



Diablo Water District

**STANDARD SPECIFICATIONS
AND DRAWINGS**

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DECEMBER 2013

**DIABLO WATER DISTRICT
STANDARD SPECIFICATIONS AND DRAWINGS**

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**DIABLO WATER DISTRICT
STANDARD SPECIFICATIONS AND DRAWINGS**

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2. Reference Indices

**DIABLO WATER DISTRICT
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MATERIALS INDEX

Item	Technical Specification	Standard Drawing
Air release valve	15100	DWD 20 DWD 23 (alternate)
Backfill	02230	DWD 1
Ball valve	15100	--
Blow off	15100	DWD 21 DWD 22
Bollard	--	DWD 24
Butterfly valve	15100	DWD 19
Cathodic protection	16640	DWD C1 through DWD C29
Chain link fence	02830	DWD 14
Corporation stop	15400	DWD 8
Double check valve	15400	DWD 10
Double detector check valve	15400	DWD 13
Ductile iron pipe	02610	--
Fire hydrant	15100	DWD 15 DWD 16
Flange coupling adapter	15100	--
Gate valve	15100	DWD 15 DWD 17 DWD 18
Insulating fittings	15100	--
Mechanical coupling	15100	--
Meter	15400	DWD 8 DWD 9
Meter box	15400	DWD 8 DWD 9

Item	Technical Specification	Standard Drawing
Offset	02512	DWD 6 DWD 7
Pavement	02210	DWD 1
PVC pipe	02620	--
Reduced pressure backflow preventer	15400	DWD 11 DWD 12
Service	15400	DWD 8
Spacer insulator	02231	DWD 5
Steel pipe	02512	DWD 6 DWD 7
Tapping tees and sleeves	15100	--
Valve nut extension	15100	DWD 17
Valve stem	15100	DWD 18

SERVICE/METER
SPECS:

15400

DWGS:
DWD 8
DWD 9
DWD 10
DWD 11
DWD 12
DWD 13

AIR RELEASE VALVE
SPECS:

15100 DWGS:
DWD 20
DWD 23

GATE VALVE
SPECS:

15100

DWGS:
DWD 17
DWD 18

BUTTERFLY VALVE
SPECS:

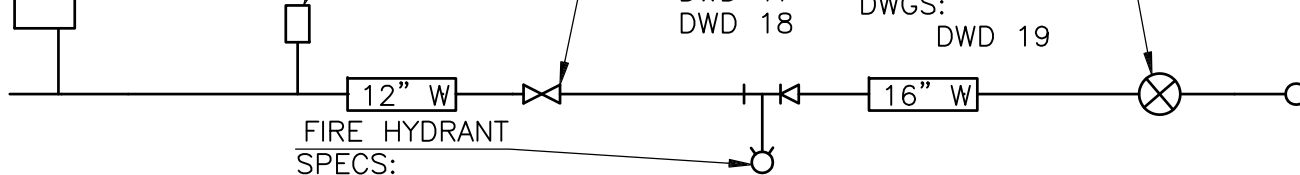
15100

DWGS:
DWD 19

BLOW OFF
SPECS:

15100

DWGS:
DWD 21
DWD 22



FIRE HYDRANT
SPECS:

03304
15100

DWGS:
DWD 2
DWD 3
DWD 15
DWD 16

CHAIN LINK FENCE
SPECS:

02830

DWGS:
DWD 14

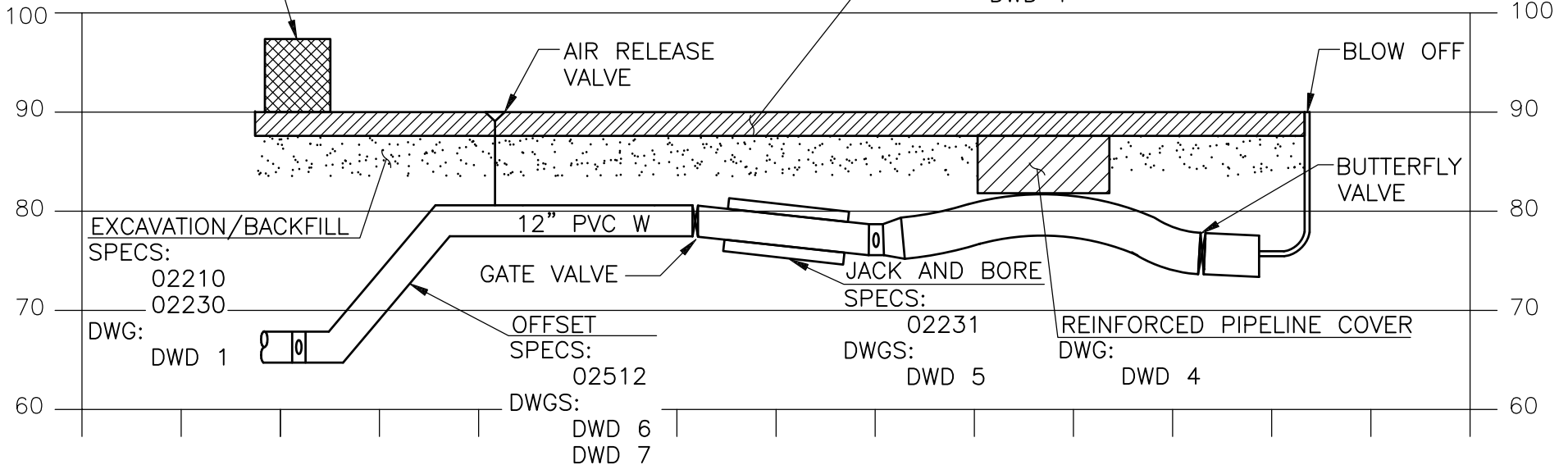
PLAN

NTS

PAVEMENT
SPECS:

