

#### Provide resistance to vandalism, ultraviolet light and extreme temperature changes.

#### Minimum 3.8 inch width, 6” maximum width.

#### Length of 62" to 66".

#### Available in APWA designated colors as identified in Section 2.06.

#### Fifteen year warranty from manufacturer.

## FIELD TOUCH-UP APPLICATIONS

### All surfaces of metallic appurtenances in contact with potable water and not protected from corrosion by another system shall be shop-coated by the manufacturer. Appurtenances with damaged coatings shall be repaired or replaced as directed by the Engineer. Touch-up of damaged surfaces, when allowed by the Engineer, shall be performed in accordance with the manufacturer's recommendations.

# EXECUTION

## CONNECTIONS TO EXISTING FACILITIES

### The Contractor shall furnish the tee, valves and all other materials as called for in the Standard Specifications and plan details in accordance with the Approved Materials List for cut-in installations (and wet taps, where permitted). The Contractor shall provide all equipment and labor required for the excavation and installation of the connection including but not limited to thrust blocks, backfill and pavement replacement. The Contractor shall provide the labor for service change-overs and connections to existing facilities under DISTRICT observation. Emergency standby equipment or materials may be required of the Contractor by the DISTRICT.

### Cut-in tee (or wet tap, where permitted) and valve installations shall be performed as follows:

### Prior to construction, Contractor shall pothole the existing pipe at the location of the proposed connection. The DISTRICT shall inspect the pothole prior to Contractor's repair of trench. Contractor shall record the following information on as-built drawings:

#### Pipe size, outside diameter and circumference.

#### Pipe material such as PVC, Ductile-Iron, Steel or ACP.

#### Pipe class and/or pressure rating.

#### Elevation and horizontal position (coordinates).

#### Location of collars, pipe bells, fittings or couplings, within five feet of proposed tie-in, if found.

#### Potential conflicts with existing utilities.

#### Location of system valves which may be required to shut down or minimize flow to existing pipeline.

### A plan shall be submitted to the DISTRICT by the Contractor which details the findings of the pothole activities and indicates specifically how the tie-in will be made and what materials will be used. Additionally, the Contractor shall indicate which system valves may need to be shut down during the construction of the connection. This plan must be reviewed by DISTRICT staff and authorization given in writing to proceed.

### To facilitate the proposed connection and allow for slight adjustments in alignment and thrust blocks for testing, the Contractor shall leave a minimum 10' gap between the new pipe installation and the proposed connection point at the existing water main. The Contractor shall leave a gap longer than 10' if conditions warrant, or if directed by the Engineer.

### The new pipeline shall have successfully passed pressure testing in accordance with Section 15044 and disinfection and bacteriological testing in accordance with EVMWD New Water Main Chlorination and Bacteriological Testing Protocol prior to proceeding with the connection to the existing pipeline.

\*Note to the Engineer – incorporate EVMWD New Water Main Chlorination and Bacteriological Testing Protocol into bid package

### After the DISTRICT Engineer has given approval to proceed with the connection, the Contractor shall schedule with the DISTRICT for the cut-in or wet tap installation.

#### Shutdowns will be scheduled at the convenience of the DISTRICT. Shutdowns may be scheduled for nights or weekends if required.

#### The Contractor shall give the DISTRICT a minimum of ten (10) working days notice prior to any proposed excavation or shutdown of existing mains or services. Scheduling shall be subject to approval by the DISTRICT.

#### The DISTRICT Engineer may postpone or reschedule any shutdown operation if, for any reason, the DISTRICT Engineer believes that the Contractor is improperly prepared with competent personnel, equipment, or materials to proceed with the connection.

#### If progress in completing the connection within the time specified is inadequate, the DISTRICT Engineer may order necessary corrective measures. Corrective measures may consist of directing DISTRICT personnel or another contractor to complete the work. All costs for corrective measures shall be borne by the Contractor.

### Contractor may proceed with excavation only when pothole has been completed, materials have been approved and delivered, cut-in or wet tap installation has been scheduled and a copy of the approved traffic control plan has been supplied to the DISTRICT Engineer.

#### The Contractor shall saw-cut pavement, excavate and provide and install shoring and steel plating, when necessary, one day prior to the wet tap or cut-in installation.

