October 30, 2026

Northridge Well Phase 2
Fair Oaks Water District

# ADDENDUM 1

PROJECT: Northridge Well Phase 2, Equipping and Site Improvement Project
Project No. C26WTNWRE

Instructions to Prospective Bidders:

This Addendum forms a part of the Contract Documents and modifies the original Bidding Documents and Contract Documents issued for this Project. All conditions, requirements, materials and workmanship are to be as described in the Contract Documents unless specifically stated otherwise. This Addendum consists of 9 Addendum pages and 11 pages of Addendum attachments for a total of 20 pages, not including the FOWD Standard Specifications, which are also attached.

Acknowledgement of Receipt of this Addendum shall be included in the space provided on Page 1 of the Bid Proposal submitted for the Northridge Well Equipping and Site Improvement Project.

**Item 1.1** Estimated Cost for the County Encroachment Permit Required for Work Within the Kaula Drive Right of Way.

*The estimated cost to obtain the County Encroachment Permit for work within Kaula Drive is $600 with a $2500 refundable deposit. Work permitted within the Kaula Drive Right of Way will typically be limited to 8:30 a.m. – 3:30 p.m. weekdays. These limits may be reduced by the County to avoid conflicts with School traffic to and from Northridge Elementary School.*

**Item 1.2** Cost for Temporary Meter to Obtain Construction Water From FOWD.

*Per Section 01000, "Summary and General Requirements", Article 1.11.B, Water, there is an existing FOWD hydrant on Kaula Drive opposite the Northridge Well site. The District may also provide a temporary wharf hydrant at the Project site for construction water. The District will waive all deposits and fees for use of the Districts' construction meter installed by the Contractor at either the existing hydrant on Kaula Drive or at a temporary onsite hydrant.*

**Item 1.3** Application for Project Electric Service.

*The District has completed the application to SMUD to provide electric service for the Northridge Well Equipping and Site Improvement Project. Section 16010,"Electrical General", Article 1.05 B.1 of the Project Specifications, therefore, does not apply to this Project.*

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**Item 1.4** Permitted Times that the Offsite Water Main in Kaula Drive may be Shut Down.

*The District will permit shut down of the water main in Kaula Drive from 9 a.m. to 3 p.m. Monday - Thursday. Contractor shall provide FOWD 48 hours notice prior to shut down. Shut downs will not be permitted on consecutive days. There are 5 services that will be impacted by the water main shut down on Kaula Drive.*

**Item 1.5** Connection to Existing 8" Diameter ACP Water Mains in Kaula Drive.

*The scope of the main water improvements in Kaula Drive includes connections to, and modifications of, existing 8" diameter ACP water mains in Kaula Drive. As part of the Project contract requirements, the Contractor will be required to provide the proper handling, removal and off haul of AC pipe, as needed, to complete construction of the Project improvements.*

**Item 1.6** Chemical Room Floor Drain.

*Plan Sheet M3, Detail 1, includes a mud valve installed on the tapered flange of the Chemical Room floor drain. Since the floor drain at this location will also serve as the discharge from the chlorine residual analyzer, installation of a mud valve at this location will be deleted.*

**Item 1.7** System Integrator.

*Project Specification Section 16010, "Electrical General", Article 1.03 B.5 (System Integrator) is amended to include Soffa Electric Inc. (916) 260-2600.*

**Item 1.8** Submittal of Project Pre-Qualification Application**.**

*Per Page 1, Item 7, of the Bid Proposal, Prospective Bidder must submit a completed Project Pre-Qualification Application on or before November 6, 2026, one week prior to the Bid due date.*

**Item 1.9** Building Slab on Grade Structural Section

*The Well Building Slab on Grade Structural Section shall be 8" thick concrete with # 5 rebar @12" CC EW as shown on the Foundation Plan, Plan Sheet 2.0. This section exceeds the minimum recommended Slab on Grade structural section recommended in Project Geotechnical Report. The structural section included in the Project Plans controls. A 4-inch-thick section of crushed rock is not required under the 8-inch-thick concrete section for the Building Slab on Grade construction.*

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***Item 1.10*** *Foundation Waterproofing*

*Prospective Bidders should refer to Plan Sheet A4, Detail 1 and Plan Sheet A7, Detail 1. The foundation waterproofing membrane and metal trim edge shall extend 6 inches above the adjacent grade. The existing school play area grades located at the back of the proposed Well Building range from elevation +/- 219.0 to +/- elevation 219.5. The foundation waterproofing membrane and metal trim edge shall, therefore, extend to elevation +/- 219.5 to elevation 220.0.*
*The waterproofing membrane and metal edge trim is only required along the back of the Well Building wall and is not required along the back of the rest of the CMU perimeter wall.*

***Item 1.11*** Preferred Pump Installation Subcontractor

*Loewen Pump is the District's preferred pump installation subcontractor*

**Item 1.12** (Q) Specification Section 16100-2.07 requires a 400A, 480V, 4-pole,4 wire generator receptacle, however, drawing E2 shows an 800A generator main breaker. Additionally, drawing E10, conduit schedule P004A, identifies (4) 600 MCM copper conductors with a # 1/0 ground, while Section 16010, paragraph 2.07 (H) requires a 25-foot flexible generator cable without identifying the conductor sizes.

*(A) The Type G generator cable may not be available in 4 conductor over #4/0 sizing, therefore, change to a 3 wire, 3 pole configuration as noted in the attached. Refer to the attached Cable and Plug catalog cut sheets. The circuit will be revised to 400A capacity with neutral grounded at the generator*

***Item 1.13*** (Q) Please confirm whether the generator connection is intended to be rated 400A or 800A and provide the correct receptacle and breaker ratings.

(A) *The circuit breaker is to be revised to 800AF/400AT, 800A frame, 400A trip*

**Item 1.14** (Q) Please confirm the required conductor sizes and quantities for the 25-foot flexible generator cable, including the neutral and ground.

(A) *Please refer to the attached Cable and Plug catalog cut sheet. Neutral is no longer required.*

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***Item 1.15*** *(Q)* Please confirm whether the (4) 600 MCM conductors and the #1/0 ground shown on E10 are correct, considering the specified receptacle rating and 800A breaker.

(A) *Conductors are accurate as shown on the Plans*

**Item 1.16** ( Q) Please confirm the required mating plug configuration to ensure compatibility with the District's existing portable generator.

(A) *Refer to the attached Cable and Plug catalog cut sheets. Neutral is no longer required*

**Item 1.17** (Q) Do above ground ductile iron fittings need to be fusion bonded epoxy coated ?

*(A) Yes, per Section 15040, "Piping", above ground Ductile Iron Piping, including DIP fittings, shall be fusion bonded epoxy coated, AWWA C116 with UV resistant polyurethane top coat.*

**Item 1.18** (Q) Can you confirm who is responsible & paying for Special Inspections; including Compaction Tests, Concrete Cylinders, Rebar Inspections and similar inspections?

*(A) The District will retain a Geotechnical Consulting Firm to conduct the Special Inspections of this Project*

**Item 1.19** (Q) In the Project Specifications, Section 02810, Perimeter Gates", a 20-year Warranty is required for the structural components and the gate sheets of the perimeter rolling gates. Will the District accept a shorter warranty period for the components of the rolling gates?

*(A) Yes, a manufacturer's warranty of not less than 2 years from the date of completion of the Northridge Well Equipping and Site Improvement project will be accepted by the Distict.*

**Item 1.20** (Q) What is the style of the corrugated metal panels that the District prefers for the rolling gates?

(A) Refer to the Project Specifications, sheet metal gate panels shall be galvanized steel, minimum 12-gauge. Panel color and style shall be selected by the District from shop drawings submitted by the Contractor.

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**Item 1.21** (Q) Will the Flowserve Model 14 EMM Well Pump be accepted as "an equal "to the Floway (Trillium)Well Pump specified in the Project Specifications?

*(A) No, the District has determined that the Flowserve Well Pump submitted is not an equal to the Floway Well Pump submitted and will not be accepted for this Project.*

## Questions/ Responses from Prospective Bidders at the Pre- Bid Meeting

1. **PG&E Permit: Has the required permit from PG&E been obtained**?
   A PG&E permit will not be required. Fair Oaks Water District (FOWD) is responsible for the SMUD service application and has already started that process.
2. **Overhead Telecommunications: Where does the existing overhead telecommunications line run, and where does it terminate?**

   There are no telecommunications connections that need to be made as part of this project. The telecommunications connection point on Kaula Drive shown on Sheet E9 of the plans will be removed from the improvement plans as part of this Addendum.

3. **Title 22: Has the Title 22 documentation been submitted to the State?**
   All required water quality sampling was already submitted to the State as part of the Northridge Well drilling permitting process.
4. **Bid Bond Template: Is there a standard bid bond template available, or can a generic template be used**?
   A generic template can be used for the bid bond.
5. **Existing water main: is the existing water main to be removed and replaced? If so, what is the proposed approach for completing the work?**
   As shown on the Project Site Plan, Sheet C-1, the scope of work includes removal and replacement of sections of existing ACP water main In Kaula Drive. FOWD recommends the following work sequence so that improvements can be constructed while minimizing service outages to the neighboring homes:
   a. Isolate valves on Kaula Drive and Hinsey Way for a one-day shutdown. Install the 12" tee at Hinsey Way and tie in to the existing 8" AC pipe to the east. Close the new 12" valve on the east side of the tee. This will allow all services to be brought back online, while keeping the water main isolated.

b. Connect to the existing 12" C900 on the south side of the tee. This main will already be isolated with no service disruptions.
c. Relocate the existing irrigation service to the existing 8" AC on Kaula Drive using a hot tap method.
d. Remove and replace approximately 50 feet of existing 8" AC pipe with new 12" ductile iron pipe. This main will already be isolated with no service disruptions.
e. Connect to the well discharge piping at the 12" tee. This main will already be isolated with no service disruptions.
f. Pressure test and disinfect all new water main per FOWD Standards and Specifications. The District's current Standards and Specifications are attached to this addendum
g. Tie in to the existing 8" AC on the west side of the 12" tee for the well discharge piping. This main will already be isolated with no service disruptions.

6. **Hazardous Materials: Who is responsible for identifying, handling, and removing any hazardous materials?**
The contractor is responsible for handling and removal of hazardous materials and must obtain all associated permitting.

7. **Well discharge: Where is the water from the well permitted to be discharged?**
Well water may be discharged to the sewer with an appropriate permit from the Sacramento Area Sewer District. Water may also be discharged to the storm drain using FOWD's NPDES permit. Discharging water through the onsite pump to waste system is the preferred method of water discharge.

8. **Subcontracted Work: What is the maximum allowable percentage of the total project work that may be subcontracted**?
No more than 50% of the total project work may be subcontracted.

9. **Well pedestal: Is the well pedestal installed above or below finished grade?**
The well head pedestal will be constructed to a height of 1'- 9" above the finished grade of the well pad and extend 2'-3" below the finished grade for a total height of 4 feet. Refer to the Northridge Well Section and the Well Head Pedestal Detail 5, Sheet M1

10. **SCADA system: who is responsible/installing/coding for the SCADA system**?

The Contractor shall retain a qualified System Integrator to install the SCADA system. Application

programming shall be conducted by the District's Construction Management Team. Refer to Section 16010, "Electrical General ", Article 1.03 B. of the Project Specifications for the required qualifications of the System Integrator. Pre- qualified System Integrators are listed in Section 16010, Article 1.03 B.5 of the project Specifications as amended by Item 1.7 of this Addendum.

**Questions/ Responses from Prospective Bidders at the Project Site Review following the Pre-Bid Meeting**

1. **Who is responsible for removing and disposing of the existing AC pipe? What is the proposed procedure for removing and replacing the existing water main? Who is responsible for disinfecting and pressure testing the replacement main?**
   See response to question 5 from the Pre- Bid Meeting

2. **Antenna Pole: The antenna pole is not shown on the plans. Is a new pole required, and where should it be located?**
   The existing power pole will remain in place. The existing "antenna pole "is the weather station shown on the plans. It is to be protected in place as well.

3. **Electrical transformer salvage: Are any existing electrical transformers turned over to the district or required to be salvaged**?
   SMUD will remove and dispose of the existing transformer as part of the power service application that the District has submitted to SMUD

4. **Dog gate: Does the existing dog gate need to be reinstalled or replaced as part of the project**?
   No, the small gate located at the south east corner of the site will not be replaced as part of the new improvements.

5. **SMUD Coordination: Is the contractor responsible for coordinating all required permits, inspections, scheduling, and other with SMUD?**
   FOWD will obtain the initial permit from SMUD. The contractor is then responsible for scheduling and coordination of field work with SMUD including removal and installation of the transformer and inspections of the new electrical facilities.
6. **Existing Drain inlet: What is the plan with the existing inlet? Will it remain in place or be removed?**

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The existing drain inlet and approximately 10 feet of existing 12" storm drain pipe leading up to the new connection point will be completely removed, backfilled, and compacted as part of the Project Demolition Plan. In addition, the remnant section of the abandoned 12 diameter water main, the abandoned sodium hypochlorite supply pipeline, the disconnected control wire and conduit and the pipe support stanchion located at the abandoned Northridge Well Site will be completely removed, backfilled and compacted as part of the Project Demolition Plan. Please refer to the attached.

7. **Special Inspections: Who is responsible for arranging and paying for the required special inspections, the contractor or owner?**
   The District will contract a geotechnical firm to perform compaction testing and special inspections as needed.

8. **Neighbor Notifications: Has FOWD communicated with the adjacent property owners regarding the proposed wall?**
   FOWD will notify all neighboring residences prior to construction and post information about the project on the District's website.

