

Technical Specifications

Division 1 General Requirements

1-1.01 Approved Plans Required

No work shall commence on any water facilities which are intended to be attached to the District's system unless the Contractor is in possession of complete, fully-approved plans and specifications bearing the signature of the General Manager or his/her duly authorized representative, and covering all phases of the proposed construction.

An exception to this requirement would be the installation of a single item such as a water service, fire hydrant or fire service.

1-1.02 Contractor's License

All contractors performing work for the District or performing work on projects, which are to be accepted by the District, must be duly licensed under the laws of California to do or perform such work.

1-1.03 Reference to Standards

Whenever standards (such as AWWA, ASTM, etc.) are referred to in these specifications, said reference shall be to the latest officially adopted revision thereof.

From time to time these Improvement Standards, Technical Specifications and Standard Details will be revised. It shall be the engineer/contractor's responsibility to obtain the latest revision thereof prior to design and installation.

1-1.04 Permits, Licenses, and Fees

The Contractor shall, at no expense to the District, obtain all necessary permits and licenses for construction of the project, give all necessary notices, and pay all fees required by law. Contractor shall promptly furnish the District copies of all finally approved permits secured by the Contractor in the performance of his/her contract.

1-1.05 Compliance with Laws

The Contractor shall conduct the work in compliance with all existing State and Federal safety laws and County and Municipal ordinances and regulations limiting or controlling the work in any manner.

1-1.06 Construction Safety

All construction of water systems intended to be connected to the District's system must be constructed in strict compliance with the statutory safety requirements of the State of California as set forth in California Administrative Code, Title 8 and all amendments thereto.

1-1.07 Work in Sacramento County Rights-of-Way, Easements, and Waterways

Any Contractor performing construction within Sacramento County rights-of-way, easements, and waterways shall be in possession of County-approved plans or a County Encroachment Permit and shall comply with all conditions imposed therein, all at no expense to the District.

1-1.08 Existing Facilities and Utilities

The Contractor shall be responsible to determine and verify the location of existing facilities and/or utilities. Damage to any existing pipeline, service or other utility, fence building or other structure or to landscaping or other improvements shall be the responsibility of the Contractor and shall be repaired or replaced by the Contractor at his/her expense and to the satisfaction of the District.

The District recommends the Contractor take photographs of the existing as-is conditions prior to beginning work.

1-1.09 Pre-Construction Meeting

An on-site meeting with the District Inspector, Consulting Engineer, County Inspector, and Contractor must be held at least two days in advance of construction to inspect materials, schedule inspections, review the approved water system construction plans, and schedule any tie-in connections. Pre-construction meetings shall not be scheduled until all items in B-10 have been received including submittal of the material list, guarantee letter, and encroachment/maintenance bond submitted.

1-1.10 Materials Approval

At least ten days prior to the pre-construction meeting, the Contractor shall furnish to the District for approval a list of all materials proposed to be used in constructing the water system, including manufacturer, actual location of manufacture, and model number of each item.

1-1.11 Required Notice

The Contractor shall notify the District three days prior to commencement of construction and shall furnish the District at least two (2) days notice when inspections are required, when pipe is in the ground prior to backfilling, when service and main valves are installed, when initial backfill has been placed, when ready for the hydrostatic test, and shall keep the District informed generally as to progress of construction.

1-1.12 Inspection Requirements

Any improvement constructed in accordance with the approved plans, the Special Conditions, and the General and Standard Technical Specifications, for which it is intended or required that the District will assume maintenance responsibility, will be inspected during construction by an authorized representative of the District. Any improvements constructed without the inspection as provided above or constructed different from the contrary to the order or instructions of the District will not be accepted by the District for maintenance purposes and permission to connect with the existing system will be denied.

Within ten days after receiving the request for final inspection, the District will inspect the work. The Contractor, Consulting Engineer, and Developer shall be notified in writing as to any particular defects or deficiencies to be remedied. The Contractor shall proceed to correct any such defects or deficiencies at the earliest possible date. At such time as the work has been completed, a second inspection will be made by the District to determine if previously mentioned defects have been repaired, altered, and completed in accordance with the plans. The District will not accept any work or project until all defects have been remedied to its satisfaction.

1-1.13 Water System Information

Sacramento Suburban Water District is a member of the U.S.A. One-Call Program, Call U.S.A. 48 hours in advance for public water system information.

1-1.14 Water System Shutdown

Only District personnel will make all water system shutdowns.

UNDER NO CIRCUMSTANCES WILL ANYONE OTHER THAN A REPRESENTATIVE OF THE DISTRICT OPEN OR CLOSE ANY VALVE IN A DISTRICT SYSTEM.

Shutdowns for the purpose of making connections to existing mains must be scheduled at least three working days in advance and are only permitted on Tuesday, Wednesday, or Thursday. The District will advise the Contractor of the hours during which shutdowns may be made. All connections must be supervised and controlled by District personnel. No shutdowns shall be permitted until the District Inspector verifies that Contractor is physically present and prepared to assist making the connection with personnel, materials, and appurtenances as specified on approved plans.

Night work as required shall be scheduled through the District pending available personnel, time and coordination of customers affected by the proposed shutdown. Night work will require payment of additional inspection fees in advance of the proposed work as determine by the District.

Tie-ins will not be allowed to District facilities on the Tuesday following a District holiday or on the Thursday prior to a District holiday.

1-1.15 Traffic Control

When working in streets, the Contractor shall take adequate precautions for the protection of the traveling public. Barricades, warning lights and signs, and flagmen, where necessary, shall be maintained in accordance with the latest revision of the Caltrans “Manual of Traffic Controls” or County of Sacramento “Improvement Standards” until the excavation is refilled, the obstruction removed, and the roadway made safe for the traveling public. At its discretion, the District may require the Contractor to submit and obtain Sacramento County’s approval of a traffic control plan before the District will approve plans and/or authorize a shutdown.

1-1.16 As-Built Drawings

The Contractor shall maintain one set of construction drawings to be used for keeping a record of all changes made during construction. The Contractor shall be responsible for keeping these drawings and neatly noting all changes with colored pencil or ink. The District will check these drawings, and partial payments will not be made to the Contractor until the check made by the District verifies that the records are being properly kept. These construction drawings are to be kept in neat order and will be delivered to the Consulting Engineer at the completion of the project. Upon completion of revised as-built drawings, said drawings will be delivered as per B-12.

1-1.17 Disposal of Trench Soil

Surplus material excavated from pipeline trenches shall become the property of the Contractor and shall be disposed of legally in conformance with applicable County ordinances. The Contractor shall promptly furnish to the District copies of all grading permits and written permissions from landowners secured by the Contractor to dispose of trench soil.