#### The Contractor shall provide lights, barricades and traffic control in accordance with the agency of jurisdiction and as deemed necessary for the excavation by the DISTRICT Engineer.

#### The Contractor shall de-water existing mains where cut-in installations are required in the presence of the Engineer and in accordance with Section 15044 and 02223. The Contractor shall be prepared to deal with leaking valves and water from those valves to complete the shutdown. Only DISTRICT personnel are authorized to operate existing valves. The Contractor shall be responsible for any and all damage resulting from unauthorized operation of existing DISTRICT facilities.

#### In areas where cut-ins are to be performed the Contractor shall line the bottom of the trench with 12" to 18" of 3/4" rock and install a 12" to 16" deep sump for dewatering the trench bottom.

#### The Contractor shall perform all of the work for cut-in and wet taps installations under DISTRICT observation including:

##### **Cut-ins:** Cut and remove portions of existing mains, and disinfect and install tees, valves, couplings, and appurtenances required to complete the closure. The Contractor shall discard pipe and appurtenances removed from service in accordance with this Section.

##### **Wet taps (when authorized):** Disinfect the tapping saddle and tapping valve per Section 15044 prior to installation. Pressure tests shall be performed per Section 15044 for potential leaks before tapping operations.

#### The Contractor shall complete the installation as shown on the Approved Plans in accordance with the Standard Specifications including, but not limited to:

##### Disinfecting and installing the pipe section(s) necessary to make the closure to the new system.

##### Installing and setting the valve gate well(s) in accordance with the Standard Drawings.

##### Installing thrust and anchor blocks in accordance with Section 03300.

##### Completing all backfill and compaction of the trench in accordance with Section 02223.

##### Repairing or replacing pavement as necessary in accordance with agency of jurisdiction requirements.

## JOINT RESTRAINT SYSTEM

### Joint restraint systems shall be installed in accordance with the manufacturer’s recommendations and as described below:

#### Length of pipe to be restrained on each side of bends, tees, reducers and other fittings shall be installed per standard detail W-4A and W-4B.

#### Split ring restraint shall be installed on the spigot end of pipe, connected to a back-up ring which seats behind the bell of the adjoining pipe or fitting. Bolts shall be torqued per Manufacturer with a properly calibrated torque wrench.

#### Restraint devices can be installed prior to lowering pipe into the trench.

#### Splined gaskets, also known as joint restraint gaskets, shall be installed in accordance with the manufacturer's recommendations.

#### Coat all nuts, bolts and washers with Bitumastic 50 or equal and encase in polyethylene wrap in accordance with Section 15000.

## FLEXIBLE PIPE COUPLINGS

### Flexible pipe couplings shall be installed in accordance with the manufacturer’s recommendations and as described below:

#### Use plain-end pipe with flexible couplings per AWWA C200. Provide joint harnesses per AWWA M11 for aboveground applications or where indicated on the Approved Plans.

#### Flexible couplings may be used only where indicated on the drawings.

#### Clean oil, scale, rust, and dirt from the pipe ends and touch-up the epoxy coating and allow time for curing before installing the coupling. Clean the gaskets before installing.

#### Follow the manufacturer's recommendations for installation and bolt torque using a properly calibrated torque wrench.

#### Lubricate the bolt threads with graphite prior to installation.

## GROOVED END OR SHOULDERED COUPLINGS FOR DUCTILE IRON OR STEEL PIPE

### Grooved-end or shouldered couplings shall be installed in accordance with the manufacturer's recommendations and as described below:

#### Grooved-end or shouldered joint couplings shall be installed per AWWA C606 and the manufacturer's recommendations.

#### Clean loose scale, rust, oil, grease, and dirt from the pipe or fitting groove and touch-up the epoxy coating as necessary, allowing time for curing before installing the coupling.

#### Clean the gasket before installation. Apply a lubricant selected from the Approved Materials List to the gasket exterior including lips, pipe ends, and housing interiors.

#### Fasten the coupling alternately and evenly until the coupling halves are seated. Follow the manufacturer's recommendations for bolt torque using a properly calibrated torque wrench.