9. **Well testing discharge: During well testing, is the contractor permitted to discharge into the new pump to waste inlet?**
   The contractor will be able to discharge well test flows using the new pump to waste piping and drain inlet, once construction is complete and all permits and approvals are obtained from Sacramento County DWR.

10. **Tree Removal: Does the tree need to be removed or trimmed? Is so, who is responsible?**
    The contractor will be responsible for tree trimming and/or removal. It is likely that trees on the north side of the fence will need to be removed to construct the perimeter wall. The Contractor will coordinate the tree removal with the District who will advise the School District that the trees will be removed as part of the Northridge Well Project

11. **Water main chlorination: what are the chlorination and disinfection requirements for the new main?**
    The new water main will be pressure tested and disinfected per FOWD Standard Specifications. Approved methods for disinfection include the use of calcium hypochlorite tablets or a liquid sodium hypochlorite solution.
12. **Given the short length of the water main, is swabbing allowed?**

Swabbing will only be allowed for tie-in connections.

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13. **Bac-t Testing: Who is responsible for collecting the Bac-t samples?**
    FOWD will collect all necessary samples.

14. **Deadline for Questions: what is the deadline for submitting any additional question or requests for clarification**?

    The deadline to submit questions is close of business on November 6, 2026. Submit questions or requests for clarification to Blake Chetcuti.

## Addendum 1 Attachments

**Pre – Bid Sign- In Sheets (5 Sheets)**
**Portable Generator Cable and Plug Catalog Cut Sheets (3 Sheets)**
**Plan Sheet E 2 Modifications**
**Plan Sheet E 9 Modifications**
**Plan Sheet D 1 Modifications**
**FOWD Standard Specifications**

***END OF ADDENDUM 1***

**PRE-BID SIGN-IN SHEET**
**FAIR OAKS WATER DISTRICT**

**NORTHRIDGE WELL #15**
**EQUIPPING AND SITE IMPROVEMENTS**

October 29, 2026

| Name | Company Name | E-Mail Address | Phone # |
|---|---|---|---|
| Jack Scroggs | KASL Consulting Engineers | jscroggs@kasl.com | (916) 769-4295 |
| JARED JOHNSON | SJE | Jared@sjelec.net | 209-639-0006 |
| Kenneth Kelso | GSW construction | estimating@gswconstruction.com | 415-757-0603 |
| BEN DRENNON | RWD GENERAL FOR | BEN@RWD.CONSTRUCTION | (916) 765-2867 |
| Shawn Sullivan | M3 Construction | Shawn@m3co.com | 916 718 0389 |
| Joe Lee | T&S construction | Estimating@916PIPE.com | 916-381-3052 |
| Jen Klick | Sierra National Const. | Jen@sierranationalconstruction.com | 916 481 6792 |
| ROB LANGBEHN | SYBLON REID | ROBL@SRCO.COM | 916-296-2463 |
| Steve Murphy | Concco West, Inc | SMurphy@concowest.com ~~(209) 601-0299~~ | (209) 601-0299 |
| Mishan Bhandari | UES (Geotech Testing, inspections | mbhandari@teamues.com | (916) 837-0768 |
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CONSULTING KASL ENGINEERS

**PRE-BID SIGN-IN SHEET**
**FAIR OAKS WATER DISTRICT**

**NORTHRIDGE WELL #15**
**EQUIPPING AND SITE IMPROVEMENTS**

October 29, 2026

| Name | Company Name | E-Mail Address | Phone # |
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| Adhair N | Soracco Inc | estimating@soraccoinc.com | (209) 267-4030 |
| Brad Kloeppel | South Valley Pump & Drilling | BRAD@SVCOS.COM | 661-633-4945 |
| Jack Shores | Auburn Constructors | estimating@auburnconstructors.com | (916) 924-0344 |
| Vlad Smolin | Xeela engineering LLC | info@Xeelaengineering.com | 916-591-3803 |
| Frank Larteri | NTS | FrankLarteri@NTSsafety.com | (916) 214-9541 |
| Nick Vida | KB Electric | NickVida@kbelectric.net | 916 545-4903 |
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CONSULTING KASL ENGINEERS

**PRE-BID SIGN-IN SHEET**
**FAIR OAKS WATER DISTRICT**

**NORTHRIDGE WELL #15**
**EQUIPPING AND SITE IMPROVEMENTS**

October 29, 2026

| Name | Company Name | E-Mail Address | Phone # |
|---|---|---|---|
| Jake Philipps | GSW Construction | JPhilipps@gswconstruction.com | 925-708-4939 |
| Chris Estes | Rain For Rent | Cestes@RainForRent.com | (530) 702-0105 |
| Peter Truong | TNT Industrial | estimating@tntindustrial.com | 916-395-8400 |
| JASE FASIANO | PRO BUILDERS | Sebastian@sacprobuilders.com | 916 225 0373 |
| FRANK CHARLES | ROAD SAFETY INC | FRANK@ROADSAFETYINC.NET | 916-699-8302 |
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**PRE-BID SIGN-IN SHEET**
**FAIR OAKS WATER DISTRICT**

October 29, 2026

**NORTHRIDGE WELL #15**
**EQUIPPING AND SITE IMPROVEMENTS**

| Name | Company Name | E-Mail Address | Phone # |
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| Gunter Brisi | Don Pedro Pump | GBRISI@donpedropump.com | 209 778 [redacted] 8818 |
| Mike Steagall | Clyde Steagall INC | michele@cgsteagall.com | (916) 652-1700 |
| Russell Hague | Covenant Technical | estimating@covenant technical.com | (714) 335-4049 |
| Billy Wier | PumpMan Norcal | billy.wise@pumpmannorcal.com | (707) 292-3287 |
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**PRE-BID SIGN-IN SHEET**
**FAIR OAKS WATER DISTRICT**

**NORTHRIDGE WELL #15**
**EQUIPPING AND SITE IMPROVEMENTS**

October 29, 2026

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| Steven Dooley | McGuire & Hester | sacestimating@mcguireandhester.com | (530) 379-3236 |
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# Super Vu-Tron® Type G and Type G-GC Round

## 90°C (UL), 2000 Volt Portable Power Cable

### Product Construction:

#### Conductor:
- 8 AWG through 500 kcmil fully annealed stranded bare copper

#### Insulation:
- Premium-grade, color-coded 90°C EPDM
- Color code: See chart below
- Insulated grounds and ground checks

#### Jacket:
- Super Vu-Tron® 90°C, black
- Temperature range: -40°C to +90°C

#### Jacket Marking:
- TYPE G-GC (4/0 AND SMALLER) – CAROL SUPER VU-TRON® SIZE (mm²) TYPE G-GC PORTABLE POWER CABLE (UL) 2000 V DRY 90°C WET 75°C SUN RES P-7K-123049-MSHA --- CSA TYPE G-GC (-40°C) 2 KV FT5 MADE IN USA (TRU-MARK SEQUENTIAL FOOTAGE)
- TYPE G-GC (LARGER THAN 4/0) - (SIZE) TYPE G-GC CAROL SUPER VU-TRON® 90°C DRY AND WATER RESISTANT 75°C 2000 V SUN RES (UL) P-7K-123049 MSHA LR27161 MADE IN USA (TRU-MARK SEQUENTIAL FOOTAGE)
- TYPE G - CAROL SUPER VU-TRON® SIZE (mm²) TYPE G PORTABLE POWER CABLE (UL) 600/2000 V DRY 90°C WET 75°C SUN RES P-7K-123049 MHSA --- CSA TYPE G (-40°C) 2 KV FT5 MADE IN USA (TRU-MARK SEQUENTIAL FOOTAGE)

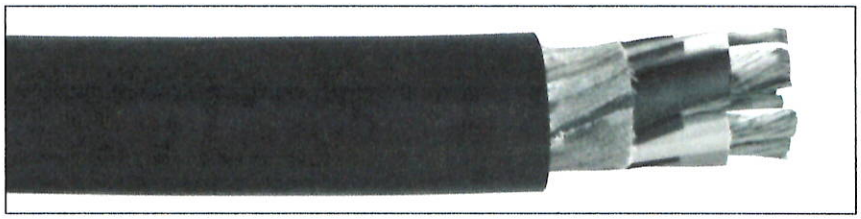
### Applications:
- Industrial and light- to medium-duty mining applications
- Heavy-duty service as power supply cable
- Mobile and portable electrical equipment
- 3- and 4-conductor—use on three-phase AC systems where grounding is required

### Features:
- Excellent impact and abrasion resistance
- Withstands exposure to oil, acids, alkalies, heat, moisture and most chemicals
- Suitable for immersion in water*
- Indent-printed for easy identification
- Rope lay stranding for maximum flex life
- Cable core bound for superior flexibility and toughness
- Non-wicking rubber fillers (G-GC)
- Canadian color code available upon request
- Sunlight-resistant
- TRU-Mark® sequential footage marking

### Industry Approvals:
- UL Type G, G-GC
- CSA
- MSHA Approved
- RoHS Compliant

### Packaging:
- Lengths cut to order

*Suitable for immersion in water if properly sealed and terminated.



### 3 CONDUCTOR – TYPE G-GC – 2000 VOLT

| CATALOG NUMBER | NO. OF COND. | AWG OR kcmil | COND. STRAND | NOMINAL COND. O.D. INCHES | NOMINAL COND. O.D. mm | YELLOW GROUND CHECK AWG SIZE | GREEN GROUND COND. AWG SIZE | NOMINAL INS. THICKNESS INCHES | NOMINAL INS. THICKNESS mm | NOMINAL O.D. INCHES | NOMINAL O.D. mm | CURR. AMPS[1] | APPROX. NET WT. LBS/M'[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 82313 | 3 | 8 | 133 | 0.160 | 4.06 | 10 | 2#10 | 0.060 | 1.52 | 0.965 | 24.51 | 65 | 600 |
| 82623 | 3 | 6 | 259 | 0.198 | 5.03 | 10 | 2#10 | 0.060 | 1.52 | 1.020 | 25.91 | 87 | 770 |
| 82643 | 3 | 4 | 259 | 0.245 | 6.22 | 10 | 2#8 | 0.060 | 1.52 | 1.125 | 28.58 | 114 | 1005 |
| 82663 | 3 | 2 | 259 | 0.297 | 7.54 | 10 | 2#7 | 0.080 | 2.03 | 1.315 | 33.40 | 152 | 1480 |
| 82373 | 3 | 1 | 259 | 0.353 | 8.97 | 8 | 2#6 | 0.080 | 2.03 | 1.445 | 36.70 | 177 | 1815 |
| 82383 | 3 | 1/0 | 259 | 0.385 | 9.78 | 8 | 2#5 | 0.080 | 2.03 | 1.570 | 39.88 | 205 | 2205 |
| 82393 | 3 | 2/0 | 259 | 0.442 | 11.23 | 8 | 2#4 | 0.080 | 2.03 | 1.660 | 42.16 | 237 | 2545 |
| 82403 | 3 | 3/0 | 259 | 0.480 | 12.19 | 8 | 2#3 | 0.080 | 2.03 | 1.810 | 45.97 | 274 | 3230 |
| 82413 | 3 | 4/0 | 259 | 0.555 | 14.10 | 8 | 2#2 | 0.080 | 2.03 | 1.920 | 48.77 | 316 | 3675 |
| 82423[2]* | 3 | 250 | 627 | 0.615 | 15.62 | 8 | 2#2 | 0.095 | 2.41 | 2.390 | 60.71 | 352 | 6060 |
| 82443[2]* | 3 | 350 | 855 | 0.725 | 18.42 | 8 | 2#1/0 | 0.095 | 2.41 | 2.680 | 68.07 | 433 | 7400 |
| 82473[2]* | 3 | 500 | 1235 | 0.880 | 22.35 | 8 | 2#2/0 | 0.095 | 2.41 | 3.030 | 76.96 | 536 | 10100 |

### 4 CONDUCTOR – TYPE G – 600/2000 VOLT

| CATALOG NUMBER | NO. OF COND. | AWG OR kcmil | COND. STRAND | NOMINAL COND. O.D. INCHES | NOMINAL COND. O.D. mm | GREEN COND. AWG SIZE | NOMINAL INS. THICKNESS INCHES | NOMINAL INS. THICKNESS mm | NOMINAL O.D. INCHES | NOMINAL O.D. mm | CURRENT AMPS[1] | APPROX. NET WT. LBS/M'[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 82314 | 4 | 8 | 133 | 0.160 | 4.06 | 4#12 | 0.060 | 1.52 | 1.045 | 26.54 | 52 | 690 |
| 82624 | 4 | 6 | 259 | 0.198 | 5.03 | 4#12 | 0.060 | 1.52 | 1.125 | 28.58 | 70 | 880 |
| 82644 | 4 | 4 | 259 | 0.245 | 6.22 | 4#10 | 0.060 | 1.52 | 1.225 | 31.12 | 91 | 1160 |
| 82664 | 4 | 2 | 259 | 0.297 | 7.54 | 4#9 | 0.080 | 2.03 | 1.435 | 36.45 | 122 | 1720 |
| 82374* | 4 | 1 | 259 | 0.353 | 8.97 | 4#8 | 0.080 | 2.03 | 1.595 | 40.51 | 142 | 2200 |
| 82384 | 4 | 1/0 | 259 | 0.385 | 9.78 | 4#7 | 0.080 | 2.03 | 1.730 | 43.94 | 164 | 2705 |
| 82394 | 4 | 2/0 | 259 | 0.442 | 11.23 | 4#6 | 0.080 | 2.03 | 1.855 | 47.12 | 190 | 3190 |
| 82404 | 4 | 3/0 | 259 | 0.480 | 12.19 | 4#5 | 0.080 | 2.03 | 2.040 | 51.82 | 219 | 4005 |
| 82414 | 4 | 4/0 | 259 | 0.555 | 14.10 | 4#4 | 0.080 | 2.03 | 2.145 | 54.48 | 253 | 4560 |

[1] Ampacities based on 90°C conductor and 30°C ambient temperature per Table 400.5(A)(2) of the National Electrical Code®.
[2] UL Listed and c(UL) Certified.
* Non-stock item; minimum quantity purchase required.
[5] Actual shipping weight may vary.