02210

DWGS:
DWD 1



EXCAVATION/BACKFILL
SPECS:

02210
02230

DWG:
DWD 1

12" PVC W

GATE VALVE

OFFSET
SPECS:
02512
DWGS:
DWD 6
DWD 7

JACK AND BORE
SPECS:

02231
DWGS:
DWD 5

REINFORCED PIPELINE COVER
DWG:
DWD 4

PROFILE

NTS

DIABLO WATER DISTRICT

STANDARD DRAWING
QUICK REFERENCE GUIDE

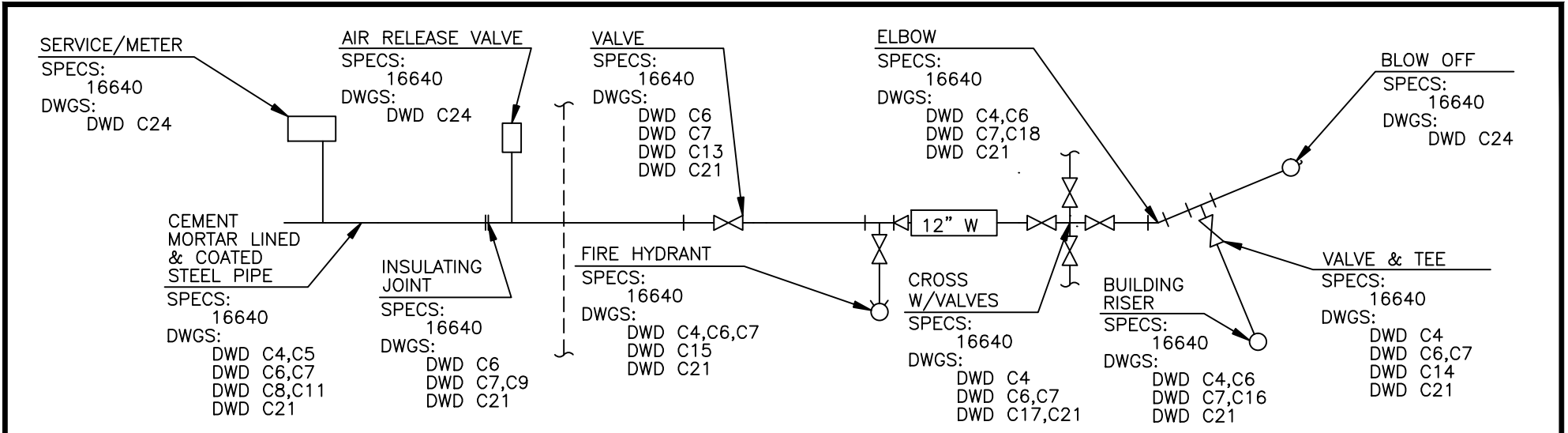
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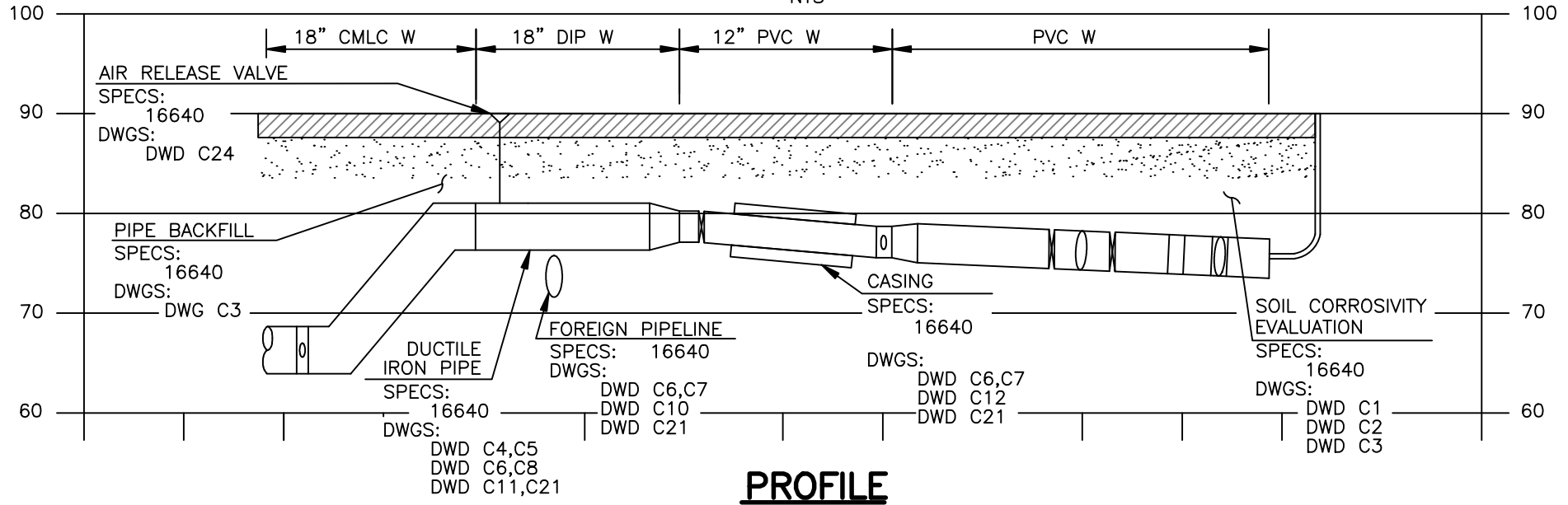
APPROVED MY