1-1.18 Guarantee and Maintenance Bond

Prior to commencement of the work accomplished under District-approved plans, and as a condition of final acceptance herein, the Contractor shall execute and deliver to the District a guarantee of the materials, workmanship, and/or equipment that he or she shall have constructed or installed in the course of said work. This guarantee shall be in the form attached hereto and shall remain in full force and effect for a period of one year from the date upon which the District accepts the work. Should any failure of the work occur within the guarantee period, which can be attributed to faulty materials, poor workmanship, or defective equipment, the Contractor shall promptly make the needed repairs at his/her expense. A completed guarantee form shall be required before each job performed by a Contractor in the Sacramento Suburban Water District.

THE DISTRICT WILL NOT ACCEPT THE GUARANTEE LETTER AND NO WORK SHALL BEGIN UNLESS THE LETTER IS PLACED ON THE CONTRACTOR’S LETTERHEAD, SIGNED BY THE CONTRACTOR, FILLED OUT COMPLETELY AND INCLUDES THE STATEMENT OF FINAL COST OF THE WATER SYSTEM.

Prior to commencement of any work performed in Sacramento Suburban Water District, each Contractor shall be required to furnish an overall guarantee/maintenance bond or corporate surety bond, payable to the District, issued by an acceptable surety company authorized to do business in

the State of California, to protect the District against the results of faulty materials, poor workmanship, or defective equipment, and to guarantee the Contractor's responsibility for each completed work or project, as outlined above, for a period of one year from the date the District accepts the work or project. The bond also shall cover all subsequent jobs performed by the Contractor in the Sacramento Suburban Water District, if such works or projects are being constructed simultaneously or serially. The time limit of such bond will begin from the date the District first accepts the bond and will end on the anniversary date of the acceptance letter. The Contractor shall obtain the bond on forms furnished by the District in the sum of not less than \$25,000.00. It shall be the Contractor's responsibility to renew the bond on the anniversary date so as to cover all jobs that are started after initial bond submittal and so that it remains in effect for at least one year after the District accepts the last work on the project and issues an acceptance letter. Should the Contractor be unable to obtain a bond for the project, then the Developer shall furnish a bond. Said bond shall only cover the project and shall be no less than 50% of the contract amount for water facilities and be in effect for a period of one year from the date of the District's acceptance of the work or project.

GUARANTEE

(To be submitted on Contractor's letterhead)

Sacramento Suburban Water District ("District")
3701 Marconi Avenue, Suite 100
Sacramento, CA 95821

Dear Sir or Madam:

We hereby unconditionally guarantee that the construction performed under approved plans and/or contract dated _____, 20____, for the project entitled _____ will be done in accordance with the approved drawings and specifications and that work as installed will fulfill requirements of the guarantee included in the specifications. We agree to repair and/or replace at our sole cost and expense, and to the satisfaction of the District and its engineers, any or all of our work, together with any other adjacent work which may be displaced by doing so, that may prove to be defective in workmanship or materials within a period of one year from date of acceptance of above-named project by District, without any expense to said District, ordinary wear and tear excepted. We further guarantee that we will leave the site of any repair or replacement work in satisfactory working order and condition.

In the event of our failure to comply with the above-mentioned conditions, within ten days after being notified in writing by the District, we, collectively or separately, do hereby authorize the District to have said defects repaired and made good at our expense, and we will honor and pay the costs and charges therefore upon demand. In the event of such failure on our part, we further promise to pay such reasonable litigation costs, including attorney's fees and expert witness fees and costs, as a court with jurisdiction in the matter shall decide, should the enforcement or interpretation of this guarantee or any part thereof require legal action.

Company Name (Print)

Address

Phone Number

Contractor's License Number

Contractor's Signature

Print Name

The contract amount for water construction only: _____

**SACRAMENTO SUBURBAN WATER DISTRICT
ENCROACHMENT PERMIT / MAINTENANCE BOND**

KNOW ALL PERSONS BY THESE PRESENTS,

THAT WHEREAS _____
(hereinafter “Contractor”) as principal has applied or will apply to the Sacramento Suburban Water District (hereinafter “District”) for the issuance of a water system encroachment permit in accordance with and subject to the provisions of the District Improvement Standards and Technical Specifications (hereinafter “District Standards”) for installing or constructing water facilities or improvements (e.g., water mains, laterals, hydrants, services) and other work within streets, roads and easements in the District.

WHEREAS, the Contractor is required under the terms of the above-referenced permit(s) and District Standards to furnish, an encroachment bond to the District conditioned on compliance with the requirements of the permit(s) and District Standards in the penal sum of \$25,000.00.

NOW, THEREFORE, we, the Contractor as principal and _____
_____ (“Surety”), a corporation organized and existing under the laws of the State of California and authorized to transact business in the State of California as an admitted surety, are held and firmly bound unto the District in the penal sum of \$25,000.00, for the payment of which sum, well and truly to be made, we hereby bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT if the bounden Contractor, its heirs, executors, administrators, successors and assigns, shall (1) fully comply with the terms and conditions of the above-described permit(s) and District Standards and Technical Specifications, (2) maintain and remedy the work under the above-described permit(s) free from defects in materials and workmanship for a period of one year following completion, (3) indemnify and hold harmless the District from any and all claims, demands, lawsuits, liabilities, costs and actions of every nature, kind and description, brought for or on account of any damage or injury to the County of Sacramento or City of Citrus Heights streets, highways and easements, or any part thereof, or to any real or personal property, or to any person or persons caused by or arising out of any failure of the Contractor to comply with any of its obligations under any such permit(s) or District Standards and Technical Specifications, and (4) properly safeguard the work and the District water facilities, County and City streets, highways and easements and other structures thereon and thereof in as good condition as before the work, then this obligation shall become null and void as to the completed work; otherwise it shall be and remain in full force and effect and in the event suit is brought upon this bond by the District and it is the prevailing party, the Contractor and Surety shall pay all litigation costs incurred by the District, including reasonable attorney’s fees and expert witness fees and costs.

Notwithstanding anything in this bond to the contrary, the Surety's obligation hereunder shall continue so long as any obligation of the Contractor remains. The Surety, for value received, hereby agrees that no change, extension of time, alteration or addition to the terms of the encroachment permit or to the work to be performed thereunder shall in any way affect its obligations on this bond, and Surety hereby waives notice of any such change, extension of time, alteration or addition to the terms of the encroachment permit or to the work to be performed thereunder. The Surety hereby waives the provisions of sections 2819 and 2845 of the California Civil Code.