### COLOR CODE CHART

| NO. OF CONDUCTORS | COLOR |
|---|---|
| 3 | Black, White, Red |
| 4 | Black, White, Red, Orange |

General Cable

RoHS Compliant Directive 2002/95/EC

MSHA Mine Safety and Health Administration

Certified Canadian Standard Association

UL LISTED

CAROL BRAND

# Arktite® Heavy Duty Receptacle Assemblies

## 400 A, 600 VAC/250 VDC, 50-400 hertz

Generator receptacle example

## Features:

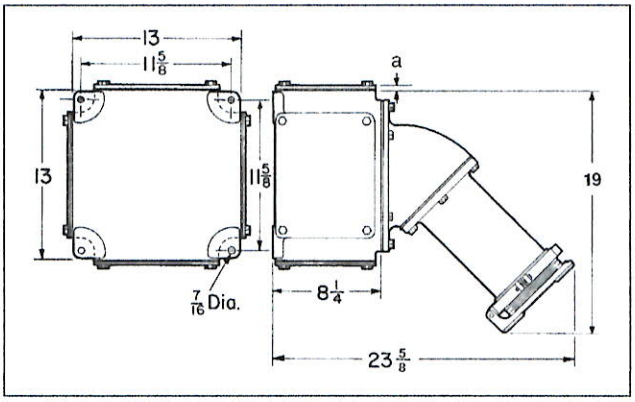
- Grounding contact wire terminators will accommodate ground wire of same size as phase wire
- Spring band contact design provides multiple points of electrical contact. Improves electrical reliability and significantly reduces effort required for insertion and withdrawal
- Crimp/solder type contacts are standard.
- Large wire wells are available for "extra flexible" wire
- Larger wire well connectors will interchange with connectors of other wire well size, of same amperage and contact configuration.
- Self-closing spring doors on receptacles and cord connectors provide environmental sealing
- Threaded nuts provide positive plug retention
- Two piece plug and cord connector design provide easy installation
- For disconnect use only – not for current interrupting

**NOTES:**
**1. For listing of additional back boxes, see page 991. Illustration shows 3 blank plates and 1 hub plate.**
**2. S22 suffix for reverse interiors is available from factory only. Field conversion cannot be done.**
**3. Replacement interiors for standard units vs. S22 units vary in length. Specify the unit type when ordering parts.**

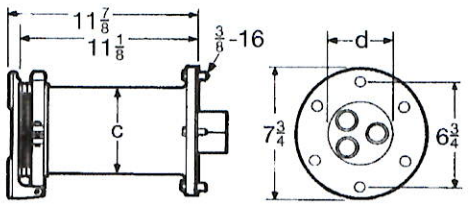
## Dimensions

### AREX Assemblies

| Description | a |
|---|---|
| With blank hub plate | 5/16 |
| With hub plate max. | 4 5/8 |




**AR Receptacles**




| No. Poles | c | d |
|---|---|---|
| 3 | 5 3/16 | 4 3/16 |
| 4 | 5 13/16 | 4 11/16 |

## Wire Mesh Grips



## Application:

Wire mesh grips are used:
- to provide secure cable termination
- to extend cable life
- **with 20, 200 and 400 ampere plugs**

## Features:

- Eliminate sharp radius of cable bend at the point where cable enters plug, thereby reducing cable failure
- Absorb longitudinal stresses placed on the point of termination caused by pulling the cable
- Gripping action increases in direct proportion to amount of tension applied to cable

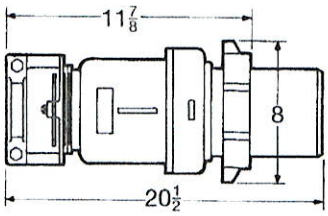
## Standard Material & Finishes:

- Stainless steel wire braid – Natural

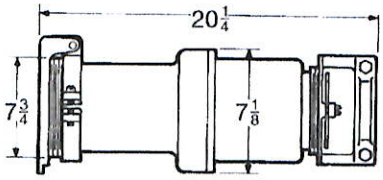
## Ordering Information:

| Plug Cable Range | Grip Range | Nominal Grip Length – Inches | Grip Cat. # |
|---|---|---|---|
| 1.375 to 1.875 | 1.375 to 1.625 | 8 | K163 |
| | 1.625 to 1.875 | 11 | K188 |
| 1.875 to 2.500 | 1.875 to 2.000 | 10 | K200 |
| | 2.000 to 2.250 | 11¾ | K225 |

**AP Plugs**




**APR Connectors**





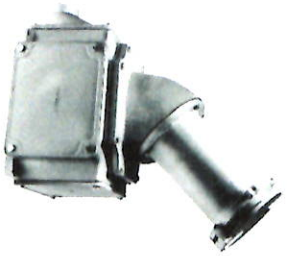

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# Arktite® Heavy Duty Receptacle Assemblies

Weatherproof

## 400 A, 600 VAC/250 VDC, 50-400 hertz

**Receptacle Assembly**



**With AJ Back Boxes‡ and Angle Adapters**

**Receptacle**



**Receptacle Housings only**

**Mating Plug**



**Mating Connector**



**Style 1 – Wire Well Takes .84″ Maximum Conductor Size**

| Description | Hub Size | Spring Door Cover Cat.# | Spring Door Cat. # | Cable Dia. | Plug Cat. # | Connector Cat. # |
|---|---|---|---|---|---|---|
| 3-wire, 3-pole | 2½ | AREX40317 | AR4031 | 1.375 to 1.875 | AP40357 | APR40317 |
| | 3 | AREX40318 | | 1.875 to 2.500 | AP40358 | APR40318 |
| 4-wire, 4-pole | 2½ | AREX40417 | AR4041 | 1.375 to 1.875 | AP40457 | APR40417 |
| | 3 | AREX40418 | | 1.875 to 2.500 | AP40458 | APR40418 |
| **Style 1 – Wire Well Takes 1.25″ Maximum Conductor Size** ← 600mcm is 1.05" diameter | | | | | | |
| 3-wire, 3-pole | 3 | AREX403128 | AR40312 | 2.500 to 3.000 | AP403510 | APR403110 |
| | 3½ | AREX403129 | | 3.000 to 3.800 | AP403512 | APR403112 |
| | 4 | AREX4031210 | | | | |
| 4-wire, 4-pole | 4 | AREX4041210 | AR40412 | 2.500 to 3.000 | AP404510 | APR404110 |
| | 5 | AREX4041212 | | 3.000 to 3.800 | AP404512 | APR404112 |
| **Style 2 – Wire Well Takes .84″ Maximum Conductor Size** | | | | | | |
| 2-wire, 3-pole | 2 | AREX40326 | AR4032 | 1.375 to 1.875 | AP40367 | APR40327 |
| | 2½ | AREX40327 | | 1.875 to 2.500 | AP40368 | APR40328 |
| | 3 | AREX40328 | | | | |
| 3-wire, 4-pole | 2½ | AREX40427 | AR4042 | 1.375 to 1.875 | AP40467 | APR40427 |
| | 3 | AREX40428 | | 1.875 to 2.500 | AP40468 | APR40428 |
| **Style 2 – Wire Well Takes 1.25″ Maximum Conductor Size** | | | | | | |
| 2-wire, 3-pole | 3 | AREX403228 | AR40322 | 2.500 to 3.000 | AP403610 | APR403210 |
| | 3½ | AREX403229 | | 3.000 to 3.500 | AP403612 | APR403212 |
| | 4 | AREX4032210 | | | | |
| 3-wire, 4-pole | 4 | AREX4042210 | AR40422 | 2.500 to 3.000 | AP404610 | APR404210 |
| | 5 | AREX4042212 | | 3.000 to 3.500 | AP404612 | APR404212 |

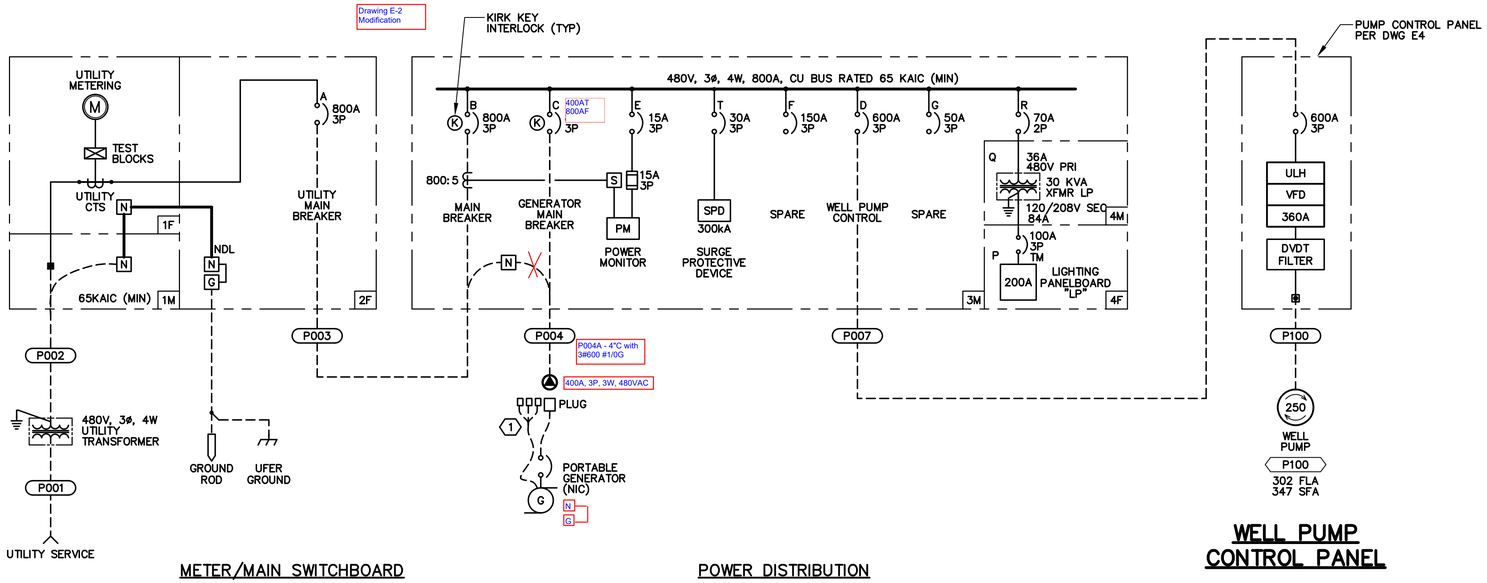
† Furnished with cable grip and neoprene bushing.

‡ Hub plates and blank plates may be interchanged to permit conduit feed from bottom or sides.





US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds

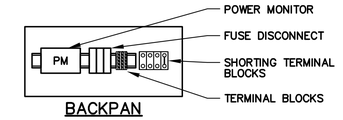



METER/MAIN SWITCHBOARD

POWER DISTRIBUTION

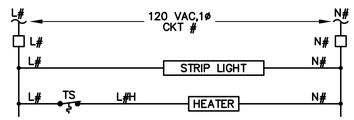
WELL PUMP CONTROL PANEL

## ONE-LINE DIAGRAM




## POWER MONITOR PANEL

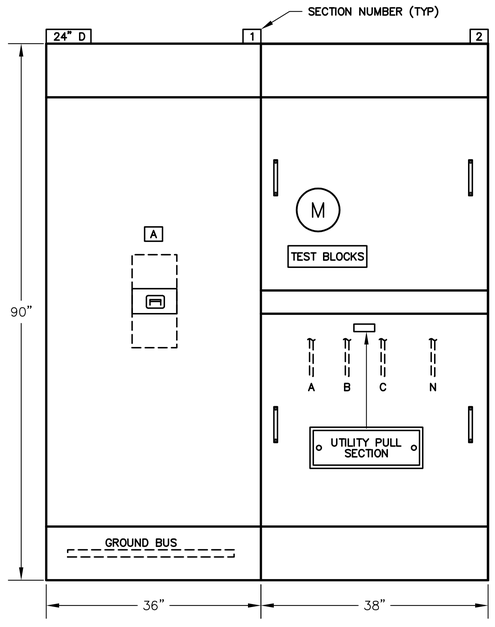
LOCATED INSIDE SWITCHBOARD




## TYPICAL SECTION AUXILIARY CIRCUIT

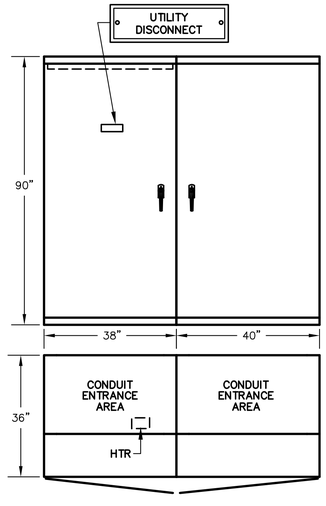
NOTES:

1. TYPICAL AUXILIARY CIRCUIT CIRCUIT NUMBERS PER PANELBOARD SCHEDULE. REPLACE # WITH CIRCUIT NUMBER TO COMPLETE WIRE AND TERMINAL BLOCK TAGS.
2. APPLIES TO NON-METER SECTIONS ONLY




## METER/MAIN ELEVATION

NEMA 3R, OUTDOOR




## METER/MAIN WEATHERWRAP

NOTES:

1. ALL DIMENSIONS ARE APPROXIMATE. ACTUAL DIMENSIONS SHALL BE PER MANUFACTURER APPROVED IN SUBMITTAL.

## DRAWING REFERENCED NOTES:

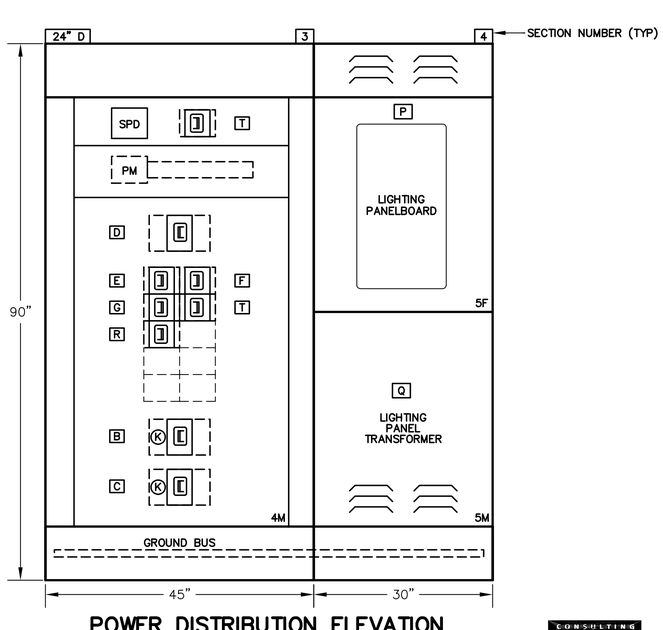
1. GENERATOR CONNECTION PLUG WITH ADDITIONAL PLUGS FOR BLOCK HEATER, CHARGER AND START CONTROLS. PER DWG E14/GCP

## WEATHERWRAP FABRICATION METHODS

1. NEMA 3R WEATHER-PROOF FOR OUTDOOR INSTALLATION.
2. OUTER DOORS SHALL BE SEALED WITH RUBBERIZED FOAM GASKET.
3. EXTERIOR FABRICATED FROM GALVANEAL (PAINT BOND) SHEET STEEL.
4. 12 GAUGE EXTERIOR AND 14 GAUGE INTERIOR.
5. ALL SEAMS SHALL HAVE CONTINUOUS WELD, GROUND SMOOTH.
6. OUTER DOORS TO BE PADLOCKABLE WITH HEAVY DUTY 3 POINT LATCHES.
7. DOOR HINGES AND PINS SHALL BE 316 STAINLESS STEEL.
8. NO SCREWS, RIVETS, OR BOLTS SHALL PROTRUDE EXTERNALLY.
9. INTERNAL SCREWS, RIVETS, BOLTS, AND NUTS SHALL BE STAINLESS STEEL.
10. PAINT APPLICATION SHALL BE AS FOLLOWS:
    A. TWO STAGE CHEMICAL BATH CLEANING.
    B. ELECTROSTATICALLY APPLIED POWDER COAT PAINT FINISH.
    C. OVEN CURED FOR TWO HOURS.
    D. EXTERIOR COLOR SHALL BE: ANSI 61, GRAY
11. PHENOLIC SCREW MOUNTED NAMEPLATES SHALL BE PROVIDED FOR ALL OUTER DOOR SECTIONS.
12. FABRICATION, COMPONENTS, AND WIRING SHALL CONFORM TO UL, NEC AND NEMA STANDARDS. PANEL SHALL BE APPROPRIATELY LABELLED.
13. ALL WIRING SHALL BE LABELLED ON BOTH ENDS OF WIRE.
14. AS-BUILT WIRING DIAGRAMS SHALL BE SHIPPED WITH PANEL.
15. PROVIDE DRAWING POCKET ON INSIDE OF CONTROL PANEL DOOR.

## GENERAL NOTES:

1. EACH BREAKER SHALL HAVE A PADLOCKABLE HASP TO LOCK BREAKER IN THE OFF POSITION.
2. ALL DIMENSIONS ARE APPROXIMATE. ACTUAL DIMENSIONS SHALL BE PER MANUFACTURER APPROVED IN SUBMITTAL.
3. FURNISH AND APPLY ENGRAVED WHITE LETTERING ON BLACK PLASTIC NAMEPLATES FOR DEVICES AND BREAKERS WHERE NOTED, ON EXTERIOR DOORS AT MINIMUM, WITH A LETTERED BOX. TEXT HEIGHT SHALL BE 1/4 INCH MINIMUM. REFRENCE ONE-LINE DIAGRAM FOR LABEL.
4. FURNISH CODE REQUIRED WARNING LABELS AND EQUIPMENT RATINGS LABELS.




## POWER DISTRIBUTION ELEVATION

NEMA 1, INDOOR

BID SET

CONSULTING KASL ENGINEERS

FRISCH ENGINEERING, INC.
CONSULTING ELECTRICAL ENGINEERS
13405 FOLSOM BLVD, UNIT 600
FOLSOM, CA 95630
PH 916 353 1025
WWW.FRISCHENGINEERING.COM

FILE: 24068-E02.DWG
DATE: Oct 14, 2026 TIME: 3:43:16PM

| REVIEWED BY: | DATE: | DESIGNED BY: A. FRISCH |
|---|---|---|
| REVIEWED BY: | DATE: | DRAWN BY: T. FRISCH |
| REVIEWED BY: | DATE: | CHECKED BY: M. FRISCH |
| | | DATE: Oct 14, 2026 |

| REV. | DATE | DESCRIPTION | APP. |
|---|---|---|---|
| | | | |

FAIR OAKS WATER DISTRICT
10326 FAIR OAKS BLVD,FAIR OAKS, CA 95628, (916) 967-5723

NORTHRIDGE WELL #15 EQUIPPING AND SITE IMPROVEMENTS

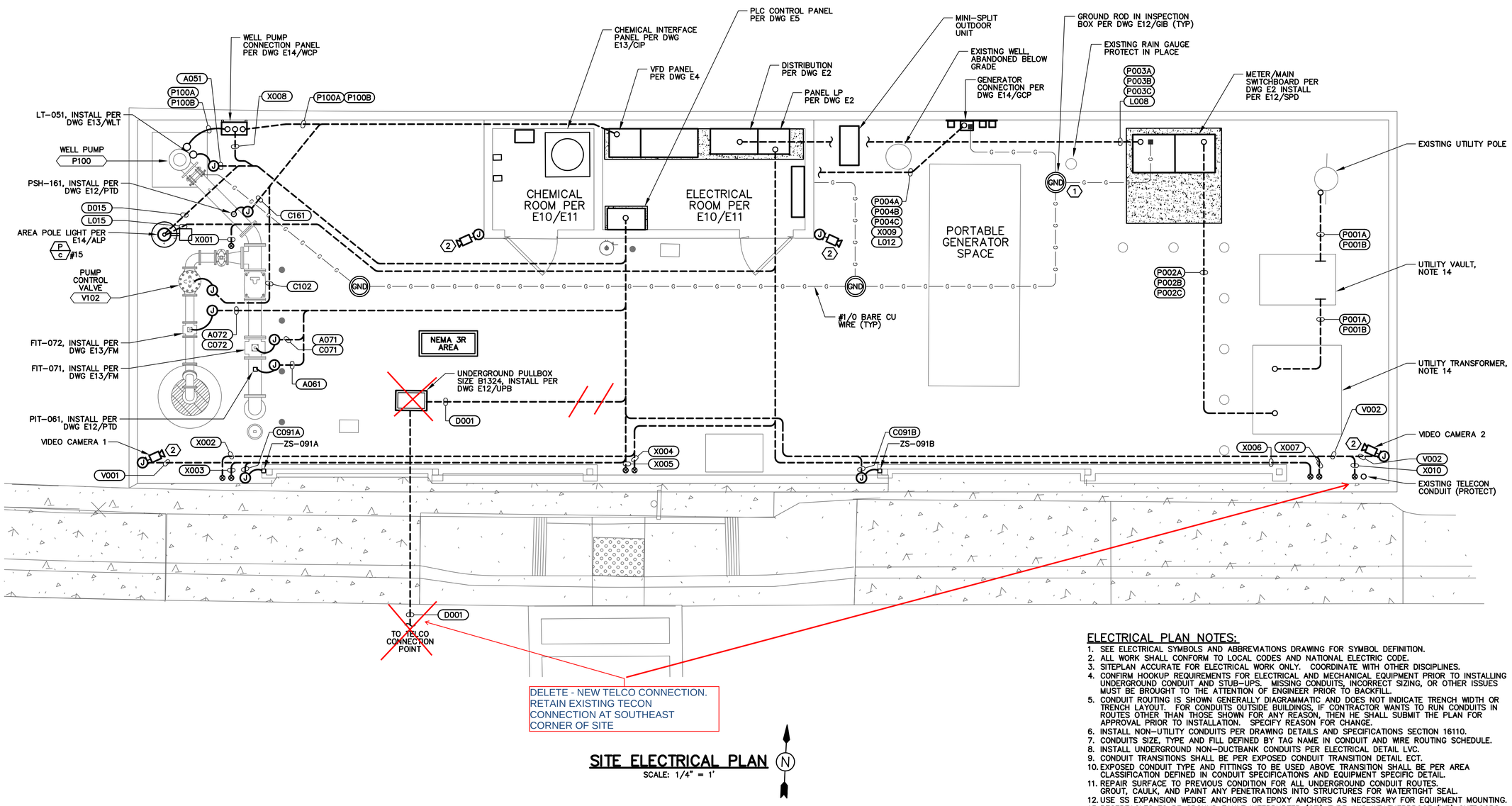
# MAIN SWITCHBOARD ONE-LINE & ELEVATION

DATE: SEPT 2026
SCALE:
HORIZ: N/A
VERT: N/A
VER:

FAIR OAKS WATER DISTRICT

SHEET E2
OF 33 SHEETS 48
PROJECT NUMBER C26WTNWRE

FILE: 24068-E02.DWG
DATE: Oct 14, 2026




## SITE ELECTRICAL PLAN

SCALE: 1/4" = 1'

## ELECTRICAL PLAN NOTES:

1. SEE ELECTRICAL SYMBOLS AND ABBREVIATIONS DRAWING FOR SYMBOL DEFINITION.
2. ALL WORK SHALL CONFORM TO LOCAL CODES AND NATIONAL ELECTRIC CODE.
3. SITEPLAN ACCURATE FOR ELECTRICAL WORK ONLY. COORDINATE WITH OTHER DISCIPLINES.
4. CONFIRM HOOKUP REQUIREMENTS FOR ELECTRICAL AND MECHANICAL EQUIPMENT PRIOR TO INSTALLING UNDERGROUND CONDUIT AND STUB-UPS. MISSING CONDUITS, INCORRECT SIZING, OR OTHER ISSUES MUST BE BROUGHT TO THE ATTENTION OF ENGINEER PRIOR TO BACKFILL.
5. CONDUIT ROUTING IS SHOWN GENERALLY DIAGRAMMATIC AND DOES NOT INDICATE TRENCH WIDTH OR TRENCH LAYOUT. FOR CONDUITS OUTSIDE BUILDINGS, IF CONTRACTOR WANTS TO RUN CONDUITS IN ROUTES OTHER THAN THOSE SHOWN FOR ANY REASON, THEN HE SHALL SUBMIT THE PLAN FOR APPROVAL PRIOR TO INSTALLATION. SPECIFY REASON FOR CHANGE.
6. INSTALL NON-UTILITY CONDUITS PER DRAWING DETAILS AND SPECIFICATIONS SECTION 16110.
7. CONDUITS SIZE, TYPE AND FILL DEFINED BY TAG NAME IN CONDUIT AND WIRE ROUTING SCHEDULE.
8. INSTALL UNDERGROUND NON-DUCTBANK CONDUITS PER ELECTRICAL DETAIL LVC.
9. CONDUIT TRANSITIONS SHALL BE PER EXPOSED CONDUIT TRANSITION DETAIL ECT.
10. EXPOSED CONDUIT TYPE AND FITTINGS TO BE USED ABOVE TRANSITION SHALL BE PER AREA CLASSIFICATION DEFINED IN CONDUIT SPECIFICATIONS AND EQUIPMENT SPECIFIC DETAIL.
11. REPAIR SURFACE TO PREVIOUS CONDITION FOR ALL UNDERGROUND CONDUIT ROUTES. GROUT, CAULK, AND PAINT ANY PENETRATIONS INTO STRUCTURES FOR WATERTIGHT SEAL.
12. USE SS EXPANSION WEDGE ANCHORS OR EPOXY ANCHORS AS NECESSARY FOR EQUIPMENT MOUNTING.
13. RECEPTACLES TO BE GROUND FAULT INTERRUPTER (GFI) TYPE AND WEATHERPROOF (WP) OUTDOORS AND WHERE SHOWN.
14. UTILITY PRIMARY AND SECONDARY CONDUITS, TRANSFORMER PAD, PULL BOXES AND REMOVABLE BOLLARDS SHALL BE INSTALLED PER POWER UTILITY ENGINEERED DRAWINGS AND STANDARDS.

## DRAWING REFERENCED NOTES:

(1) GROUND ENHANCEMENT MATERIAL SHALL BE ERICO GROUND ENHANCEMENT MATERIAL (GEM), LYNCOLE XIT, OR EQUAL. INSTALL IN SLURRY FORM SURROUNDING GROUNDING WIRE COMPLETELY WITH APPROXIMATELY 1" MATERIAL ON ALL SIDES OF CONDUCTOR.

(2) SECURITY CAMERAS TO BE INSTALL BY OTHERS.