DATE DECEMBER, 2013

DWG. NO. DWD 0



PLAN
 NTS



PROFILE
 NTS

DIABLO WATER DISTRICT		STANDARD DRAWING			
		QUICK REFERENCE GUIDE – CATHODIC PROTECTION			
DESIGNED	MA	DRAWN	TH/JAW	APPROVED	MY
				DATE	JAN 2014
					DWG. NO.
					DWD CO

3. Abbreviations & Acronyms

ABBREVIATIONS & ACRONYMS

Whenever in these Standard Specifications and Drawings or in any of the other instruments which these specifications govern, the following abbreviations are used, they shall be defined as listed below:

AASHTO	American Association of State Highway Transportation Officials
AB	Aggregate Base
AC	Asphalt Concrete
ANSI	American National Standards Institute
API	American Petroleum Institute
AISI	American Iron and Steel Institute
AISC	American Institute of Steel Construction
APWA	American Public Works Association
APPROX	Approximately
ARV	Air Release Valve
ASA	American Standards Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASSY	Assembly
ASTM	American Society for Testing Materials
AWS	American Welding Society
AWWA	American Water Works Association
BF	Blind flange
BFV	Butterfly valve
BO	Blowoff
BOW	Back of Walk
BR	Brass (Lead Free)
CL&C	Cement mortar lined and coated

CLR	Clear
CFS	Cubic Feet per Second
CO	Cleanout
COMP	Compression
CONC	Concrete
CORP	Corporation
CPLG	Coupling
CMP	Corrugated metal pipe
CP	Concrete pipe
CU	Cubic
DCVA	Double check valve assembly
DDC	Double Detector Check
DIP	Ductile iron pipe
DIA	Diameter
DISTRICT	Diablo Water District
DWD	Diablo Water District
DWG	Drawing
ELEV	Elevation
ELL	Elbow
ENGR	Engineer
EPDM	Ethylene Proylene Diene Monomer
EST	Estimate
EW	Each way
FBE	Flanged both ends
FCA	Flanged coupling adapter
FH	Fire hydrant

FLG	Flanged
FOE	Flanged one end
FPT	Female pipe thread
FT	Foot
GA	Gauge
GALV	Galvanized
GV	Gate valve
HE	Hub end
HYD	Hydrant
ID	Inside diameter, inside dimension
IP	Iron pipe
IPS	Iron pipe size
K	Copper pipe class
LFBR	Lead Free Brass
LG	Long
MAX	Maximum
MECH	Mechanical
MEE	Milled each end
MIN	Minimum
MIP	Male Iron Pipe (thread)
MJ	Mechanical joint
NIC	Not in contract
NO	Number
NPT	National pipe thread
NRS	Non rising stem

NTS	Not to scale
OSHA	Occupational Safety & Health Act
OS&Y	Outside stem and yoke
OD	Outside diameter/outside dimension
PC	Portland cement
PE	Polyethylene pipe
PL	Property line
POE	Plain one end
PRV	Pressure reducing valve
PSF	Pounds per square foot
PSI	Pounds per square inch
PVC	Polyvinyl chloride
PVCP	Polyvinyl chloride pipe
PCCP	Pretensioned concrete cylinder pipe
RDWD	Redwood
RED	Reducing
REQ'D	Required
RP	Reduced pressure
RW, ROW	Right of way
S	Sewer
SCHED	Schedule
SCRD	Screwed
SHT	Sheet
SQ	Square
SCLC	Steel cement mortar-lined and coated
ST	Street

STD	Standard
STL	Steel
STRUCT	Structural
SW	Solvent weld
TBE	Threaded both ends
TBO	Temporary blowoff
TOE	Threaded one end
TJ	Tyton joint
TYP	Typical
UL	Underwriters Laboratory, Inc.
USA	Underground Service Alert
UV	Ultra Violet or Ultra Violet Light
W	Water
W/	With
W/O	Without
#	Pound, number

4. General Requirements

GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 PURPOSE OF STANDARD SPECIFICATIONS AND DRAWINGS

- A. The purpose of these Standard Specifications and Drawings is to provide certain minimum requirements for the design, materials used, and methods of construction for Diablo Water District's water system facilities whether in public or private property.

1.02 DEFINITIONS

- A. As used in these Standard Specifications and Drawings, the following terms have the meanings indicated:
 - 1. "APPLICANT": Any individual, developer, partnership, public agency, or corporation requesting water service from the District.
 - 2. "BOARD OF DIRECTORS": The Board of Directors of Diablo Water District.
 - 3. "CONTRACTOR": The person or persons, firm or firms, co-partnership or corporation, who has or have entered into a contract with an Applicant or the District to perform work on water lines and appurtenances which are to be the property of or under the jurisdiction of the District.
 - 4. "DISTRICT" or "OWNER": Diablo Water District, acting through its Board of Directors or authorized representatives.
 - 5. "DRAWINGS" and "SPECIFICATIONS": Drawings and specifications for water service prepared by an Applicant or his representative.
 - 6. "ENGINEER": As designated by the District, the engineer or authorized representative representing Diablo Water District.
 - 7. "STANDARD DRAWINGS" and "STANDARD SPECIFICATIONS": Drawings and written matter included herein together with changes or additions which may be attached hereto.
 - 8. "SUBCONTRACTOR": An individual, firm, or corporation having a direct contract with Contractor or any other subcontractor for the performance of a part of the Work at the site.
 - 9. "WORK": Any and all obligations, duties, and responsibilities necessary to the successful completion of the project assigned to

or undertaken by a contractor under contract to the District, including all labor, materials, equipment, and other incidentals, and the furnishing thereof.