The address or addresses at which the Contractor and Surety (ies) may be served with notices, papers and other documents under the California Bond and Undertaking Law (Code of Civil Procedure sections 995.010 et seq.) is or is the following:

IN WITNESS WHEREOF, the principal and surety have executed and delivered this bond on _____, 20__.

CONTRACTOR

[Seal]

By: _____

_____ *[name]*

_____ *[title]*

SURETY

[Seal]

By: _____

_____ *[name]*

_____ *[title]*

Technical Specifications

Division 2 Pipelines & Appurtenances

Section 1 Materials

2-1.01 Materials and Brand Names

All materials and equipment furnished under these specifications shall be new and of a quality equal to that specified in this Section. Materials or equipment specified herein by brand or trade name or catalog designation are so specified or designated because they are known to be suitable for the operating service required of them. It is, however, not the purpose of these specifications to eliminate other material or equipment of equally demonstrated design and functional quality and efficiency. However, all material proposed to be used shall carry the AWWA stamp of approval with test results to verify the material satisfies AWWA Standards and shall be subject to approval by the District as specified in Subsection 1-1.10.

2-1.02 Material Testing

All testing requirements of the specifications shall be conducted by the pipe manufacturer or his/her representative within the State of California and the resulting tests shall be certified by an established, reputable firm acceptable to the District operating in the materials testing field.

2-1.03 Water Pipe

Pipe used in the construction of water distribution systems may be any of the types specified below, unless a particular type is specified or shown on the approved plans. It shall be the regular product of a firm who has successfully manufactured comparable pipe for at least three years.

Ductile Iron Pipe

Ductile Iron pipe (D.I.P.) shall be Pressure Class 350 unless specified otherwise and shall conform to AWWA Standard C-151. All ductile pipes shall be cement mortar lined and seal coated in conformance with AWWA Standard C-104. Joints shall be of a bell and spigot type conforming to AWWA Standard C-111, such as "Tyton Joint;" manufactured by U.S. Pipe and Foundry Co or "Fastite" manufactured by American DIP Co. Standard laying length shall be 18 to 20 feet. Installation shall conform to these specifications and AWWA Standard C-600. As required for certain pipeline installations, the District Engineer prior to use must approve any alternative types of pipeline restraints.

Ductile iron pipe used for trench-less methods or laid under culverts shall be pressure class 350. Pipeline joints for trench-less operations shall be of the type conforming to restraining assembly consisting of an integrally cast restrained joint bell, spigot end with a factory-welded alloy steel ring and a ductile iron-restraining ring.

Ductile Iron Pipe shall be used under all culverts and shall extend a minimum 5 feet beyond outside edge of the culvert as per Standard Detail No. 25. No joints shall be located under the culvert.

Polyethylene Encasement shall be required for all Ductile Iron Pipe installation, including fittings, valves, etc. Encasement material and installation methods shall conform to AWWA Standard C-105 with a minimum thickness of 8 mil and a 12 inch overlap.

All runs of water pipe and service lines shall have a No. 10 gauge solid, hard-drawn copper tracer wire. Tracer wire shall have 45 mil type TW insulation. Tracer wire shall be taped along the top of the pipe with 10-mil polyethylene tape. Installation shall conform to SSWD Standard Detail No. 4

Blue caution tape shall be laid along the top of the initial backfill to facilitate notification of facilities. Installation shall conform to Standard Detail No. 3.

2-1.04 Water Pipe Fittings

All junctions shall be flange connected, unless otherwise noted. All bends, elbows, tees, crosses, and special fittings shall be flanged unless otherwise noted and shall conform to the following requirements. Tie-ins to **existing facilities** shall be performed per Standard Detail Nos. 22 23, and 24 or in accordance with the following if conditions warrant.

- (1) Flanged tee, should a valve be required on the existing main or should the main be mortar lined steel pipe as per Standard Detail Nos. 22, 23 and 24.
- (2) Stainless steel tapping saddle for runs on existing mains with no additional valves on the existing main. Stainless steel tapping saddles shall not be used on mortar lined steel pipe 14 inches or smaller unless directed by District. However, the tapping saddle shall only be used when the run is as per the following chart:

Existing Main Size (inches)	Maximum Allowable Tap Size (inches)
4	No Tap Allowed
6	No Tap Allowed
8	6
10	8
12	8
14	No Tap Allowed
16	12
20	16
24	16

(a) Fittings for Water Pipeline

Fittings shall conform to AWWA Standards C-110 and C-153, Class 250, Ductile Iron only. Gaskets shall conform to AWWA Standard C-111. Joints shall be flanged or mechanical joint with mega lug type restraints, unless otherwise specified or shown on plans. Rubber-ring push-on joints for A.C. Pipe conforming to AWWA Standards C-110 and C-153 may be employed for 6-inch diameter or smaller pipe only. Field restraint type gaskets shall be used as necessary in conjunction with restraint type fittings shall be per Standard Detail No.11.

(b) Fabricated Steel Items

Fabricated adapter fittings and specials shall be made up of steel pipe, conforming to ASTM Designation A53, 35,000 psi Minimum Yield Strength, 1/4-inch wall, except 20-inch diameter through 24-inch diameter, which shall be 3/8-inch wall, greater than 24-inch through 36-inch shall be 1/2-inch wall thickness. Welding fitting shall be seamless steel conforming to ASTM Designation A-234. Flanges shall be Class "D," slip-on welding flanges welding front and back and faced, and all in accordance with AWWA Standard C-207. Pipe, fittings, and flanges shall be lined and coated, 12 to 15-mil thickness with a Fusion Bonded Epoxy Coating conforming to AWWA Standard C-213. The lining and coating material shall be 100% solids, thermosetting, fusion bonded, dry powder epoxy resin such as "Scotchkote No. 302" (3M Co.) or approved equivalent applied by the fluidized bed method only.

2-1.05 Conductor Pipe

Pipe used as a conductor under a highway, railroad, or other location shall be welded steel pipe manufactured of ASTM Designation A-245, commercial grade steel. All joints shall be butt-welded. Welded steel conductor shall have a minimum wall thickness of 1/4-inch for sizes up to and including 24-inch in diameter, 5/16-inch for sizes 27-inch to 36-inch diameter, and 3/8 inch for sizes greater than 36-inch to 42-inch diameter. Conductor pipes greater than 42-inches in diameter shall be designed by the Consulting Engineer and approved by the District prior to use.

Conductor casing shall be used for all trench-less methods unless otherwise directed by District.

2-1.06 Valves and Valve Boxes

Installation of valves, valve boxes, and appurtenances shall conform to Standard Detail No. 5 and as specified herein.