BID SET


FRISCH ENGINEERING, INC.
CONSULTING ELECTRICAL ENGINEERS
13405 FOLSOM BLVD, UNIT 600
FOLSOM, CA 95630
PH 916 353 1025
WWW.FRISCHENGINEERING.COM


FILE: 24068-E09.DWG
DATE: Oct 14, 2026 TIME: 3:44:38PM

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|---|---|---|
| REVIEWED BY: | DATE: | DRAWN BY: T. FRISCH |
| REVIEWED BY: | DATE: | CHECKED BY: M. FRISCH |
| | | DATE: Oct 14, 2026 |

| REV. | DATE | DESCRIPTION | APP. |
|---|---|---|---|

FAIR OAKS WATER DISTRICT
10326 FAIR OAKS BLVD,FAIR OAKS, CA 95628, (916) 967-5723

NORTHRIDGE WELL #15 EQUIPPING AND SITE IMPROVEMENTS

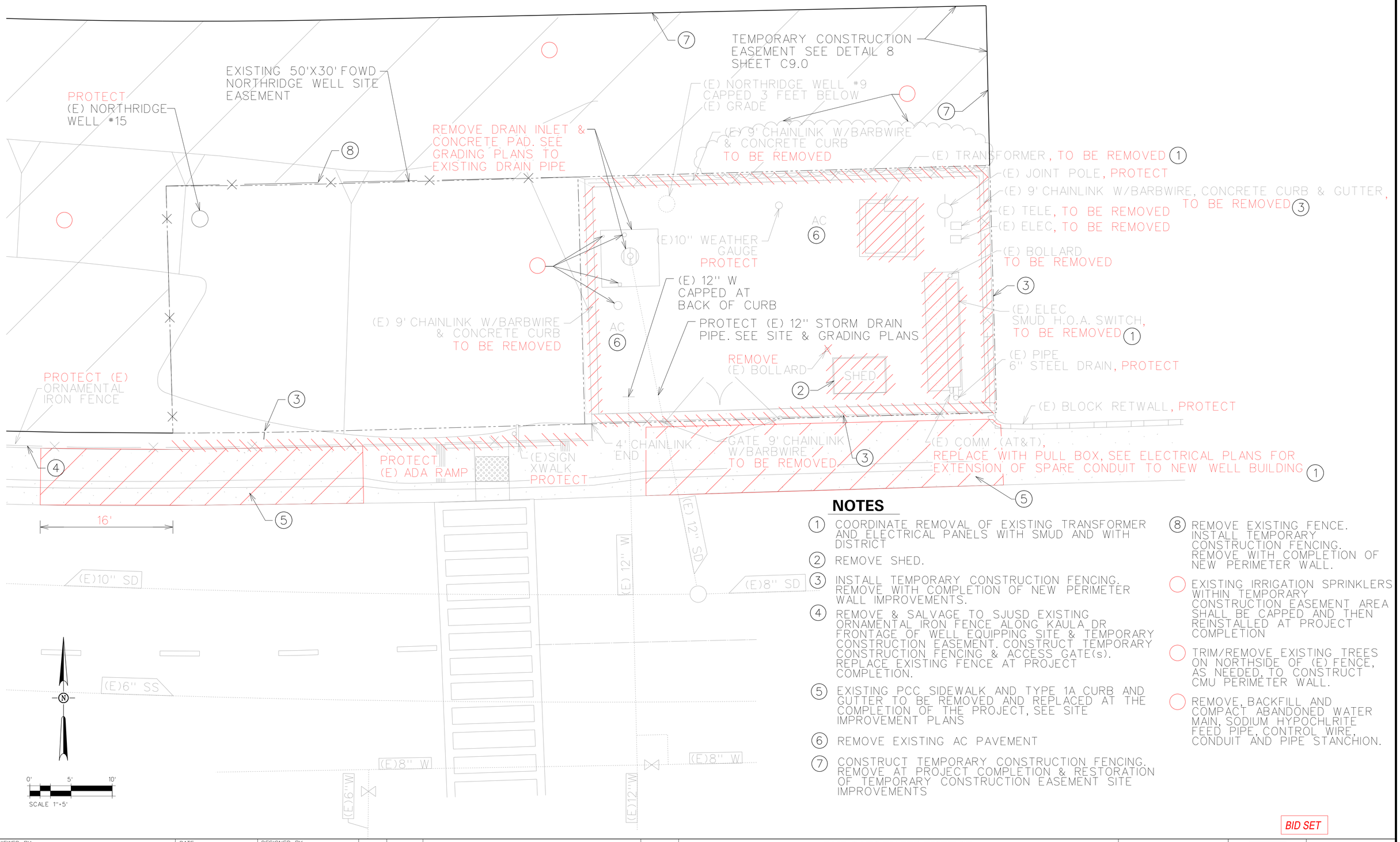
# ELECTRICAL SITE PLAN

DATE: SEPT 2026
SCALE:
HORIZ: N/A
VERT: N/A
VER:

FAIR OAKS WATER DISTRICT

SHEET E9
OF 40 SHEETS 48
PROJECT NUMBER C26WTNWRE

FILE: 24068-E09.DWG
DATE: Oct 14, 2026




## NOTES

1. COORDINATE REMOVAL OF EXISTING TRANSFORMER AND ELECTRICAL PANELS WITH SMUD AND WITH DISTRICT
2. REMOVE SHED.
3. INSTALL TEMPORARY CONSTRUCTION FENCING. REMOVE WITH COMPLETION OF NEW PERIMETER WALL IMPROVEMENTS.
4. REMOVE & SALVAGE TO SJUSD EXISTING ORNAMENTAL IRON FENCE ALONG KAULA DR FRONTAGE OF WELL EQUIPPING SITE & TEMPORARY CONSTRUCTION EASEMENT. CONSTRUCT TEMPORARY CONSTRUCTION FENCING & ACCESS GATE(s). REPLACE EXISTING FENCE AT PROJECT COMPLETION.
5. EXISTING PCC SIDEWALK AND TYPE 1A CURB AND GUTTER TO BE REMOVED AND REPLACED AT THE COMPLETION OF THE PROJECT, SEE SITE IMPROVEMENT PLANS
6. REMOVE EXISTING AC PAVEMENT
7. CONSTRUCT TEMPORARY CONSTRUCTION FENCING. REMOVE AT PROJECT COMPLETION & RESTORATION OF TEMPORARY CONSTRUCTION EASEMENT SITE IMPROVEMENTS
8. REMOVE EXISTING FENCE. INSTALL TEMPORARY CONSTRUCTION FENCING. REMOVE WITH COMPLETION OF NEW PERIMETER WALL.

- EXISTING IRRIGATION SPRINKLERS WITHIN TEMPORARY CONSTRUCTION EASEMENT AREA SHALL BE CAPPED AND THEN REINSTALLED AT PROJECT COMPLETION
- TRIM/REMOVE EXISTING TREES ON NORTHSIDE OF (E) FENCE, AS NEEDED, TO CONSTRUCT CMU PERIMETER WALL.
- REMOVE, BACKFILL AND COMPACT ABANDONED WATER MAIN, SODIUM HYPOCHLRITE FEED PIPE, CONTROL WIRE, CONDUIT AND PIPE STANCHION.

BID SET

| REVIEWED BY: | DATE: | DESIGNED BY: |
|---|---|---|
| REVIEWED BY: | DATE: | DRAWN BY: |
| REVIEWED BY: | DATE: | CHECKED BY: |
| | | DATE: 11/2/2026 |

| REV. | DATE | DESCRIPTION | APP. |
|---|---|---|---|

FAIR OAKS WATER DISTIRCT
10326 FAIR OAKS BLVD, FAIR OAKS, CA 95628, (916) 967-5723

NORTHRIDGE WELL #15 EQUIPPING AND SITE IMPROVMENTS

# DEMOLITION PLAN

DATE: SEP 2026
SCALE:
VER.:

FAIR OAKS WATER DISTRICT

SHEET D1
OF 3 SHEETS 48
PROJECT NUMBER C26WTNWRE

FILE: C:\Users\NathanLee\VKASL Consulting Engineers\VKASL Consulting Engineers - Documents\Jobs\2695-08 Northridge Well Project\Plans - Phase 2\03_D1 DEMO PLAN.dgn
DATE: 11/7/2026




# STANDARD SPECIFICATIONS MANUAL

**November**

**2007**

***Prepared by the staff of Fair Oaks Water District***

***Approved by Fair Oaks Water District Board of Directors***

***December 10, 2007***

**Fair Oaks Water District, 10317 Fair Oaks Boulevard, Fair Oaks CA, 95628**

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## Foreword

These Specifications provide acceptable standards for the design, construction, repair, and modification of water supply facilities within the boundary of Fair Oaks Water District. This includes all water supply facilities that are within jurisdiction of the Fair Oaks Water District with exception of cross-connection control devices.

Items relevant to a project or development not covered within this document shall be submitted to the District in writing with the proposed plans for the District's review and approval.

# 1.0 General Specifications and Requirements

## 1.1. Approved Plans

No work shall commence on any water installation which is intended to become attached to the District's distribution system, unless complete plans and specifications covering all phases of the proposed construction have been submitted to and approved by the District.

## 1.2. Contractors License and Insurance Requirements

All contractors performing work for the District, or performing work on improvements that are to be accepted by the District must be duly licensed under the laws of the State of California and be pre-approved by the Fair Oaks Water District.

All contractors performing work for the District must be in full compliance with the latest edition of the District General Conditions.

## 1.3. Permits, Licenses, and Fees

Contractor shall, unless otherwise directed by the District, obtain all necessary permits and licenses for construction of the project, give all necessary notices, and pay all required fees. The Contractor shall promptly furnish the District copies of all approved permits secured by the Contractor in the performance of its contract.

## 1.4. Easements

Contractor shall verify prior to commencing construction of water facilities that all easements required for the project are in place, and approved by the Fair Oaks Water District. Prior to the final acceptance of the water system installed by Contractor, the Developer/ Owner shall provide recorded easement documents to the District.

## 1.5. Compliance with Statutes

Contractor shall conduct the work in compliance with State and Federal safety code laws and County and District ordinances and regulations limiting or controlling the work.

## 1.6. Construction Safety

Construction of improvements 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.

The Contractor must comply with all provisions of the California Occupational Safety and Health Act (Labor Code Sections 6300 et seq.) and all applicable Title 8 Safety Orders issued by the State of California Occupational Safety and health Administration ( Cal/OSHA).

## 1.7. Existing Facilities and Utilities[1]

All projects must clearly identify, and field verify all existing utilities and public water infrastructure to be maintained and abandoned.

- Field verification of all utilities and public water infrastructure shall be a part of the original scope of work for all projects.
- All public water facilities identified, and approved for abandonment by the FOWD, must be abandoned in accordance with FOWD requirements at the expense of the project.
- All existing public water facilities within the project boundaries, and parcel frontage, must be upgraded to current FOWD requirements at the expense of the project.
- Damage to existing utilities and public water facilities shall be repaired or replaced as required by the FOWD at the expense of the project.
- All work on existing public water facilities must be completed by an approved FOWD contractor and inspected by designated FOWD staff prior to final acceptance and approval by the FOWD.

## 1.8. Materials Submittal and Approval

A minimum of three (3) days prior to the pre-construction meeting, the Contractor shall submit to the District, for approval, a list of materials proposed to be used in constructing the water system, including item name, description, manufacturer, and model number.

## 1.9. Pre-Construction Meeting

An onsite pre-construction meeting with the designated District Representative, Consulting Engineer, Contractor, and the County Inspector will be held a minimum of two (2) working days in advance of construction. During this meeting, District representative must inspect materials, provide schedule of inspections, review the Approved Plans, and schedule tie-in connections. Pre-construction meetings will not be scheduled until the District fees have been paid in full and the material list have been submitted.

## 1.10. Notices

The Contractor shall provide the District designated representative a minimum of two (2) working days prior to commencement of construction, a construction schedule, clearly indicating the major milestones of the project, such as:

- Start Date,
- Dates of planned shut-downs and tie-ins,
- Dates of proposed hydrostatic test

The Contractor shall keep the District designated representative informed as to progress of construction. Any changes to the original construction schedule shall be coordinated and approved by the District at minimum two(2) days in advance.

1. Section 1.7. revised on May 23, 2025

## 1.11. Inspections

All water system improvements, constructed in accordance with the District approved plans and specifications shall be inspected during construction by an authorized representative of the District. Improvements constructed without the inspection by the District representative, will not be accepted and will not be connected to the District's existing distribution system. All un-inspected installations may require removal at the contractor expense.

## 1.12. Water System Location and Information

Fair Oaks Water District is a member of the Underground Service Alert (USA) Program. Prior to any underground excavation, contact USA at (800) 227 2600 and follow the requirements of the Government Code 4216 and USA's suggested marking guidelines. Contractor is responsible for removal of all project related USA markings.

## 1.13. Water System Shutdowns

Only authorized District personnel shall perform water system shutdowns. Valves in the District's system will not be operated by anyone other than an authorized representative of the District. Call the District Inspector a minimum of 48 hours in advance to schedule work that requires a system shut down. Unauthorized operation of the District facilities may result in complete stoppage of the project at the sole expense of contractor.

## 1.14. Traffic Control

When working in streets, the Contractor shall take precautions to protect the public. Barricades, warning lights, signs shall be maintained in accordance with the latest version of the Caltrans Manual of Traffic Controls and/or County of Sacramento Improvement Standards. The County Encroachment Permit may require preparation of a traffic control plan (TCP). The TCP shall show traffic control measures to be used for vehicles, bicycles and pedestrians affected by the construction.

The Contractor is fully responsible for preparation, approval and compliance with the conditions of the County approved TCP.

## 1.15. As-Built Drawings

The Contractor shall maintain at least one set of construction drawings as a record of all changes occurring during construction. The Contractor shall note all changes on these drawings. The construction record drawings shall be kept in neat order and shall be available to the District for review during construction and delivered to the District at the completion of the work, prior to the District's acceptance.