- B. In addition, other Standard Specifications and Standard Methods are incorporated by reference and shall be considered a part of these Specifications as applicable. In general, the Standards in question shall be the latest amended standards adopted by the American Standards Association (ASA), by the American Water Works Association (AWWA), by the American Society of Civil Engineers (ASCE), by the American Society of Mechanical Engineers (ASME), by the American Welding Society (AWS), by the federal government, State of California, and County of Contra Costa. All referenced standards shall be the most recent version or edition.

1.03 PLAN REVIEW AND APPROVAL PROCESS

- A. **GENERAL:** All work necessary to the installation of water mains and appurtenances to provide water service shall be shown on drawings furnished by an Applicant. The drawings shall be prepared under the direction of, and signed by, a currently registered professional engineer in the State of California.
- B. **DESIGN:** Design of the water system improvements and preparation of the drawings shall following the requirements contained in the "Design Requirements" Section of this document. This work shall include cathodic protection improvements as required for the water facilities.

All calculations requested by the District to verify the design of any portion of the water system shall be submitted. Calculations shall be based on methods generally accepted by the engineering profession and shall be neatly and legibly done in such form as to enable them to be readily checked. Literature and technical data concerning any of the materials and equipment proposed to be used shall be furnished upon request. If requested, soils report for the project area shall be submitted as part of the review process.

- C. **APPROVAL OF DRAWINGS:** Four sets of prints of the drawings showing the proposed work shall be submitted to the District for approval. The "Subdivision Water System Design Requirements and Plan Review Checklist" contained herein under "Design Requirements" shall be submitted with the drawings, with the applicable boxes checked by the Design Engineer. If the applicable design requirements are not followed, an explanation shall be provided with the submittal.

The District shall review the drawings and provide comments in writing, as appropriate. The Applicant shall revise the drawings to address District comments, and re-submit the drawings as many times as needed to obtain District approval. Upon approval of the drawings the District shall so notify

the Applicant in writing. Applicant shall deliver four sets of final signed plans to the District prior to commencement of construction.

1.04 PRIOR TO COMMENCEMENT OF CONSTRUCTION

- A. **APPROVED PLANS:** Prior to commencement of construction, all drawings must be approved and fully signed by all approving agencies. Cathodic protection design and plans must be completed and approved, including submittal of soils test results for the cathodic protection design.
- B. **AGREEMENT:** Prior to commencement of construction, the Applicant shall enter into an agreement with the District. The agreement must be adopted by the District Board of Directors.

If within one year after the date of the approval of the drawings, the Applicant and the District have not executed an agreement for the construction of the work, the approval will then expire and be of no further effect. If thereafter the Applicant determines to execute an agreement with the District, four additional sets of prints shall be submitted to the District for approval. If the Applicant fails to commence and complete the work within the times stipulated in the Agreement, the District may rescind its approval of the drawings and require as a condition of the agreement specific modifications and revisions of the drawings.

- C. **BONDS AND INSURANCE:** Prior to commencement of construction, the Applicant shall deliver to the District all bonds and insurance certificates as required by the Agreement.
- D. **CONTRACTOR:** District shall approve the Contractor selected by the Applicant prior to commencement of construction.
- E. **PERMITS:** Applicant shall obtain all required permits for installation of the facilities at his/her own expense.

1.05 CONDUCT OF CONSTRUCTION WORK

- A. **GENERAL:** No work on facilities for, or related to, the District's water system shall be done until all drawings, including cathodic protection, have been approved by the District. Notification that the drawings are found in conformance with District standards shall not relieve the Applicant or Contractor of any responsibilities indicated in the Standard Specifications and Standard Drawings. Contractor shall at all times have at the work site this volume of the District's Standard Specifications and Drawings.
- B. **SUBMITTALS:** No work on facilities for, or related to, the District's water system shall be done until all necessary literature and technical data, for all materials, equipment and appurtenances proposed to be used, have been submitted to, and approved by, the District. Contractor shall have approved submittals on site at all times.

1. The Contractor shall not install any equipment or materials until the District has approved all submittals. If any equipment or materials are installed prior to approval of the submittals, it shall be at the Contractor's risk.
 2. In general, corrections or comments or lack thereof, made relative to submittals during review, shall not relieve the Contractor from compliance with the requirements of the drawings and specifications. Submittals are for review of general conformance with the design concepts of the project and general compliance with the contract documents. The Contractor is responsible for the final design conforming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating the work of all trades, and performing the work in a safe and satisfactory manner.
- C. **MATERIALS:** All materials shall be checked on location by the Contractor. After materials have been received and checked by the Contractor, the Contractor shall notify the District that the proper materials have been delivered. No work shall commence until the District has inspected the materials.
- D. **SAFETY OFFICER:** The Contractor's Safety Officer shall be on location at all times during construction activities.
- E. **INSPECTION:** All materials furnished and all work performed shall be subject to inspection by the District. The materials and work shall be held strictly to the true intent of the Standard Specifications and Drawings in regard to quality of materials, workmanship, and diligent execution. Such inspection may include mill, plant, shop, or field inspection, as required. The District inspector shall be permitted access to all parts of the work, including plants where materials or equipment are manufactured or fabricated, and he shall be furnished with such materials, information, and assistance as is required to make a complete and detailed inspection.
- F. **WORK DONE IN THE ABSENCE OF INSPECTION:** Work done in the absence of prescribed inspection may be required to be removed and replaced under the proper inspection, and the entire cost of removal and replacement, including the cost of all materials and labor which may be furnished by the District and used in the work thus removed, shall be borne by the Contractor, regardless of whether the work removed is found to be defective or not. Work covered up without the authority of the District, shall, upon order of the District, be uncovered to the extent required, and the Contractor shall similarly bear the entire cost of performing all the work and furnishing all the materials necessary for the removal of the covering and its subsequent replacement, as directed and approved by the District.
- G. **TESTING:** The District may make, or have made, such tests as he deems necessary to ensure that the work is being accomplished in accordance with the requirements of the District. In the event that any tests reveal

noncompliance with the requirements of the contract, the Contractor shall bear the cost of such corrective measures deemed necessary by the District, as well as the cost of subsequent retesting.