(a) Valves

All valves shall be Class 150 and shall meet or exceed the requirements of AWWA Standard C-504 for Butterfly type and AWWA Standard C-509 or C-515 for Resilient Seat type gate valves.

Valves shall be suitable for buried service, will be equipped with a 2-inch square operating nut, and will open counter-clockwise (CCW). Unless shown or otherwise noted on the plans, valves will be furnished with flanged, mechanical joint or push-on ends, conforming to the requirements set forth herein for water pipe fittings.

The type of valves shall be of the following or approved equivalent:

Butterfly Valves – Pratt, Mueller, DeZurik,.

Gate Valve – American Flow Control (AFC), Kennedy, Mueller, Clow.

Butterfly valves shall be used on 14-inch diameter and larger pipe, and shall have seat in body, not on disc.

Resilient Seat gate valves shall be used on 12-inch or smaller pipe unless otherwise noted.

(b) Valve Boxes

Valve boxes shall be Christy G04, Tyler Union G05 or approved equal having a cast iron face and cast iron traffic lid. Covers will be marked “WATER” and shall have a tight fit in the box.

Valve box risers shall be fabricated from 8-inch diameter PVC (SDR-35) or C-900 PVC pipe or equivalent.

(c) Valve Operating Extension

A valve operating extension shall be required whenever the valve is installed such that the operating nut is more than 48 inches below finished grade. The valve operating extension will be fabricated from steel elements to the dimensions shown on Standard Detail No. 5.

(d) Valve Aligner

Valve aligners shall be required on all valves placed in Sacramento Suburban Water District. Aligners shall be installed as shown on Standard Detail No. 5 and be sized to fit within the riser pipe as designated by these specifications.

2-1.07 Fire Hydrants

Fire hydrants and appurtenances will be furnished and installed in conformance with Standard Detail No. 6, as designated on the plans, and as specified herein.

The hydrant main valve will be minimum 5 1/4 inch diameter; will open CCW, with bronze-to-bronze seating. The foot piece will have mechanical joint inlet with mega lug type restraints for connection to the 6-inch diameter ductile iron pipe hydrant lateral.

Hose nozzles shall be threaded-in, with one (1) 4 1/2-inch diameter Pumper Outlet and two (2) 2 1/2-inch Hose Outlets, having “National Standard Fire Hose Coupling Screw Threads,” conforming to ASA Standard B26 or unless otherwise specified. The hydrant nozzle caps will be securely chained to the body. Pumper Outlet shall face the street or traffic lane unless specified otherwise. In the event that the hydrant must be disassembled to rotate the pumper outlet so that it faces the street, new gaskets will be applied to the hydrant when it is reassembled.

Even though not indicated on the plans, every fire hydrant installation must have a resilient seat gate valve installed on the lateral at the tee from the main and all piping shall be restrained from hydrant tee to hydrant foot piece.

Fire hydrants 50 feet or farther from the connecting water main shall have an 8-inch lateral and valve.

“Steamer” fire hydrants shall be wet-barrel type, shall meet or exceed the requirements of AWWA Standard C-503 and shall be CLOW Model No. 960 or 860, JONES Model J4060, or approved equal. Hydrants must be a traffic-type equipped with an approved break-off protection device, such as LBI Model No. 400 BOCVA or AVK Series 2488 or James Jones Model J5000 series. The portion of the completed hydrant above the “breakable” flange shall be finish-painted with “RUST-O-CRYLIC” No. 5747 Yellow. Installation shall conform to Standard Detail No. 6. All fire hydrants shall be traffic protected by guard posts as per Standard Detail No. 7 unless otherwise noted.

2-1.08 Service Lines and Fittings

Service lines and fittings shall be furnished and installed in conformance with Standard Detail Nos.13, 14, 15, 16, 17, 18, 19, and 20, and as specified herein.

(a) Service Saddles

Service saddles shall conform to the following, depending on the type and size of water main onto which they are to be mounted.

All Pipe (6-inch through 12-inch diameter main) – except mortar lined steel

Brass body, double strap brass saddle casing, drilled and tapped for corporation stop, and be of all brass and shall be of the following: JAMES JONES 979, ROMAC 202B, FORD 202B, ROCKWELL 323, MUELLER BR2B or approved equal.

All Pipe (16-inch through 24-inch diameter main) – except mortar lined steel

Brass body, stainless steel band of brass, drilled and tapped for corporation stop, and shall be of the following: JAMES JONES 979, MEULLER BR2B, FORD 202BS, ROCKWELL 323, or approved equal.

Mortar Lined Steel Pipe (all sizes)

Stainless steel full circle repair clamp with iron pipe tapped service outlet (Repair Clamp). Repair clamp model is subject to District review and approval. Mortar shall be removed to attach repair clamp on bare metal. Contractor to primer (Protecto Wrap

No. 1170), mastic (Henry 208 Wet Patch) and grout (non-shrink) repair clamp after installation. Inspection by the District is required.

(b) Corporation Stop

Corporation stops shall be ball valves and lead free brass (ASTM Designation B62) with a standard male iron pipe thread inlet and compression (“Pack Joint”) outlet for copper tubing. Corporation stops shall be of the following models, or approved equal, conforming to the following table of sizes:

Service Size (inches)	FORD Model No.	JAMES JONES Model No.	McDONALD Model No.	MUELLER Model No.
1	FB1100-4-NL	J-1435SG	74704-BT	B-25028NL
1 1/2	FB1100-6-NL	J-1935SG	74704-BT	B-25028NL
2	FB1100-7-NL	J-1935SG	74704-BT	B-25028NL

(c) Service Line

Service lines in sizes up to and including 2 inches in diameter shall be polyethylene-coated “Type K” copper tubing soft tempered, meeting ASTM Designation B88.

Service lines larger than 2 inches in diameter up to and including 4 inches shall be Ductile Iron Pipe Pressure Class 350 with Bell and Spigot joints.

Service lines larger than 4 inches in diameter shall conform to Section 1.03 and 1.04 herein.

(d) Meter Setters and Fittings

Meter setters shall be copper with full port angle ball meter stop valve with lock wing on the inlet side and outlet side. Connection to inlet piping shall be compression type pack joint inlet or CTS quick joint and FIP outlet with a double purpose coupling on 1-inch setters. Setters for 1-1/2 inches and 2 inches shall have flanged valves with lock wings on inlet and outlet side with high bypass (bypass tee not drilled). Connection to inlet piping shall be compression type pack joint or CTS quick joint inlet and a FIP outlet.