Authorized District personnel will conduct a pipeline trace prior to acceptance of a new pipeline to:

- ensure the locator wire has been properly installed and has continuity with existing District facilities
- verify water main locations conform to plan dimensions.

As-built drawings shall be furnished to the District upon completion of the new water system and prior to acceptance by the District. Contractor shall provide one hard copy of an as built drawing and a digital copy in Auto Cad format.

WATER SYSTEM WILL NOT BE ACCEPTED AND SERVICES WILL NOT BE ACTIVATED UNTIL AN ACCEPTABLE SET OF AS-BUILT DRAWINGS IS PROVIDED TO THE DISTRICT.

## 1.16. Disposal of Trench Spoils

Surplus material excavated from pipeline trenches will become the property of the Contractor and shall be disposed in conformance with applicable County ordinance(s). The Contractor shall furnish the District copies of all grading permits and written permissions from landowners secured by the Contractor to dispose of trench soil. The Contractor shall be responsible for proper disposal of Asbestos Cement (AC) pipe and cuttings and provide District with evidence of proper disposal.

## 1.17. Guarantee Letter and Maintenance Bond

Prior to the District's approval of the as-built plans and as a condition of pre-acceptance of the work performed, the Applicant/ Contractor shall execute and deliver a signed Guarantee Letter and Maintenance Bond. The Guarantee Letter and Maintenance Bond shall cover all materials, workmanship, and equipment constructed or installed by the Applicant. This Guarantee Letter /Maintenance Bond shall remain in effect for a period of one (1) year from the date of the District's formal, pre-acceptance of the system improvements. The Guarantee/Bond, which shall be executed by a duly licensed surety company authorized to do business in the State of California, shall protect the District against the results of any failure or damage of the work occurring within the Guarantee period under the provisions of the Guarantee.

Should any failure of the work occur within the Guarantee period attributable to faulty materials, poor workmanship, or defective equipment, the Applicant shall promptly make the needed repairs at Applicant's expense. In addition, where the District deems applicable, should damage from any cause occur during subsequent construction work within the same Project, the Applicant shall promptly make the needed repairs at Applicant's expense.

The Applicant /Contractor shall repair any trench settlement and comply with Sacramento County encroachment permit requirements during the Guarantee period.

The Guarantee/Bond shall be in the sum of not less than one hundred percent (100%) of the contract amount for installation or one hundred percent (100%) of engineering estimate for installation of the new water system. A final inspection will occur a minimum of one month prior to the end of the guarantee period.

## GUARANTEE LETTER

(To be submitted by the Applicant)

DATE: _____

FROM: Applicant's Name: _____
Address: _____
_____

TO: Fair Oaks Water District
10317 Fair Oaks Boulevard
Fair Oaks, Ca. 95628-7187

REGARDING: (Project/Subdivision) _____
(Location/Streets) _____

Officials of Fair Oaks Water District:

We hereby guarantee that the construction performed under the Approved Plans dated _____, 20____, for the above-named project has been done in accordance with approved drawings and Fair Oaks Water District specifications and that work as installed will fulfill requirements of the Guarantee. We agree to repair or replace any or all of our work, together with any other adjacent work that may be displaced in the process, should any failure or damage of the work occur, attributable to any cause, including, but not limited to, faulty materials, poor workmanship, defective equipment, and damage occurring during building construction, for a period of one (1) year from date of pre- acceptance of above-named project by the District.

In the event of our failure to comply with the above-mentioned conditions, within ten (10) days (or less in an emergency) after being notified in writing by the District, we, collectively or separately, authorize the District to have the defects or damage repaired and made good at our expense, and we will promptly honor and pay the costs and charges for repairs. In the event of failure on our part, we further promise to pay attorney's fees as a court with jurisdiction in the matter shall decide, should the enforcement or interpretation of this Guarantee Letter or any part thereof require legal action.

_____
Applicant's Signature

Notary Seal _____

# 2.0 Design Standards

## 2.1. Design Criteria

The water system improvements shall be designed according to District standards and requirements to supply and maintain an adequate positive pressure in all parts of the system under normal operating conditions. In addition, the design of systems must consider and provide emergency flow as well as normal flow, as described in sections 2.4 and 2.5.

## 2.2. Water Quality

Applicable quality standards and requirements are as follows:

- California Health and Safety Code, Division 5, Part 1, Chapter 7;
- California Administrative Code, Title 17, Chapter 5, Subchapter 1, Group 4;
- California Administrative Code, Title 22, Chapters 15 and 16;
- Standard of Minimum Requirements for Safe Practice in the Production and Delivery of Water for Domestic Use (California Section of the AWWA);
- General Order No. 103 of the California Public Utilities Commission;
- Fair Oaks Water District Resolution No. 97–09 (Protection of Drinking Water from Cross Connection and Backflow)
- Domestic Water Supply Permit # 01-001-90 and subsequent Water Supply Amendment # 01-09-07PER010 as issued by the California Department of Public Health.

## 2.3. Pressure Requirements

The District pressure zones are designed to maintain normal operating pressures of no less than 40 psi and no greater than 125 psi at the service connections.

Exceptions

- During peak hour demand, pressure may drop to no less than 30 psi.
- During fire flow condition, pressure may drop to no less than 20 psi.

Variations in pressure under normal operations shall not exceed fifty percent of the average operating pressure as computed by averaging at least twenty four consecutive hourly pressure readings.

## 2.4. Water Supply Requirements

The system or facilities shall be designed to deliver water at a rate adequate to supply the total requirements of all consumers at maximum rates of use under both normal conditions and emergency conditions. The established maximum normal use rate for typical single-family residential subdivisions may be determined by Chart 1 of General Order No. 103 of the California Public Utilities Commission. Special considerations shall be given to subdivisions of multiple-family dwellings, commercial development and industrial developments. Computations used in the design of such systems shall be submitted with the plans and specifications. Water mains shall be designed so that under average-day and peak-hour conditions, velocity will be less

than 3 feet per second and 7 feet per second respectively. Under fire flow conditions, water velocity in the pipeline shall not exceed 10 feet per second.

Should the District's evaluation reveal that capacities of existing water supply and distribution system are inadequate to serve the new subdivision or development, the Applicant shall develop a water master plan to outline necessary water system improvements to maintain consumption and fire flow within parameters specified in this specification manual.

Detailed plans and specifications must be submitted to the District for review and approval.

## 2.5. Fire Flow Rates

The design of the system shall provide for the delivery of the fire flow at the rates and duration specified by the Sacramento Metropolitan Fire District . The Fair Oaks Water District may require a water flow analysis for a new development prior to approval of water distribution plans. The analysis shall be provided and paid for by the Applicant.

## 2.6. Distribution System

### 2.6.1. Location of Water Mains

Water mains and pipelines shall be constructed and installed typically within the public right-of-way. Where water facilities must be installed on private property, a water easement shall be prepared, authorized and recorded with the County of Sacramento, prior to commencing installation. The easement shall be thirty (30) feet or greater in width unless otherwise specified and approved by the District. Water lines shall be designed to be a minimum ten (10) feet from the property line or easement edge for the entire water main length. No permanent structures of any nature shall be located in the water easement.

Water mains shall be located three (3) feet from the lip of the gutter If this location is occupied by other utilities, the District may locate water main six (6) feet from the lip of the gutter or other location acceptable for the District.

### 2.6.2. Layout of Mains

The minimum pipe size that may be installed in the District is eight (8) inches inside diameter, unless otherwise approved by the District.

Dual mains (one pipeline on each side of the street) shall be installed in streets that carry heavy concentrations of traffic, or where the right-of-ways are eighty (80) feet or more in width. State highways and major county thoroughfares generally are in this category.

The distribution system shall be networked in grid pattern with eight (8) inch or larger cross-connecting mains at intervals of approximately thirteen hundred (1,300) feet with intermediate eight (8) inch mains as required. In addition, the District shall be networked in grid pattern with twelve (12) inch or larger mains at one-half (0.5) mile intervals. Where necessary, Applicants will be required to retrofit the existing system to facilitate this standard.

The water distribution system shall be looped to ensure adequate fire protection and water quality, and to maintain the ability to isolate mains by section with minimum service interruption.

The standard pipeline sizes that may be installed in the District are eight (8), twelve (12), sixteen(16) eighteen (18), twenty-four (24), thirty (30), thirty-six (36), forty-two (42) inches.

The water distribution system shall be designed to deliver at the rates specified in Section 2.4 to points of connection at pressures not less than specified in Section 2.3.

All dead-end mains shall be equipped with a fire hydrant (refer to Std-11). Air-vacuum valves (refer to Std-2) shall be required at significant high points and additional blow-off assemblies will be required at significant low points.

All District water mains, services, and other facilities shall be installed in their own trenches. No joint trenches with other utilities will be permitted.

### 2.6.3. Full frontage extension

Water main installation is required along the entire length of the frontage improvements of the parcels under development.

The Applicant is responsible for the full cost of such main extension.

The minimum pipe size required in the frontage shall be in accordance with Section 2.6.2, or as required by the District.

### 2.6.4. Valves

Water systems shall be designed to include sufficient number of valves to minimize shut-downs. Valves shall be generally located as follows:

- At intervals to isolate no more than two (2) fire hydrants at any time.
- At minimum intervals of 500 feet in commercial and residential areas.
- A maximum of five (5) valves will be required to isolate any location.
- Typically, the number of valves shall be equal to the number of fitting branches (tee – 3 valves, cross - 4 valves) or per District discretion
- Valves shall not be located in street gutters, valley gutters, or in driveways.
- The District may require additional valves depending upon system configuration.

### 2.6.5. Fire Hydrants

Hydrants shall be located at street intersections whenever possible, and shall be located to minimize the hazard of damage by traffic. Hydrant spacing and location are determined by the Sacramento Metropolitan Fire District.

The minimum-size water main serving fire hydrants shall be eight (8) inches in diameter.

The minimum size mains for multiple-family dwellings and all commercial developments shall be specified by the District based on the fire flow requirements set forth by the Fire District. The service line connecting the hydrant and the main shall be six (6) inches, with a SIX (6) inch resilient wedge gate valve installed at the main. The valve shall be flanged to the tee or other base fitting to prevent separation. Refer to Standard drawing Std-11 for details of installation.

### 2.6.6. Private Fire Protection Service (PFPS)

The size of the PFPS tap shall be determined by the Developer consultant. The PFPS tap and an approved Backflow device (RPPDCA or DC) shall be shown on the improvements plans prior to the District approval in accordance with Std-12. The Applicant is responsible for installation, maintenance, and repair of PFPS and backflow device.

The backflow device shall be tested prior to activation and annually thereafter by the certified tester. Non-compliance with this requirement will result in PFPS disconnection and immediately notification of the Fire Department.

### 2.6.7. Service Lines

Service line and all necessary fittings are to be installed in accordance with SD-7 and SD-8.

Water services shall not be looped, and water lines from one parcel must not encroach (without easement) on or serve any part of another parcel. No extended service is allowed.

All services and meters shall be located within the public right of way, PUE or in easement, designated for Fair Oaks Water District.

Separate water service taps are required for each of the following:

- Single-family or condo parcels;
- Landscape irrigation facilities for commercial and multi-family development
- For each unit of duplex or forplex , even when located on the same parcel

The Applicant shall use “Application For Service” to provide size, type (domestic, irrigation, fire) and number of services to be installed. The District will review the Application for service and will determine if requested size is appropriate for intended use.

If in the opinion of the District, requested size of the service and meter are not sufficient, the District will make appropriate changes. The Developer/Owner will be furnished with the fee schedule reflecting changes determined the District.

The Applicant must submit improvements plans for District approval prior to service installation or upgrade. The Applicant is responsible for upgrade of existing service.

### 2.6.8. Prohibited Components

In accordance with the District Policy 6040, installation of booster pumps on a service lines are not authorized without the written consent from the Fair Oaks Water District Board of Directors.

## 2.7. Improvements Plan Submittal

The Applicant and/or the Consulting Engineer preparing plans for a project are encouraged to discuss water system configuration and service connections with the District staff. During the plan submittal process, the Applicant shall follow the procedure outlined below:

### 2.7.1. Application For Service

The Applicant shall fill out an Application For Service with all pertinent information and provide request from Sacramento Fire Protection Agency, stating Agency requirements for fire flow, sprinkler system and additional fire hydrants. Application For Service shall be accompanied with the engineering plans as described in Section 2.7.2.A

### 2.7.2. Preliminary Plans

#### 2.7.2.A. General Requirements

All plans submitted to the Fair Oaks Water District for review will meet the following minimum requirements identified herein. Additional requirements may be established by the District.

a. A legal map or legal property description

b. A completed application for service

c. Two sets of water plans indicating all water details up to, and for the property to be served. The acceptable size of submitted drawings shall be 24" by 36" or 11" by 17" with horizontal scale between 1"=20' to 1"= 40". Applicant shall provide a plan and profile view where crossing or installation of other utilities are required,

**Water Plan Drawing Submittal Requirements**

The following are the requirements for drawing submitted to the District:

a. Project name

b. Engineer's name

c. Engineer's P.E. stamp with signature( on the final drawings)

d. District standard notes, vicinity map

e. Legend, north arrow, scale ( horizontal and vertical)

f. Rights-of-ways, easement and property lines, driveway locations, street names and dimensions

g. Show existing mains, laterals, services, valves and fire hydrants

h. Show proposed water facilities using different layer

i. Identify all other utilities ( existing and proposed) in the area of the project that can affect alignment of water lines

j. Lot ( APN) and street numbers

### 2.7.3. Initial Plan Check

Within thirty (30) days following the Applicant's application and plan submittal, the District will respond providing the Applicant with information relevant to the project, including applicable fee schedules and a marked-up copy of the proposed water plan. The District's reply may also contain a request for additional items, including:

- Water flow analysis for the proposed new water system;
- Payment of all applicable fees (refer to section 2.7.4);
- Signed, notarized, unrecorded easements provided to cover all existing and proposed facilities not covered by easements shown on the proposed final map;
- A blueprint of the water plan complete with all required changes and additions resubmitted to the District and
- All of the above items completed by the Applicant and returned to the District for further review prior to water plan approval in accordance with section 3.8.6 guidelines.
- A letter from the Sacramento Metropolitan Fire District, stating the required fire flow.