## BOLTS AND NUTS

### All bolts and nuts shall be new and unused.

### Bolts and nuts shall be cleaned, if needed, by wire brushing and lubricated prior to assembly.

### Tighten nuts uniformly and progressively.

### Buried bolts and nuts, excluding those in underground vaults, shall receive a heavy coat of Bitumastic 50 or equal coating selected from the Approved Materials List prior to being wrapped with polyethylene. Bolts and nuts in underground vaults shall be coated with an anti-seize compound.

### All stainless steel bolts shall be coated with an anti-seize compound

### Bolts and nuts shall not be reused once tightened. Used bolts and nuts shall be discarded and removed from the job.

## POLYETHYLENE ENCASEMENT

### Polyethylene encasement shall completely encase and cover all metal surfaces.

### **Pipe:** All ductile-iron pipe shall be encased with polyethylene sleeves in accordance with Method A described in AWWA C105, or with polyethylene wrap in accordance with Method C described in AWWA C105.

### **Fittings:** Fittings such as tees, bends and reducers shall be encased with polyethylene wrap in accordance with AWWA C105.

### **Valves:** Valves shall have only the stem and operating nut exposed, and the wrap shall be attached so that valve operation will not disturb the wrapping or break the seal.

### Polyethylene sleeves shall be secured with polyethylene or vinyl adhesive tape or plastic tie straps at the ends and quarter points along the sleeve in a manner that will hold the sleeve securely in place during backfill. Polyethylene wrap shall be secured with polyethylene or vinyl adhesive tape in a manner that will hold the wrap securely in place during backfill.

## WARNING/IDENTIFICATION TAPE

### Warning/Identification Tape shall be installed as described below in accordance with the Standard Drawings.

### Tape shall be placed at the top of the pipe zone 12" above and centered over the utility intended for identification. Tape used with onsite potable and recycled water irrigation systems shall also be installed at 12" above the pipe.

### Tape shall be installed with the printed side up and run continuously along the entire length of the utility intended for identification. Tape shall be installed on the main piping and all appurtenant laterals, including blowoffs, air valve assemblies, fire hydrants, and services. Tape splices shall overlap a minimum of 24" for continuous coverage.

### Tape shall be installed prior to placement of the Trench Zone Backfill.

## GATE WELLS AND VALVE STEM EXTENSIONS

### Gate wells shall be installed as shown on the Standard Drawings and as described below.

#### Gate wells shall be installed with lids flush with the final surface.

#### Gate wells shall be coated with blue paint for potable water, purple paint for recycled water and green paint for sewer (force main) in accordance with Standard Drawings excepting normally closed valves which should be painted red.

#### Valve Stem Extensions shall be installed when the valve-operating nut is more than 5' below grade. Stem extensions shall be of sufficient length to bring the operating nut to a point between 12" and 24" below the gate well lid. Valve stem extensions shall be installed in accordance with the Standard Drawings.

## METER BOX INSTALLATION

### Meter boxes shall be installed at the locations shown on the Approved Plans and in accordance with the Standard Drawings. Near the completion of the project, a final meter box adjustment to finish grade may be required. Water meters shall not be installed until final adjustments are made to the meter box and approved by the DISTRICT.

## ABANDONMENT OR REMOVAL FROM SERVICE OF EXISTING FACILITIES

### Reference EVMWD Standard Drawing W-32.

## SALVAGE

### When the Contractor is required to remove existing pipe and appurtenances, or portions thereof, from the ground, such materials may, at the discretion of the Engineer, be considered salvage. All materials identified as salvage are considered property of the DISTRICT.

### The Contractor shall remove and temporarily stockpile all materials identified as salvage in a safe location that will not disrupt traffic or shall deliver salvage to the DISTRICT's Field Operations Yard as directed by the DISTRICT Engineer.

### The Contractor shall legally dispose of all other materials in an appropriate manner. Disposal is the responsibility of the Contractor. Obtain concurrence from the agency having disposal jurisdiction with respect to disposal sites and transportation methods.

## RECONNECTIONS

### The Contractor may encounter unused service laterals or appurtenant piping connected to an existing pipeline being replaced. Laterals and appurtenance piping that will not be connected to the new pipeline shall be abandoned as described above.

### Existing service laterals or appurtenances shall be connected to new pipelines as shown on the Approved Plans or as directed by the DISTRICT Engineer in accordance with the Standard Drawings.

**END OF SECTION**