Meter Size (inches)	Setter Size (inches)	FORD Model No.	MUELLER Model No.	McDONALD Model No.
*5/8	3/4	VBB73-83W-41-33- FP-Q-NL	309B2478----04N	739D309JJQD33
3/4" & 1	1	VBB74-84W-41-44- FP-Q-NL	390B2478----04N	739-410JJQD44
**1 1/2	1 1/2	VBB76-18HB-11- 66NL	098B2423----00N	720R618WWFF665
2	2	VBB77-18HB-11- 77NL	106B2423----00N	720R718WWFF775

- * Use adapters for 5/8" meters on 3/4" setters and 3/4" meters on 1" setters.
- ** A 1 1/2" metered residential domestic service does not require a by-pass.

(e) Boxes shall be of the type listed below:

Meter Size (inches)		Non-Traffic	Incidental Traffic	Heavy Traffic
5/8 & 3/4 & 1	Box	Armorcast P6001868x12 (Rotocast 13"x 24") B-30	Armorcast, RPM A6001946PCx12 (Polymer 13"x 24") B-30	Christy Concrete B1324BOX
	Lid	Armorcast A6001969-H13	Armorcast A6001969-H13	B132451PH001-1
	Box	Carson B30 Tier 22 PC132412-T22SW	Carson B30 Tier 22 PC132412-T22SW	
	Lid	PC1324-T22	PC1324-T22	
1 1/2" & 2	Box	Armorcast P6001534x18 (Rotocast 17"x 30") B-36	Armorcast, RPM A600140PCx18 (Polymer 17"x 30") B-36	Christy Concrete B1730BOX
	Lid	Armorcast A6001947T-H13	Armorcast A6001947T-H13	Christy B173051PH001-1
	Box	Carson B36 Tier 22 PC173018-T22SW	Carson B36 Tier 22 PC173018-T22SW	
	Lid	Carson PC1730-D,T22	Carson PC1730-D,T22	
3" & 4	Box	Armorcast RPM A6001430PCx18 (Polymer 30"X 48") B-48	Armorcast RPM A6001430PCx18 (Polymer 30"x 48") B-48	Jensen 3048 Model PB3048
	Lid	Armorcast A6001470TA-H13	Armorcast A6001470TA-H13	Jensen 3048 TRF Torsion Spring Assisted Cover w/ AMI Hole(s)
	Box	Carson B48 Tier 22 PC304818-T22SW	Carson B48 Tier22 PC304818-T22SW	
	Lid	Carson PC3048-D,T22	Carson PC3048-D,T22	

Steel lids for traffic situations shall match box size and be constructed from diamond plate material. Lids to meter boxes containing meters shall be marked "WATER" and have an endpoint hole with the following dimensions: 2-inch diameter hole drilled in a 1/4-inch diameter recessed 3 7/16-inch

diameter depression at 4 inches equal distance from any corner of lid for radio read antenna. Lids to boxes containing blow offs shall be marked "BLOW OFF".

2-1.09 Flexible and Transition Couplings and Mechanical Joint Sleeves

Flexible couplings and transition couplings shall be ductile iron and epoxy coated per AWWA C111, AWWA C213, AWA C219, ROMAC MODEL 501, FORD FC2-12L, SMITH BLAIR No. 462, or approved equal. Flexible and transition couplings must be 12-inch minimum in length unless otherwise directed by District.

If applicable and approved by District inspector, wide or extended range couplings may be used. The extended range couplings shall also be bolted with ductile iron sleeve and end rings, FORD FC2W-L12, ROMAC XR501 or approved equal. Couplings shall be a minimum of 12-inches in length.

Flange coupling adaptors shall not be used on District facilities without prior approval of the District Engineer.

Outside diameter steel pipe and mortar-lined steel pipe shall have Protecto Wrap No. 1170 adhesive primer installed directly on the pipe. Wet surface plastic roof cement Henry 208 shall be installed over the Protecto Wrap No. 1170. A non-shrink concrete grout shall be installed over the Henry 208. Contractor shall allow District ample time to verify pipeline is properly coated.

Mechanical joint sleeves shall be ductile iron and comply with AWWA C110. Sleeves shall be a minimum of 12-inches in length.

2-1.10 Sampling Stations

Sampling stations for coliform testing shall be a P6002010 Armorcast Water Sampling Station, manufactured by the Armorcast Company. Sampling Stations shall be installed per Standard Detail No. 28

Technical Specifications

Division 2 Pipeline and Appurtenances

Section 2 Installation and Construction

2-2.01 Trench Excavation

Trench excavation shall include removal of all materials or obstructions of any nature, the installation and removal of all sheeting and bracing, and the control of water, necessary to construct mains, services, or other works. Unless otherwise indicated on the drawings or permitted by the District, excavation will be open cut.

(a) Trench Depth and Width

Trenches shall be dug to an even laying grade to a depth sufficient to provide 36 inches of minimum cover over the pipe measured from the finished grade. For pipe diameters larger than 12 inches, minimum cover shall be 42 inches measured from the finished grade. Maximum depth to top of pipeline shall not exceed 60 inches without approval of District.

The minimum clear width of trench at the top of pipe shall be the larger of:

- a) 18 inches; and
- b) 12 inches greater than the outside diameter of the barrel of the pipe.

The maximum clear width of trench at the top of the pipe shall be the outside diameter of the pipe plus 24 inches.

The Contractor shall conduct his/her operations to limit top widths to the above-specified maximum at the top of the pipe unless the District allows a greater allowable width.

If trench widths at the top of the pipe as specified above are exceeded by any amount, for any reason, the Contractor shall provide at his/her own expense and as approved by the District: stronger pipe, and/or improved bedding conditions, and/or concrete protection, to meet the load requirements of the condition.

(b) Cutting of Pavement

When the trench is in an existing paved area, the pavement shall be sawed or scored on neat lines parallel with and equidistant from, the trench centerline. Pavement between lines shall be broken and removed immediately ahead of the trenching operations. The width of the pavement removed shall be sufficient that the trenching operation does not damage the edges of the pavement left in place. When existing pavement is concrete,

it shall be sawed to a neat line 6 inches wider on each side than the actual trench width or as specified by Sacramento County Improvement Standards.

(c) Bracing and Shoring

All construction of water systems intended to be connected with the District's system must be constructed in strict compliance with the statutory safety requirements of the State of California as set forth in California Administrative Code, Title 8, and all amendments thereto, and all applicable County and District ordinances, rules, orders and regulations. Any violation by the Contractor of any safety law, ordinance, order, rule or regulation shall be sufficient cause for the District to immediately suspend the work. No compensation for losses incurred by the Contractor for such a suspension shall be allowed.