### 2.7.4. Fees

The Applicants for development planned within the District are responsible for payment of development fees as approved by the District's Board of Directors for new service connections. The District has established a fee schedule that includes charges for the following:

- Services provided for project supervision, inspections, plan checking.
- New connections to the District's distribution system, including connection fees and Peak Hour Pressure and Flow Mitigation fees).
- Water for construction use.
- Tapping fees.
- Fire Flow Test fees

Prior to District approval of the submitted plans, the Applicant or their representative must pay all applicable development fees.

### 2.7.5. Approved Plans and Construction Drawings

The Applicant shall not start construction of water system without District approved construction plans, payment of all applicable fees and approved and recorded easements. Applicant shall provide two (2) sets of approved construction plans to the District prior to start of construction.

Construction must commence within one (1) year of approval date shown on the plans. The District reserves the right to disconnect any portion of water improvements connected to the public system that are not diligently pursued to completion.

Applicant must resubmit plans after a year for review and re-approval.

# 3.0 Pipelines and Appurtenances

## 3.1. Scope

This section identifies the materials, methods of installation, tests, and other requirements for District water mains, services, and other appurtenances of the water distribution system.

## 3.2. Materials and Brand Names

All materials and equipment furnished under these Specifications shall be new and of a quality equal to that specified. Materials or equipment specified herein by brand or trade name or catalog designation is specified 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. All material proposed to be used shall meet AWWA standards and shall be subject to the District's approval as specified herein.

## 3.3. Materials Testing

All testing requirements of the Specifications shall be conducted by the pipe manufacturer or its representative within the State of California and the resulting tests shall be certified by an established reputable firm operating in the testing materials field.

## 3.4. General

Pipe materials used in the construction of water distribution systems shall generally be Polyvinyl Chloride (PVC) C900, Class 150 or better. Ductile Iron Pipe of Class 50 or better shall be used in applications where pipe larger than twelve (12) inches in diameter is required, for installations where less than thirty (30) inches of cover over the main is available, or as otherwise approved or required by the District. Pipe lettering shall face up for identification. Damaged or discolored pipe shall not be used. Pipe that is identified as damaged shall be marked damaged and discarded.

All materials shall be new and sufficient to make the installations complete and operative as designed. Pipe and fittings shall not be altered or marked, except as specified herein or approved by the District.

A plastic non-detect blue tape with the words "CAUTION : BURIED WATER LINE BELOW" shall be laid on top of the top bedding material the full length of the trench.

## 3.5. Polyvinyl Chloride ( PVC) Pressure Pipe

Pipe eight (8) inches and larger shall meet the requirements of AWWA C900, Class 150 or better, PVC Pressure Pipe.

Installation of four (4) inch pipe is only acceptable for blow-off assembly as per FOWD SD-3.)

All pipes shall be suitable for use as pressure conduit. Provisions must be made for expansion and contraction with an elastomeric gasket ring at each joint. The joints shall have seal-ring grooves to securely hold the rubber ring in place against water pressure. Joints between PVC pipe segments shall be either coupling sleeve or bell and spigot type joints. Pipe shall be manufactured with cast iron pipe equivalent ODs and furnished in standard twenty (20) foot lengths.

Ten (10) gauge coated copper locating wire shall be installed with all PVC (refer to SD-5).

All connections of PVC pipe to cast or ductile iron fittings shall be made with approved mechanical joints.

### 3.5.1. Sleeve Joints

The coupling sleeve type joints shall use a Class 150 PVC sleeve with two rubber gaskets that conform to those recommended by the pipe manufacturer. The sleeve shall have internal stops to prevent pipe ends from touching.

### 3.5.2. Bell and Spigot Joints

The bell shall consist of an integral wall section with an approved locked-in, triple-edge elastomeric gasket ring that meets the requirements of ASTM F477, as listed in AWWA C900. The bell section shall be at least as hydrostatically strong as the pipe wall and meet requirements of AWWA C900.

### 3.5.3. Small Diameter PVC Pipe

Pipe that is four (4) in diameter or smaller will not be permitted as a water main piping. Where threaded connections to customer pipe are required, these connections shall consist of Schedule 80 PVC and shall conform to ASTM D2464. PVC solvent weld cement for socket connections shall meet requirements of ASTM D2564.

## 3.6. Ductile Iron Pipe

Ductile Iron Pipe (DIP) shall be used where required or specifically requested by the District. Pipe shall be Class 50, or Class 53, cement-lined with seal coating (interior), bituminous coated (exterior), and shall conform to and meet the current requirements of AWWA C151/A21.51. Where directed by the District, the Contractor shall use Class 53 pipe in conjunction with fittings and flanges. Joints shall be flanged, push-on or mechanical, unless otherwise specified or shown on the plans. DIP and fittings shall be polyethylene encased in accordance with the standard for “Polyethylene Encasement for Ductile Iron Pipe for Water and Other Liquids” ( ANSI/AWWA C 105/A21.5). The polyethylene film shall have a minimum thickness of eight (8) mils.

### 3.6.1. Flange Joints

Flange type joints shall conform to AWWA Standard C111 and ASA Standard B16.1, Class 125.

### 3.6.2. Mechanical Joints

Mechanical joints shall conform to AWWA Standard C111.

### 3.6.3. Field Flanges

Field flanges joints designed for ductile iron pipe shall be used only with approved ductile iron pipe. Joints shall be Uni-Flange, US-Pipe, Romac, or approved equal, and shall comply with AWWA Standards C111 and C153.

## 3.7. Steel Pipe

Steel pipe shall be used only in specific instances, and will require the approval of the District. Welded steel pipe shall be in accordance with AWWA C200. The minimum design pressure shall be 150 pounds per square inch. Pipe shall be furnished with flanged ends, AWWA C207, Class D and ends for field welding or flexible couplings as shown on the Approved Plans. Pipe wall thickness shall be a minimum of 0.1875 inch for eight (8) inch to twelve (12) inch diameter pipe. Fittings shall conform to the requirements of the adjoining pipe and shall have approved dimensions per AWWA Standard C208.

Pipe, fittings, and flanges shall be lined and coated, twelve (12) to fifteen (15) mil thicknesses, with a fusion bonded epoxy coating conforming to AWWA Standard C213. The lining and coating material shall be one hundred percent (100%) solid, thermosetting, fusion bonded, dry powder epoxy resin such as Scotchkote No. 302 (3M Corporation) or approved equal. Surface preparation shall be in accordance with SSPC-SP 10 Near White Blast Cleaning. The application method shall be by the fluidized bed method and shall attain twelve (12) mil minimum dry film thickness. Field welds, connections, and otherwise damaged areas shall be coated and patched according to the manufacturer's instruction with 3M Scotch Kote No. 306, or equal.

Steel pipe subject to earth contact shall be wrapped with minimum eight (8) mil polyethylene sheeting or other material specifically approved by the District. Where the installation conditions or the District requires, the Applicant shall consult a qualified corrosion engineer to design a suitable cathodic protection system. The Applicant shall install the system as approved by the District.

## 3.8. Asbestos Cement Pipe

Use of asbestos cement pipe and fittings are not permitted.

## 3.9. Prohibited Materials

Use of leaded joint fittings, pipe or any other materials containing lead are not be permitted. Only approved water works brass or bronze components are authorized. Use of asbestos cement pipe and fittings and steel pipe and fittings shall be limited to the applications specifically addressed within these Specifications.

## 3.10. Water Pipe Fittings

### 3.10.1. Fittings for PVC and Ductile Iron Pipe

Fittings for PVC C900 and Ductile Iron Pipe shall be made of Class 350 ductile iron, and shall conform to the current requirements of AWWA Standards C111/A21.11 and C151/A21.51, and shall be cement mortar-lined with seal coating and the exterior bituminous coated in accordance with AWWA Standard C104/A21.4. Joints shall be flanged, push-on, or mechanical, unless otherwise specified or shown on the Approved Plans.

### 3.10.2. Fabricated Steel

Fabricated fittings shall be made of steel pipe conforming to ASTM Designation A53, 35,000 pounds per square inch minimum yield strength, of 0.25-inch wall thickness except as follows: 0.375 inch for twenty (20) inch to twenty-four (24) inch diameter pipe; and 0.5 inch for pipe larger than twenty-four (24) inches in diameter. Weld-on fitting shall be seamless steel conforming to ASTM Designation A234. Flanges shall be Class D; slip-on weld-on flanges welding front and back and faced, all in accordance with AWWA Standard C207.

Fittings and flanges shall be lined and coated, twelve (12) to fifteen (15) mil thickness, with a fusion-bonded epoxy coating conforming to AWWA Standard C213. The lining and coating material shall be one hundred percent (100%) solid, thermosetting, fusion-bonded, dry powder epoxy resin such as Scotchkote No. 302 (3M Corporation) or approved equal. Surface preparation shall be in accordance with SSPC-SP 10 Near White Blast Cleaning. The application method shall be by the fluidized bed method and shall attain twelve (12) mil minimum dry film thickness. Field welds, connections and otherwise damaged areas shall be coated and patched according to the manufacturer's instruction with 3M Scotchkote No. 306, or equal.

Steel fittings subject to earth contact shall be wrapped with a minimum of eight (8) mil polyethylene sheeting or other material specifically approved by the District. Where the District requires, the Applicant shall consult a qualified corrosion engineer to design a suitable cathodic protection system. The Applicant shall install the system as approved by the District.

### 3.10.3. Flexible and Transition Couplings

Flexible couplings for most installations shall be of ductile iron, Rockwell Omni 441 series or approved equal. Where the installed piping will be subject to separation forces due to pressures within the line, the flexible couplings shall be provided with an approved means to prevent separation. Where couplings are buried, they shall consist of ductile iron and shall be furnished with bolts and nuts cathodic to the coupling and pipe. Steel couplings, where used, shall meet AWWA Standard C111. Steel couplings shall be lined and coated, 12 to 15 mil thickness, with a fusion-bonded epoxy coating conforming to AWWA Standard C-213. The entire coupling shall be wrapped with a an eight (8) mil or greater polyethylene sheeting.

### 3.10.4. Gaskets, Bolts, and Nuts

In general, gaskets, bolts and nuts shall be specified by the manufacturer, depending on the type of fitting and application, subject to District approval.

Gaskets for flanges shall be of synthetic rubber, either ring or full face, and one-eighth (1/8) inch thick. All gaskets shall be full width of the flanges to which applied.

As outlined in Appendix A of AWWA Standard C153, flange bolts and nuts shall conform to ANSI B18.2.2. Bolts with less than ¾ inches in diameter shall be a minimum of a Grade B (heavy hex). Bolts ¾ inches and larger in diameter shall be a minimum Grade A (standard hex). Bolts shall be provided with hexagonal chamfered heads and nuts. The underside of all bolts shall be true surfaces at right angles to the axis of the bolts. The lengths of the bolts shall be such that after joints are made up, the bolts shall protrude through the nuts, but in no case shall they protrude more than one-half (0.5) inch. Where flanged joints are buried in the specific application to meter installation, the bolts and nuts shall be of a preferred stainless steel 316 series with acceptable substitution of stainless series 18-8 (304). An anti-seize shall be applied to the fasteners prior to assembly (Loctite Heavy Duty (56615) first choice or substitution of C5-A (85069/106727)). Where flanged joints are buried, the bolts and nuts shall be cathodic to the pipe materials and shall be wrapped with a minimum of six (8) mil polyethylene sheeting.

### 3.10.5. Tapping Sleeves for main to main connection

The use of tapping sleeves must be approved by the District prior to installation. Upon approval tapping sleeves shall be Romac SST or JCM all stainless tapping sleeve with stainless steel nuts and bolts, or approved equal.

## 3.11. Valves and Valve Boxes

### 3.11.1. Gate Valves

Valves, four (4) inches and larger shall be non-rising stem, resilient wedge gate valves conforming to the current requirements of AWWA C509. Valves shall allow two-way operation and have a two (2) inch square-operating nut. Operating valve wrench nuts shall open to the left. Valves shall have approved mechanical joint or flanged ends as required by the nature of the installation. The valves shall be flanged on the side that attaches to the tee. Valves connected to PVC pipe shall have mechanical joints.

Valves shall be Mueller A-2360 RS Gate Valve, American-Darling - CRS-80, American AVK- Series 25, U.S. Pipe - Metroseal 250, or approved equal.

### 3.11.2. Butterfly Valves

Butterfly valves shall conform to AWWA Standard C504 latest revision. All valves shall be non-rising stem, open left with a two (2) inch square-operating nut. The operating nut shall be installed on the side of the water main toward the centerline of the street. Butterfly valves shall be used on diameters ranging from fourteen (14) inches to seventy-two (72) inches, or as approved by the District. (Pratt Ground Hog and Mueller Lineseal III valves recommended).

### 3.11.3. Air /Vacuum Valve Assemblies

An air/vacuum combination valves are typically placed at the highest point of the piping system to release entrapped air and prevent vacuum and shall be installed at points designated on the approved plans or as otherwise required by the District. The air/vacuum combination valve(s) shall installed above ground surface in the protective enclosure. The acceptable air/vacuum valve is Crispin, U series or equal and shall be installed per Std-2.