- H. DEFECTIVE MATERIAL OR WORK: Materials or work not conforming to the requirements of these Standard Specifications, Drawings or submittals shall be considered as defective, and all such materials, whether in place or not, shall be rejected. No rejected material, the defects of which have been subsequently corrected, shall be used until approved in writing by the District.
- I. DISCREPANCIES IN THE STANDARD SPECIFICATIONS AND DRAWINGS: Any discrepancies, errors, or omissions, found in these Standard Specifications and Drawings shall be promptly reported to the District who may issue a correction or clarification in writing. The Contractor shall not take advantage of any such discrepancies, errors, or omissions, but shall comply with any corrective measures regarding the same prescribed by the District.

1.06 AT COMPLETION OF CONSTRUCTION - PRIOR TO FINAL ACCEPTANCE

- A. TESTING: Testing of all facilities shall be conducted according to all specifications and requirements contained herein. No facilities shall be accepted until the results of all final tests are satisfactory to the District.
- B. PUNCH LIST: All work and punch list items must be completed. The District shall assess a time frame for all punch list items to be completed. If not completed by the designated time, the District shall do so or have done by others after contacting the bonding company. The District will increase the deposit to cover the estimated punch list items. The deposit shall be refunded if the punch list is completed to the District's satisfaction within the stated timeframe.
- C. RECORD DRAWINGS: One full-size reproducible set of prints, revised to show record conditions shall be furnished to the District along with two sets of prints made from this record reproducible set. The reproducible set shall be photo quality on vellum or plain mylar; sepia or diazo mylar is not acceptable. It is suggested that a blue-line set of record drawings be provided for District review prior to submitting the mylars.

GPS coordinates shall be surveyed and recorded for all aboveground and underground valves, meters, fittings, and blowoffs (including elevations for all underground facilities). GPS coordinates shall also be collected from other utilities exposed during construction of new utilities.

- D. CATHODIC PROTECTION (if required): Shall be tested and certified by registered engineer. Record drawings (mylars) shall be submitted. It is suggested that a blue-line set of record drawings be provided for District review prior to submitting the mylars. GPS coordinates shall be surveyed and recorded for all at-grade cathodic protection test stations.

1.07 FINAL ACCEPTANCE

- A. ACCEPTANCE: Acceptance of an Applicant's project shall be made in writing by the District's General Manager after the work has been completed in accordance with District standards and approved drawings, and has been inspected and tested.

PART 2 CONSTRUCTION MATERIALS

2.01 SCOPE OF WORK

- A. All materials delivered to the worksite, necessary to complete all work as shown on the drawings and/or as herein specified, including, but not limited to: pipe, fittings, valves, hydrants, and concrete.

2.02 MATERIAL SPECIFICATIONS

- A. The Technical Specifications described herein contain the specific requirements for various materials.
- B. All materials shall be new; shall bear the manufacturer's stamp or marking; and shall conform to the most current revision of the cited specification(s).
- C. The Contractor shall, at any time when requested, submit to the District, proper authenticated documents or other satisfactory proofs of compliance with the requirements of these specifications.

2.03 DELIVERY, STORAGE AND HANDLING

- A. During loading, transportation and unloading, care shall be taken to prevent damage to pipes and coating. Carefully load and unload each pipe under control at all times. Place skids or blocks under each pipe in the shop and securely wedge pipe during transportation to ensure no injury to pipe and lining. Pipe ends shall be covered during transport to prevent contaminants from entering the pipe.
- B. Any pipe damaged in shipment shall be replaced as directed by the District.
- C. While stored, pipe shall be adequately supported from below at not more than 3 feet intervals to prevent deformation. Pipe shall not be stacked higher than 6 feet. Pipe and fittings shall be stored in a manner which will keep them at ambient outdoor temperatures. Temporary shading as required to meet this requirement shall be provided. Simple covering of the pipe and fittings which allows temperature buildup when exposed to direct sunlight will not be permitted.
- D. The pipe shall be handled by use of wide slings, padded cradles, or other devices, acceptable to the District, designed and constructed to prevent

damage to the pipe coating. The use of chains, hooks, or other equipment which might injure the pipe coating will not be allowed. Stockpiled pipe shall be suitably supported and shall be secured to prevent accidental rolling. Pipe ends shall be protected from the weather. All other pipe handling equipment and methods shall be acceptable to the District.

- E. Stockpiled pipe shall be supported on sand or earth berms free of rock exceeding 3 inches in diameter. The pipe shall not be rolled and shall be secured to prevent accidental rolling.
- F. The Contractor shall be fully liable for the replacement or repair of pipe which is damaged or has been rejected by the District.

PART 3 GENERAL CONSTRUCTION REQUIREMENTS

3.01 RIGHT-OF-WAY

- A. Water mains, services, and meters shall be located in public right-of-way. In special cases, subject to the approval of the District, water mains may be located in a minimum twenty (20) foot wide utility easement dedicated to the District. Water mains shall be located five (5) feet from either edge of an easement. Additional utility easements may be required to accommodate water meters and other water facilities.