Insofar as possible, sheeting shall not extend below the bottom of the pipe barrel. All sheeting, timbering, lagging, and bracing shall, unless otherwise required by the District, be removed during backfilling, and in such a manner as to prevent any movement of the ground or damage to the piping or to other structures. When the District requires that sheet piling, lagging, and bracing be left in place, such materials will be cut off where designated and the upper part withdrawn, with compacting of backfill to proceed as it is removed.

(d) Maximum Length of Trench Open

There will be no more than a maximum of 100 feet of open trench, unless otherwise authorized by the District for each operation. The remainder of the trench shall be backfilled and compacted, and when in streets, opened to traffic as soon as possible.

(e) Control of Water

When water is encountered, the Contractor shall furnish, install, maintain and operate all necessary machinery, appliances, and equipment to keep the excavation reasonably free from water until the placing of the bedding material, laying and jointing of pipe and fittings, pouring of concrete, and placing of the initial backfill has been completed, inspected, and approved, and all danger of flotation and other damage is removed. Ground water pumped from the trench shall be disposed of in such a manner as shall not cause injury to public or private property or constitute a nuisance or menace to the public, and the disposal method shall be subject to the approval of the State Regional Water Quality Control Board.

(f) Special Foundation Treatment

Whenever the bottom of the trench is soft or rocky or, in the opinion of the District, otherwise unsuitable as a foundation for the pipe, the unsuitable material shall be removed to a depth such that when replaced with imported crushed rock or gravel, it shall provide a stable and satisfactory foundation. The imported crushed rock or gravel

shall be graded so that 100% shall pass the 3/4-inch sieve and not more than 10% shall pass the No. 8 sieve.

When the trench bottom is cobbled or of any other material, which, in the opinion of the District, might allow loss of sand bedding, the bedding material shall be crushed rock or gravel graded so that 100% shall pass the 3/4-inch sieve and not more than 15% shall pass the 1/2-inch sieve.

2-2.02 Trench Bottom Preparations and Pipe Bedding

Unless otherwise specified, the trench shall be excavated so as to provide a minimum of 4 inches between pipe barrel and undisturbed earth. This undercutting shall be refilled with clean, imported sand, thoroughly compacted into place

When approved by the District, pipe may be supported on earth mounds where the trench bottom is solid and firm mounds can be built that shall hold the pipe from settling during and after assembly until initial backfill has been placed in accordance with Section 2-2.06 herein. The location and number of earth mound supports shall be in accordance with the pipe manufacturer's recommendations.

Supporting pipe on blocks shall not be permitted.

2-2.03 Pipes and Fitting Installation

All pipe, valves, fittings, and appurtenances shall be installed in accordance with the manufacturer's recommendations and according to accepted water works practice. Each section of pipe and each fitting shall be thoroughly cleaned out before it is installed. All pipe, fittings, valves, etc., shall be carefully lowered into the trench by suitable tools or equipment in such a manner as to prevent any damage, particularly to the lining and coating. When required by the District, approved slings shall be used to lower the pipe. Under no circumstances shall pipe or accessories be dropped into the trench. All pipe, valves, fittings, and appurtenances, before lowering into the trench, shall be examined for defects. Any defective, damaged, or unsound materials shall be rejected. All material must be new and in undamaged condition.

The pipe shall be laid true to line with no visible change in alignment at any joint unless curved alignment is shown on the plan, in which case the maximum deflection at any joint shall not exceed the manufacturer's recommendations for the type of pipe joint being used.

Under no circumstances shall small sections of pipe be installed unnecessarily unless approved by the District.

No bells or fittings shall be installed within 4 feet under any structure unless approved by the District.

Thrust blocks of Class "B" concrete shall be cast in place at all horizontal or vertical bends of four (4) degrees or more, behind each plug, tee, or cross which is valved or plugged in such a manner that it can act as a tee or elbow, and at the back of each fire hydrant. The thrust block shall extend

from the fitting to undisturbed soil, shall be kept clear of the joints, and shall be of such bearing area as to assure adequate resistance to the force to be encountered. All bolts, valves, and flanges shall be covered with plastic wrap, 8-mil thick minimum prior to pouring concrete thrust blocks. Size of blocking shall be in accordance with Standard Detail No. 10.

Restrained Joints required at all fittings and where District sees fit per SSWD Standard Detail No. 11.

Whenever pipe laying is discontinued for an hour or more, the open end of all mains and fittings shall be closed with watertight plugs or bulkheads. The plug or bulkhead shall not be removed unless, or until, the trench is dry. Pipe shall not be laid when the condition of the trench or the weather is unsuitable.

All pipe jointing, including the maximum deflection of joints in curved alignments, shall be in accordance with accepted best practices and as detailed in the manufacturer's installation manual. Both joint surfaces shall be clean before joints are made. Materials used in jointing the pipe shall only be that furnished with the pipe or recommended by the manufacturer.

When necessary to cut pipe, it shall be neatly and squarely cut to length using methods recommended by the manufacturer.

Tie-ins to existing mains shall be done in accordance with Standard Detail No. 21. Pipe to be cut in conformance with Division of Industrial Safety requirements.

2-2.04 Tracer Wire and Caution Tape

All pipe installations shall include tracer wire and caution tape.

Tracer Wire

Tracer wire shall be blue-insulated, hard-drawn, solid copper, No. 10 gauge, Copperhead Reinforced Tracer Wire. Bare wire connections shall be made with DryConn Direct Bury Lug connectors.

The wire shall be affixed along the top of the pipe and fittings by taping onto the poly wrap with 10-mil. polyethylene tape. Taping shall be sufficient to prevent movement or dislodging of wire by contractor's subsequent work.

The tracer wire shall be stubbed up inside each valve box and placed as shown on Standard Detail No. 4.

Prior to placement of final pavement, contractor shall test wire to verify continuity, locate and repair any breaks in the locator wire identified in the test. The cost of testing, repairing or replacing shall be borne by the contractor. The contractor is advised to use care in the installation and backfilling operations to prevent damage to the wire.

Caution Tape

Blue caution tape, 12-inch wide, non-metallic, shall be placed on top of the initial backfill over the center of the pipe per Standard Detail No. 3.

2-2.05 Setting Valves, Fire Hydrants, and Blow-Off Assemblies and Air Release Assemblies

Installation of valves, valve boxes, and appurtenances shall conform to Standard Detail No. 5 and these specifications. Whenever valves are to be installed at a pipeline junction, the valves shall be flange-connected to the tee or cross type fittings.

Installation of fire hydrants shall conform to Standard Detail No. 6 and these specifications. Guard posts shall conform to Standard Detail No. 7.

Fire Hydrants shall stand plumb with the pumper outlet facing the street. The pumper outlet of “steamer” hydrants shall be set at least 18 inches above the sidewalk or finished ground surface, whichever is higher.

A minimum 6-inch lateral shall serve the hydrant from the main, containing a valve to enable repairs to be made to the hydrant without shutting down the main. Hydrant laterals greater than 50 feet in length shall be 8-inch minimum diameter or as necessary to provide required fire flows.

In no case shall a fire hydrant be installed within 3 feet of a building or any other structure that would limit access. Hydrants shall be located 4 feet back of walk or curbs and in planters whereby sufficient space is available for guard posts as shown in Standard Detail No. 7. Hydrants may be required to be relocated to provide sufficient space.

Blow-off assemblies shall be constructed as shown on Standard Detail Nos. 8 and 9. The location shall be such that there shall be no possibility of back siphonage into the distribution system.

Air release assemblies shall be constructed as shown on Standard Detail No. 12. The location shall be such that the assembly functions as designed.

2-2.06 Initial Backfill

Imported sand shall conform to Sacramento County Standard Construction Specification Section 10-13.02 “Graded Sand”. The trench section shall be backfilled per Standard Detail No. 3.

Compaction by flooding or jetting is prohibited.

2-2.07 Intermediate Backfill

Backfill shall be furnished and placed in conformance with Standard Detail No. 3 and these specifications. All backfill shall be placed and compacted to a minimum relative compaction of 95 percent as determined by the test method currently being employed by the County of Sacramento unless specified otherwise in the Special Provisions or County Encroachment Permit and approved by the District. Mechanical compaction methods shall be employed.

(a) Backfill Material: Existing or Proposed Roadways

Intermediate backfill material shall be Caltrans Class 2 Aggregate Base, 3/4-inch maximum particle size, conforming to Sacramento County Standard Specification SS-17, for all streets as specified by County Standards.

(b) Backfill Material: Unpaved

Backfill shall be "Imported Select Material," conforming to Sacramento County Standard Specification SS-10. Subject to specific prior approval from the District and local agency, job excavated material; free of debris, organic matter, or pieces less than 3 inches may be used for intermediate backfill.

Compaction by flooding or jetting is prohibited.

2-2.08 Other Backfill Requirements

In addition to the requirements outlined above, the following conditions shall govern when applicable.

(a) Bracing and Shoring

Where bracing and shoring is used in an excavation (i.e., trench, bore pit), the backfill shall be carried to a height sufficient to prevent the surrounding ground from cracking and caving into the excavation before the bracing and shoring is lifted or removed. . Bracing or shoring permits and details may be required prior to construction of any improvement.

(b) Backfill of Service Lines

Where service lines are installed by open cut methods, the trench shall be backfilled in the same manner as for water main trench.

2-2.09 Installation of Water Services

Water service shall be furnished and installed in conformance with Standard Detail Nos. 13, 14, 15, 16, 17, 18, 19, and 20.

Applicable codes prohibiting the laying of water pipe in the same trench as the sewer service shall be enforced.

(a) Connections to Existing Mains

The Contractor shall make service connections to existing mains. The District may authorize a contractor, who is licensed to perform and is active in underground pipeline construction and installation, to make the connections to existing mains. Service

connections connected to existing mains must be made by using materials and equipment to make taps under pressure without removing the main from service.

(b) Installing Meter Setters and Meter Boxes

Contractor shall install all meter setters with a water meter of proper size. After backfilling of a service line is completed, a “can-like” cover shall physically protect the meter setter until the meter box is set. Should there be any damage (i.e., vandalism, theft, and freezing) to the meter setter, meter, endpoint, and meter box prior to system acceptance; the Contractor shall replace the damaged unit with a new one, at no cost to the District.

All meter boxes shall be set with the top cover flush with the abutting sidewalk or finished grade and shall be solidly founded and backfilled so there is no settlement.

2-2.10 Threaded Joints

Threaded joints for service connections, air release assemblies, etc., shall be made with Teflon Plumber’s Tape.

2-2.11 Water Facilities Corrosion Protection

All underground water facilities shall be protected from potential corrosion. Ductile iron pipe shall be protected with polyethylene encasement per manufacturer’s specifications. Tees, ells, valves and special fitting shall be wrapped in plastic 8 mil thick minimum prior to any pouring of concrete or backfill. New copper water services shall be protected with a polyethylene coated encasement. Existing copper services meeting District standards shall be modified and reused per Standard Details. Two (2) 4-pound high-purity zinc anodes shall be installed and connected to the existing copper service line with a brass cable-to-pipe clamp. The anodes shall be buried below the meter setter.

2-2.12 Boring and Jacking

When specified or permitted by the District, the water main shall be placed in a conductor pipe where crossing under a creek, roadway, railroad, or other obstruction by boring and jacking. All borings shall be accomplished with vertical and horizontal control. Prior to permitting a water line crossing by boring and jacking under any of the listed crossings, structural elements and other utilities shall be identified. Before proceeding with the work, the District will approve the equipment and method of operation.

Excavation for the boring operation shall be the minimum necessary to satisfactorily complete the work. Bracing and shoring shall be adequate to protect working personnel and any adjacent infrastructure (e.g., structure, pipeline, railway, roadbed).

(a) Installation of Conductor

The conductor shall be jacked simultaneously with the boring operation. The bored hole shall not be more than 0.1 feet larger in diameter than the outside diameter of the conductor. Adjoining sections of the conductor shall be fully welded together. The conductor shall extend 5.0 feet minimum beyond each end of the bore, or greater as specified by the District.

(b) Placing Pipe in Conductor

Pipe sections shall be jointed outside the conductor and then slid into place inside the conductor. The pipe shall be strapped with casing insulators, Calpico Model PC or M, or approved equivalent, centered at points approximately one-fifth (1/5) the pipe length from each end of pipe segment.

The space between the pipe and the conductor shall be left as-is or filled with sand as specified by the District. The ends of the conductor shall be end-sealed with Calpico Model W End Seals, or as specified by the District.

(c) Backpacking of Voids

Whenever, in the sole opinion of the District, the nature of the soil indicates the likelihood of ground loss which would result in a greater space (void) between the outer surface of the conductor than herein allowed, the Contractor shall take immediate steps to prevent such occurrences by installing a jacking head extending at least 18 inches from the leading edge of the conductor. The jacking head shall cover the upper two-thirds (2/3) of the conductor and project not more than one-half (1/2) inch beyond the conductor's outer surface. Excavation shall not be made prior to the jacking head.

Voids greater than allowable shall be filled with sand, soil, cement, or grout as directed by the District. Where voids are suspected, the District may direct the Contractor to drill the conductor, pressure inject grout to refusal, and then to repair the drilled hole. Grouting pressure shall not exceed 50 psi at the nozzle.