3.02 LOCATION OF EXISTING DISTRICT FACILITIES

- A. Contractor agrees to take all responsibility for locating existing District facilities which may be within 10 feet of the Work. Contractor shall be responsible for ensuring that the Underground Service Alert (1-800-227-2600) has been contacted before commencement of the Work and that the District's facilities have been adequately marked. Contractor shall dig by hand and by the use of probes to locate all existing District facilities prior to the use of mechanical equipment.

3.03 COMPLIANCE WITH STATE DEPARTMENT OF HEALTH SERVICES

- A. All requirements of the State Department of Health Services including, but not limited to, water main-sanitary sewer separation distances, and pipe material specifications, shall be complied with.

3.04 INDIVIDUAL PRESSURE REDUCING VALVES ON CUSTOMER SERVICES

- A. As described in the "Design Requirements" Section of this document, individual pressure reducing valves shall be required on all customer services at locations designated by the District with ground elevations less than 15 feet above mean sea level.

3.05 LINE AND GRADE

- A. The Contractor shall lay out the work in advance of beginning construction.

The Contractor is responsible for constructing the work to the lines and grades shown in the Contract Documents. The trench shall be excavated to a flat bottom, cut true and even to the established grade. Construction staking in new developments will be provided by the Applicant.

3.06 INSTALLATION OF WATER MAINS

- A. All pipe, fittings, and specials, shall be carefully handled and protected against damage to lining and coating, impact shocks and free fall. Pipe shall not be placed directly on rough ground but shall be supported in a manner which will protect the pipe against injury whenever stored at the site of the work or elsewhere. No pipe shall be installed when the lining or coating show cracks as defined in AWWA C205. Such damaged lining and coating shall be repaired, or a new undamaged pipe or fitting shall be furnished and installed. In the event a new and undamaged pipe is furnished, the damaged pipe shall be marked by the District and removed from the site.
- B. Before placement of pipe in the trench, each pipe or fitting shall be thoroughly cleaned of any foreign substance which may have collected thereon and shall be kept clean at all times thereafter. For this purpose, the openings of all pipes and fittings in the trench shall be closed during any interruption in the installation of the pipe. All pipe, fittings, valves, etc., shall be carefully lowered into the trench by suitable tools or equipment, in such manner as to prevent damage to the pipe, lining, coating, fitting or other appurtenances. Damage to the lining or coating shall be repaired to the satisfaction of the Engineer before the pipe or fitting is installed.
- C. The Contractor shall inspect each pipe and fitting to ensure there are no damaged portions of the pipe. The Contractor shall remove or smooth out any burrs, gouges, weld splatter or other small defects prior to laying pipe.
- D. The District may examine each bell and spigot end to determine whether any preformed joint has been damaged prior to installation. Any pipe having defective joint surfaces shall be rejected, marked as such, and immediately removed from the job site.
- E. Pipe shall be laid to the lines and grades shown on the Drawings with bedding and backfill as shown on the Drawings. Blocking under the pipe will not be permitted. The deflection at joints shall not exceed that recommended by the manufacturer. If any defective pipe is discovered after it has been installed, it shall be removed and replaced with a sound pipe in a satisfactory manner by the Contractor, at his own expense.
- F. The materials used for the bedding, and the amount thereof, and the manner of deposition shall be subject to the approval of the District, but the Contractor shall be held responsible for any displacement or instability of pipelines or any damage to coatings caused by improper installation of bedding materials.

- G. Installation of pipes in prepared trenches shall start at the lowest elevation, with the spigot ends pointing in the direction of flow. Pipe shall be protected from lateral displacement by placing the specified pipe embedment material. Pipe shall be laid with the bell ends facing the direction of laying except when reverse laying is specifically authorized by the District.
- H. The pipe shall be laid true to line, with no visible change in alignment at any joint, unless curved alignment is shown on the drawings. No single piece of pipe shall be laid unless it is generally straight. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than 1/16 inch per foot of length. If a piece of pipe fails to meet this requirement check for straightness, it shall be rejected and removed from the site.
- I. Except for short runs which may be permitted by the District, pipes shall be laid uphill. Pipe which is laid on a downhill grade shall be blocked and held in place until sufficient support is furnished by the following pipe to prevent movement. Pipes shall be laid uphill on grades exceeding 10 percent.
- J. Good alignment shall be preserved during installation. Fittings, in addition to those shown on the plans, shall be provided, if required, in crossing utilities which may be encountered upon opening the trench.
- K. Pipe joints shall be made only with the couplings and rubber rings furnished with the pipe or with mechanical couplings, and aligned and constructed in the trench in accordance with the manufacturer's instructions.
- L. Whenever pipe laying is discontinued for short periods, or when work is stopped at the end of the day, the open ends of all pipes shall be closed with watertight plugs, bulkheads or other approved means. The plug or bulkhead shall not be removed, unless or until the trench is dry.
- M. Under no circumstances shall pipe be laid in water, and no pipe shall be laid under unsuitable weather or trench conditions. All necessary precautions shall be taken to prevent uplift or flotation of the pipe prior to the completion of the backfilling operation. The Contractor shall assume full responsibility for any damage due to this cause and shall, at its own expense, restore and replace the pipe to its specified condition and grade if it is displaced due to floating.
- N. As pipe laying progresses, the Contractor shall keep the pipe interior free of all debris and clean until testing. The Contractor shall completely clean the interior of the pipe of all sand, dirt, mortar splatter and any other debris or foreign matter following completion of pipe laying, pointing of joints and any necessary interior repairs prior to testing and disinfecting the completed pipeline. The lowest segment shall be flushed last to assure debris removal. If, after this cleaning, obstructions remain, they shall be removed.