2-2.13 Directional Boring

Installation of pipelines shall not be installed by directional boring methods without the approval of the District and the County of Sacramento. If directional boring is approved, the contractor shall provide the following prior to start:

- Design layout for the bore pit and receiving pit.
- Borehole size.
- Grout material and design to be introduced to fill the void space between the water main and bore hole.
- County of Sacramento approval of the traffic control plan for the bore.

Installation of water services 4-inches and smaller by directional bore procedures is typically an acceptable method, and subject to District review and approval. Water services installed by directional methods shall be installed per County of Sacramento improvement standards.

2-2.14 Clean Up

During the progress of the work, the Contractor shall keep the entire job in a clean and orderly condition. Any spillage resulting from hauling operations along or across existing street/road shall be removed and cleaned immediately by the Contractor. Contractor shall govern his/her operations and methods at all times to minimize dust problems within the area of the work or along adjacent properties and rights-of-way. Water or dust palliative shall be applied as required to provide adequate dust control to the satisfaction of the District.

2-2.15 Hydrostatic Tests

After completion of the installation, the Contractor shall test all piping to the pressure specified below. The Contractor shall furnish all material, equipment, and labor for such testing. The water services shall be considered as part of the main for test purposes.

In no case shall there be placement of permanent pavement prior to successful completion of the test. Thrust blocks shall have been in place for at least 36 hours if high-early strength cement and/or an approved acceleration admixture was used, or at least 4 days if standard cement was used.

Each section of the system to be tested shall be slowly filled with water, and all air shall be expelled from the pipe. The release of air can be accomplished by opening hydrants and service line cocks at the high points of the system and the blow-offs at all dead ends. The valve controlling the admission of water into the section of pipe to be tested should be opened wide before shutting hydrants or blow-offs. After the system has been filled with water and all air expelled, all valves controlling the section to be tested shall be closed; the line shall remain in this condition for a period of not less than 24 hours.

Following the 24 hour period above, the pipe shall be refilled if necessary. The pipe shall then be subjected to a test pressure for a period of 2 hours. Test pressure shall be not less than 150 psi, or the service pressure plus 50 psi, whichever is greater, as approved by the District..

The allowable leakage in the test section shall be in accordance with AWWA C-600 and shall not exceed 0.0919 gallons per hour per inch diameter per 1,000 feet of main being tested.

All leaks shall be corrected immediately and the system again subjected to the same test for a period of 2 hours. Even if the leakage is less than allowable, all observed leaks should be repaired.

The Contractor shall take all necessary precautions to prevent any joints from drawing while the pipelines and their appurtenances are being tested. The Contractor shall, at his/her sole expense, repair any damage to pipe and appurtenances or any other structures resulting from or caused by these tests.

2-2.16 Disinfection and Flushing of Water Lines

Prior to acceptance of the system by the District, all mains shall: a) be disinfected and have passing test results for both total coliform and E. coli.; and b) be thoroughly flushed.

Disinfection

After all other work has been completed, and prior to placing in service, all water lines shall be disinfected in accordance with the most recent version of AWWA Standard C-651. While the District prefers water lines to be disinfected by the Continuous-Feed Method of Chlorination, the Tablet/Granule Method of Chlorination referenced in AWWA Standard C-651 is also acceptable. The Contractor is encouraged to submit a Water Line Disinfection Plan (including calculations) to the District before initiating the disinfection process.

The initial chlorine concentration to be dosed or otherwise established in the water lines shall be between 25 and 50 parts per million (milligrams per liter, or mg/L). The chlorine residual after 24 hours shall be at least 10 mg/L from all discharge points. If the chlorine is less than 10 mg/L, the disinfection process shall be repeated.

Analytical test result reports shall be submitted to the District for review and approval. Where testing and/or reports are considered insufficient, in the District's sole opinion, they shall be performed again at no cost to District.

Flushing

For projects involving over one (1) acre of disturbed area, the Contractor shall be responsible for obtaining an NPDES permit from the California Regional Water Quality Control Board for all discharges to the storm drain system.

Discharges associated with projects that are less than one (1) acre shall be covered under the District's NPDES permit. All discharges covered by the District's NPDES permit, shall be coordinated in advance with District staff. The District's NPDES permit requires specific monitoring and documentation for super-chlorinated discharges and discharges greater than 1 acre-foot (326,000 gallons). Therefore, these types of discharges must be coordinated with District staff at least five (5) business days prior the intended discharge. The District will provide forms for monitoring and documentation. The forms shall be completed and returned to the District as a condition of water service.

2-2.17 Regulations Relating to Sanitary Hazards

All construction shall conform to applicable regulations relative to safeguarding the public health, particularly the regulations relating to cross-connections as established by the California Administrative Code, Title 17, Chapter V, and Sections 7583-7622.

2-2.18 Water Used in Construction

Water used for testing, flushing or any other construction operation that is drawn from a District system shall be paid for at the District's current construction water rate. No water shall be drawn from a District system, until an application for a hydrant permit has been submitted by the Contractor and approved by the District. The Contractor shall be required to use a District issued hydrant meter and backflow assembly to draw water from the District system. A refundable deposit is required per the District's Regulation No. 3.

2-2.19 Water Facility Abandonment

Water facility abandonment shall be according to one of the following methods:

Backfill shall be furnished and placed in conformance with Standard Detail No. 3 and these specifications. All backfill shall be placed and compacted to a minimum relative compaction of 95 percent as determined by the test method currently being employed by the County of Sacramento unless specified otherwise in the Special Provisions or County Encroachment Permit and approved by the District. Mechanical compaction methods shall be employed.

(a) Mains/Pipelines

Water mains shall be abandoned in place unless otherwise directed by the District. Abandoned mains shall be disconnected and capped per Standard Detail No. 26. A concrete thrust block shall be placed against the cap. Thrust block size shall be in accordance to Standard Detail No. 10. Valves shall be abandoned in place and the risers backfilled per Standard Detail No. 26.

(b) Valves

Valves shall be abandoned in place and risers backfilled per Standard Detail No. 26.

(c) Fire Hydrants

Fire hydrants shall be removed and abandoned per Standard Detail No. 27.

(d) Tees

Tees shall be removed unless otherwise noted. Tees shall be replaced with section of pipe and ductile iron coupling or mechanical joint sleeve.

(e) Crosses

Crosses shall be removed unless otherwise noted. Crosses shall be replaced with tees or with sections of pipe as determined by District.

(f) Services

Water services shall be abandoned per Standard Detail No. 1, General Note 12. The District shall determine the method of abandonment.