- O. If any defective item is discovered after it has been installed, it shall be removed and replaced with an exact replacement item in a satisfactory manner by the Contractor, at the Contractor's own expense.
- P. Plastic warning tape shall be installed over all water lines as shown on Standard Drawing DWD-1. Warning tape shall be blue, minimum 2 inches wide, and printed continuously with the words: "CAUTION BURIED WATER LINE BELOW".

3.07 WARRANTY

- A. The manufacturer shall guarantee that the pipe furnished is suitable for the purpose intended and free from defects of material and workmanship for a period of three years after initial startup. In the event the pipe fails to perform as specified, the pipe manufacturer shall promptly replace defective pipe at no additional cost to the District.

3.08 INTERRUPTION OF SERVICE

- A. If the District agrees that a portion of the distribution system needs to be shutdown with interruption of service to hydrants or customers, then a written request, including the shutdown duration and a work plan, shall be submitted to the District for approval. Shutdowns will be limited to the period between 9:00 a.m. and 4:00 p.m., Tuesday through Thursday and preferably should not include mealtime hours. If a shutdown is approved, the District shall be notified 48 hours prior to commencing the work.
- B. Preparations shall be made and work planned so that the shutdown time will be as short as possible. Requests for shutdowns beyond the aforementioned times and days may be reviewed for approval by the District on a case-by-case basis. Should the approved shutdown time be exceeded, a penalty of \$100 for every hour over that approved shutdown may be assessed against the party requesting the shutdown.
- C. After having secured the approval of the District, the party requesting the shutdown will notify the local fire protection district and all customers to be affected at least 24 hours in advance of any interruption of service. The fire protection district shall be immediately notified when service to the affected area is restored.

3.09 VALVE OPERATION

- A. Only District representatives and individuals specifically designated by the District shall open or close any valve in the existing water system.

3.10 CONNECTING TO EXISTING MAINS

- A. EXPOSING EXISTING FACILITIES: When connections are to be made to any existing pipe or other appurtenances, the actual size, elevation, or position or location of which cannot be determined without excavation, the

Contractor shall carefully excavate and expose the existing facility. The facilities shall be inspected before any connections are made.

- B. WET TAPPING: Connections to the water distribution system shall be made by use of the wet tapping method unless 1) the pipe to be connected is at least 4 inches larger than the main, or 2) the district agrees that wet tapping is impossible or impracticable. Twenty-four hours notice in writing shall be given to the District prior to commencing on any wet tap into the water system.

The work crew performing the wet tap must be acceptable to the District and be capable, experienced, and responsible. The Contractor shall immediately replace any wet tap work crew which the District judges to be irresponsible or unskillful. A representative of the District shall be present before and during any wet taps.

3.11 ABANDONED FACILITIES

- A. Buried pipelines and valving to be abandoned shall be abandoned in place unless otherwise indicated "TO BE REMOVED". The ends of such pipelines shall be capped or plugged and all valving shall be closed, if possible. Details with the location, size, and material of the abandoned facility shall be accurately noted on the project record drawings (as-builts).

3.12 CONSTRUCTION WATER SUPPLY

- A. All water is to be metered and paid for by the Contractor. Meters for this purpose are available at the District office following application for same, and a deposit is required.
- B. The deposit, service charge, and consumption charge will be those stated in the rules and regulations of the District as they are in effect from time to time. The District shall be entitled to assess such charges against the Contractor and deduct the cost thereof from any money due or that may become due the Contractor under this or any other contract.

3.13 FILLING WATER TRUCKS AND OTHER WATER TRANSPORT EQUIPMENT FROM FIRE HYDRANTS

- A. An air gap or an approved reduced pressure principle backflow preventer shall be utilized to isolate the water system from the water storage compartment being filled. See the figure on the following page.

3.14 SAFETY

- A. The Contractor's Safety Officer shall be on location at all times.
- B. The Contractor shall at all times conduct his work in accordance with Construction Safety Orders of the Division of Industrial Safety, State of California, to ensure the least possible obstruction to traffic and

inconvenience to the general public, and adequate protection of persons and property in the vicinity of the work. No street shall be closed to the public without first obtaining permission of the District and the other proper governmental authorities.

- C. Toe boards shall be provided to retain excavated materials if required by the District or the public entity having jurisdiction over the street or highway. Fire hydrants on or adjacent to the work shall be kept accessible to fire fighting equipment at all times. Temporary provisions shall be made by the Contractor to ensure the use of sidewalks and the proper functioning of all gutters, sewer inlets, and other drainage facilities.

3.15 MAINTENANCE OF TRAFFIC

- A. Contractor shall conduct his work to interfere as little as possible with public travel, whether vehicular or pedestrian. Whenever it is necessary to cross, obstruct, or close roads, driveways, and walks, whether public or private, Contractor shall provide and maintain suitable and safe bridges, detours, or other temporary expedients for the accommodation of public and private travel, and shall give reasonable notice to owners of private drives before interfering with them. Such maintenance of traffic will not be required when Contractor has obtained permission from the owner and tenant of private property, or from the authority having jurisdiction over public property involved, to obstruct traffic at the designated point. Traffic control shall be provided by applicant or contractor as needed for District personnel to operate valves or other activities. It is the Contractor's responsibility to contact local governing agencies regarding submittal and approval of traffic detour plans prior to the commencement of work.

3.16 BARRICADES AND LIGHTS

- A. All streets, roads, highways, and other public thoroughfares which are closed to traffic shall be protected by effective barricades on which shall be placed acceptable warning signs. Barricades shall be located at the nearest intersecting public highway or street on each side of the blocked section.
- B. All open trenches and other excavations shall have suitable barricades, signs, and lights to provide adequate protection to the public. Obstructions such as material piles and equipment shall be provided with similar warning signs and lights.
- C. All barricades and obstructions shall be illuminated with warning lights from sunset to sunrise. Material storage and conduct of the Work on or alongside public streets and highways shall cause the minimum obstruction and inconvenience to the traveling public.
- D. All barricades, signs, lights, and other protective devices shall be installed and maintained in conformity with applicable statutory requirements.

3.17 SANITARY FACILITIES

- A. Contractor shall furnish temporary sanitary facilities at the site for the needs of all construction workers and others performing work or furnishing services on the project. Sanitary facilities shall be of reasonable capacity, properly maintained throughout the construction period, and obscured from public view to the greatest practical extent. Contractor shall enforce the use of such sanitary facilities by all personnel at the site.

3.18 CARE OF EXISTING STRUCTURES AND UTILITIES

- A. **GENERAL:** Existing power and telephone lines, trees, fences, water pipes, gas lines, sewer or other conduits, embankments, and sundry structures, in the vicinity of the work shall be supported and protected from injury by the Contractor during the construction and until the completion of the work. The Contractor shall be liable for all damages done to such structures.
- B. **EXISTING UTILITIES:** Contractor shall be responsible for ensuring that the Underground Service Alert (1-800-227-2600) has been contacted before commencement of the Work and that all existing utilities in the vicinity of the work have been marked.
- C. **RELOCATION OF EXISTING UTILITIES:** The Contractor shall make all arrangements for, and pay all costs connected with, any necessary relocation and/or reconstruction of existing surface and underground utility facilities (including without limitation, poles, guys, conduits, pipes, and mains) affecting the project or the work to be performed.
- D. **UNIDENTIFIED EXISTING UTILITIES:** If, in the performance of the work, an existing utility is encountered which is not shown on the drawings and is not apparent or inferable from visual inspection of the site, the District shall be notified immediately. The District will determine whether the drawings or specifications shall be modified, or whether the existing utility shall be relocated or whether the Contractor shall work around the existing utility.
- E. **PROTECTION OF TREES, SHRUBS AND LAWNS:** The Contractor shall take every necessary precaution to protect trees, shrubs, lawns, and other vegetation in all areas on or adjacent to the worksite(s). No trees or shrubs shall be removed or trimmed unless the drawings specifically state otherwise.

3.19 MAINTAINING DRAINAGE

- A. The Contractor shall provide and maintain temporary drainage for all excavations, drains, sewers, ditches, trenches, and structures. The Contractor shall keep the excavations dry throughout the construction operations. Whenever necessary in order to provide proper drainage, the Contractor shall, at his own expense, install underdrains, and furnish and operate all necessary pumping equipment, drainage sumps, wellpoint

systems, and other drainage facilities. The laying of pipe or placing of concrete will not be allowed under circumstances where water is standing in the excavation.

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

3.20 RAILROAD CROSSINGS

- A. Wherever the work to be done under these specifications includes encroachment upon railroad rights-of-way, easement, or permit, the Applicant and contractor are responsible for entering into an agreement with the railroad company. The Contractor shall comply with all requirements imposed by the railroad company in connection with performance of the work and shall give such notice as is required before beginning work. The Contractor shall be responsible for the payment of any necessary watchmen, flagmen, or inspectors or any other protection required on the work by the railroad.

3.21 DUST CONTROL

- A. The Contractor shall at all times keep the streets sufficiently watered and swept of all loose material produced by his operations in order that traffic and construction does not raise an objectionable amount of dust. When directed by the District, the contractor shall apply a suitable dust palliative to control dust.

3.22 NOISE CONTROL

- A. The Contractor shall take reasonable measures to avoid unnecessary noise. Such measures shall be appropriate for the normal ambient sound levels in the area during working hours. All construction machinery and vehicles shall be equipped with practical sound muffling devices, and operated in a manner to cause the least noise consistent with efficient performance of the work.

3.23 POLLUTION CONTROL

- A. The Contractor shall prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris, and other substances resulting from construction activities. No sanitary wastes will be permitted to enter any drain or watercourse other than sanitary sewers. No sediment, debris, or other substance will be permitted to enter sanitary sewers and reasonable measures will be taken to prevent such materials from entering any drain or watercourse. Applicant and contractor shall be responsible for obtaining any required permits for discharge to the sanitary sewer, and/or for the General Stormwater Permit for Construction Activities, including submittal of the Notice of Intent and preparation of the Stormwater Pollution

Prevention Plan (SWPPP).

3.24 COUNTY, CITY OR STATE ROADS

- A. Whenever the work to be done under these specifications includes encroachment upon county, city, or state road rights-of-way, the Contractor shall comply with all requirements imposed by the governing agency in addition to those set forth in these specifications, in connection with performance of the work and shall give such notice as is required before beginning work.
- B. The Contractor is responsible for securing the necessary rights-of-way, easement, or permit whenever work is to be done under these specifications including encroachment upon county, city, or state road rights-of-way and bear all fees associated herewith.

3.25 SECURITY

- A. The Contractor shall be responsible for protection of the site, and all work, materials, equipment, and existing facilities thereon, against vandals and other unauthorized persons.

END OF SECTION