### 3.11.4. Blow-Off Valve Assemblies

The blow-off valves are used to release and/or flush water from the piping system during construction activities or for the purpose of maintain an acceptable water quality. Blow-off valve typically placed at the low points of the water system as shown on the approved construction plans or at the points requested by the District Inspector. Unless specified otherwise, fire hydrant is a preferable installation in lieu of in-ground blow-off valve.

The in-ground blow-off valve, if specified , shall be installed per Std. 3. Blow-off boxes shall be Christy 13" X 24" H–20 or equal, of concrete with a cast iron lid or approved equal. The valve shall be installed within the concrete box; the street lid marked "WATER" and lay flush with the finished grade.

### 3.11.5. Mainline Valve Boxes

All mainline valve boxes shall be Christy G-5 or equivalent with a cast iron face and a round cast iron traffic lid marked "WATER". Where valve boxes may not be placed in street pavement, formed two (2) feet square by four (4) inch thick pads of Class B concrete shall be constructed around these boxes.

An approved, solid, rigid eight (8) inch riser C-900 material shall be used between the main valve and the box. Contractor shall install, plumb, and set to grade all valve boxes before the District will accept any improvements.

A valve operating extension shall be required whenever the installed valve is more than forty (40) inches below finished grade.

### 3.11.6. Meter Boxes

All meter box lids shall have the word “METER” stamped or engraved, and regardless of type or location, shall be fitted with Neptune PROREAD AUTO DETECT RECEPTACLES R900V2 MIU ASSY 6ft/25 Version Number 12512-0/. The type of valve box used shall depend on the type of ground surface material that exists at the site of installation, as follows:

#### 3.11.6.A. Pavement Areas

Service valve / meter boxes used in driveways and paved areas shall be concrete, and as follows: for one (1) inch service, Christy B16 valve box with C30 Cast Iron lid; for one and one-half (1.5) inch, Christy B30 valve box with 61G45 self closing reading lid; for two (2) inch service, Christy B36 valve box with 61G70 self-closing reading lid or approved equal.

#### 3.11.6.B. Non-Pavement Areas

In lawn/landscaped areas service valve boxes shall be Carson fiberglass meter boxes, as follows: one (1) inch service - Carson 13-20; one and one half (1.5) inch service - Carson 13-24; two (2) inch service - Carson 17-30 or an approved equal. Meter boxes shall be visible and at grade after landscape or restoration is completed by the Contractor.

### 3.11.7. Fire Hydrants

Fire hydrants shall be installed where shown on the approved construction plans. The assemblies shall be traffic type, equipped with approved hollow core bolts and a buried length to suit the application. Fire hydrants shall be manufactured in accordance with AWWA Standard C503. Hydrants shall be wet barrel steamer type with left-opening valves for each pumper connection, and shall have a minimum of two and one- half (2.5) inch hose nozzles and one four and one-half (4.5) inch pumper nozzle, all with National Standard threads. The type and style of fire hydrant shall be Clow 960, or approved equal, as determined by the Sacramento Metro Fire District..

The base tee or other fitting at the base of hydrant run-out shall have an six (6) inch flanged outlet on the side facing the hydrant. Every fire hydrant installation shall have an AWWA approved resilient wedge gate valve installed on the lateral from the main to allow repair of the hydrant without a water main outage. Fire hydrant valves shall be placed at the base tee with a flanged attachment to the tee. Hydrant service lines shall consist of six (6) inch CL150 C900 pipe. Hydrant bolts shall be breakaway type installed nut side up and filled with 25 year silicone caulk.

The Applicant shall provide road reflectors as specified by the Sacramento Metro Fire District. After installation, fire hydrants must be coated with white paint (refer to Std-11).

If in District opinion installation of barricade is required due to the traffic concerns, Applicant shall install complete installation in accordance with Std-19.

## 3.12. Service Lines and Fittings

### 3.12.1. Saddles

Service saddles for PVC C900 pipe shall be Ford S90 or approved equal. The saddle shall be made of brass and specifically designed for PVC pipe. Bolts connecting the two halves shall be bronze.

Service saddles for AC Pipe shall be Ford 202B or approved equal. The saddle body shall be brass and double straps shall be bronze with brass nuts and bolts.

For ductile iron and steel pipe, service saddles shall be Ford 202 or approved equal. Saddle bodies shall be ductile iron and double straps shall consist of zinc-plated steel. Iron saddles shall be wrapped with a minimum of six (6) mil polyethylene sheeting.

All saddles shall have female iron pipe thread outlet connections.

### 3.12.2. Corporation and Curb Stops

Corporation and curb stops shall be ball-type and of brass construction. One (1) inch to two (2) inch corporation stops shall be Mueller B-25028-MIPTXCTS-110 (compression one (1) inch to 2 inch) or approved equal. Valves shall allow for two-way operation. Corporation stops are required on all service taps and on taps for all air valves and blow-off assemblies.

All corporation stops shall have male iron pipe threads on the inlet side and female iron pipe connections on the outlet side. Pack-joint fittings are not permitted.

### 3.12.3. Compression Couplings and Adapters

Compression couplings shall be brass, Mueller H-15403 or approved equal, and compression by male iron pipe adapters shall be Mueller H-15428 or approved equal. Pack-joint fittings are not permitted.

No more than two compression adapters may be installed between the service saddle and the meter setter unless otherwise approved by the District.

### 3.12.4. Copper Lines

Copper tubing used for service lines shall be seamless, annealed copper tube and shall conform to ASTM B88 "Standard Specification for Seamless Copper Water Tube" and shall be Type K. Copper shall be grade UNS-C12200. For diameters ranging from one (1) inch to two (2) inch, use Type K Roll Soft Copper. Approved tubing includes Cambridge-Lee, Mueller Streamline or approved equal. Four (4) inches and larger service lines, if required, shall be PVC Class 150 C900 pipe.

### 3.12.5. Meter Setters and Fittings

A meter setter shall be a copper setter or yoke as shown on Std 7 and Std 8 and shall be used for all one (1), one and one-half (1.5), and two (2) inch services. One (1) inch meter setters shall be Ford VBHH-74-12W-11-44 or approved equal. One and one-half (1.5) inch meter setters shall be Ford VBHH-76-12-11-66 or approved equal, and two (2) inch meter setters shall be Ford VBHH-77-12-11-77 or approved equal. All material shall be of brass or rigid Type K copper and must meet AWWA Standards. Inlet and outlet connection fittings shall be female iron pipe size dual-purpose connections. The curb stop shall be lock-wing, ball type easy turning angle meter stop. The angle check valve shall be a dual type. Valves shall allow two-way operation.

## 3.13. Meters

Meters are required on all new services and on all services to be replaced or upgraded, or as otherwise specified by the District. Meters shall be purchased and installed by the Contractor at the Applicant's expense (refer to Std 7 and Std 8).

### 3.13.1. Service Meters (1, 1-1/2 and 2 Inch)

One (1) inch water service meter shall be a Neptune 1T-10 BRZ 302 PROREAD AUTO DETECT C/F 6WHL W/O, one and a half (1½) inch water service meter shall be Neptune 1 ½T-10 BRZ OVAL PROREAD AUTO DETECT C/F 6WHL W/O, two (2) inch water service meter shall be a Neptune 2 T-10 BRZ OVAL PROREAD AUTO DETECT C/F 6WHL W/O with corresponding Neptune "PROREAD AUTO DETECT Receptacles" for one (1) inch DUAL R900 RF MIU ASSY COMPLETE 6 ft VERSION Number 12512-000, one and a half (1-½) inch DUAL R900 RF MIU ASSY COMPLETE 6 ft VERSION Number 12512-000, two (2) inch DUAL R900 RF MIU ASSY COMPLETE 6 ft VERSION Number 12512-000.

The register must be a straight reading, radio read absolute encoder type with a large test/sweep hand and shall read in units of one hundred (100) cubic feet. All reduction gearing shall be contained in permanently sealed, tamper proof enclosure of corrosion resistant material. The register shall secure to the upper main case by means of a locking device so it cannot be removed externally.

Removal shall require use of a special tool available only from the manufacturer. The register must comply with AWWA Standard C707 and shall be guaranteed against defects in materials and workmanship for ten (10) years from the date of shipment.

The measuring chamber shall be of Water Works Bronze or suitable synthetic polymer and shall not be cast as part of the main case. The motion of the piston or disc will be transmitted to the sealed register through a magnetic drive. All registers of a particular registration and meter size shall be identical and interchangeable.

### 3.13.2. Three (3) Inches and Larger Service Meters

If a three (3) inch or greater meter is required, the following are Fair Oaks Water District acceptable models:

- Neptune Tru/Flo Compound BRONZE OVAL PROREAD AUTO DETECT C/F 6WHL W/O meter
- Neptune HP TURBINE PROREAD AUTO DETECT C/F 6WHL W/0 meter with corresponding Neptune "PROREAD AUTO DETECT Receptacles" for DUAL R900 RF MIU ASSY COMPLETE with 6 ft VERSION Number 12512-000 or DUAL R900 RF MIU ASSY COMPLETE 25 ft VERSION Number 12512-100.

The meter must meet the latest update of AWWA Standard C702, and must be compatible with the District's current computerized meter reading equipment and software.

In certain applications, subject to District approval, where larger, domestic, or irrigation meters must also serve fire systems, an appropriate sized Neptune High Performance Protectus III Fire service meter ROREAD AUTO DETECT C/F 6WHL W/O with corresponding Neptune "PROREAD AUTO DETECT Receptacles" (X) DUAL R900 RF MIU ASSY COMPLETE 6/25 ft VERSION Number 12512-0/100 shall be used.

The register must be a straight reading, radio read absolute encoder type with a large test/sweep hand and shall read in units of one hundred (100) cubic feet. All reduction gearing shall be contained in permanently sealed, tamper proof enclosure of corrosion resistant material. The register shall secure to the upper main case by means of a locking device so it cannot be removed externally. Removal shall require use of a special tool available only from the manufacturer. The register must comply with AWWA Standard C707 and shall be guaranteed against defects in materials and workmanship for ten (10) years from the date of shipment.

The measuring chamber shall be of Water Works Bronze or suitable synthetic polymer and shall not be cast as part of the main case. The motion of the piston or disc will be transmitted to the sealed register through a magnetic drive. All registers of a particular registration and meter size shall be identical and interchangeable.

# 4.0 Installation and Construction

## 4.1. Water Pipe Installation

### 4.1.1. Trench Excavation

Trench excavation shall include the removal of all materials and obstructions of any nature, the installation and removal of all sheeting and bracing, and the control of water necessary to complete the work. Methods of supporting excavations and provisions for access to trenches shall conform to applicable Federal and State Industrial Safety requirements.

Unless otherwise specified, excavations shall be open cut.

### 4.1.2. Trench Depth and Width

Trenches shall be dug to an even laying grade to a depth below finished grade so as to provide thirty-six (36) inches minimum and forty-two (42) inches maximum cover in public street rights-of-way. Where this standard cover cannot be maintained, protective measures, improved bedding protection or other District approved measures will be required. Any deviations from the standard pipe cover and appropriate measures must be approved by the District Inspector prior to installation.

The minimum trench width shall be the pipe OD plus a minimum of twelve (12) inches or more, and the pipe shall be centered in the trench.

### 4.1.3. Cutting Pavement

When digging the trench into an existing paved areas, 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 such that the trenching operation does not damage the edges of the pavement left in place. When existing pavement is concrete, the pavement shall be sawed along a neat line six (6) inches wider on each side than the actual trench width. If Sacramento County Improvement Standards differ from this specification, the County Standards shall prevail.

### 4.1.4. Bracing and Shoring

All water systems 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 that follow, and the Rules, Orders, and Regulations. Failure to comply with these requirements shall prompt the District to immediately suspend the work. No compensation for losses incurred by the Contractor for such suspension shall be allowed.

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

### 4.1.5. Maximum Length of Open Trench

In public traffic areas, including street rights-of-way, no more than one hundred (100) feet of open trench is authorized at one time for each operation. The remainder of the trench shall be backfilled, compacted, and opened to traffic as soon as possible.

### 4.1.6. Control of Water

When groundwater or surface run-off water is encountered, the Contractor shall furnish, install, maintain, and operate all necessary machinery, appliances, and equipment to keep the excavation reasonably free of water. Contractor shall maintain this water-free working environment until placing of bedding material, laying of pipe and fittings, pouring of concrete, and placing of initial backfill have been completed. Contractor shall also maintain this water-free working environment until all inspections and approval has been completed. Groundwater pumped from the trench shall be disposed of in a manner that will not cause injury to public or private property or constitute a nuisance or menace to the public. The method of disposal shall be subject to the approval of the appropriate regulatory agency(s).

### 4.1.7. Special Foundation Treatment

Whenever the trench bottom is soft, yielding, or in the opinion of the District, otherwise unsuitable as a foundation for the pipe, the unsuitable material shall be removed by over-excavating to a depth approved by the District. These materials shall be replaced with sand or aggregate base so that a stable and satisfactory foundation is provided. When such over-excavation is required, the Contractor shall use the bedding material specified herein to bring the trench bottom to the elevation required, compacted to a density of at least ninety percent (95%).

### 4.1.8. Trench Bottom Preparation

The Contractor shall provide imported sand, free from clay or organic material and suitable for the purpose intended. Sand shall be sized so that ninety percent (90%) or more of the grains pass through a Number 4 sieve and not more than five (5%) of the grains pass through a Number 200 sieve. This bedding material shall extend from a minimum of six (6) inches below the pipe to twelve (12) inches above the pipe. A plastic non-detect blue tape twelve (12) inches wide as a minimum with the words “CAUTION: BURIED WATER LINE BELOW” shall be laid on top of the top bedding material the full length of the trench.

If the trench bottom is rocky or cobbled, or in opinion of FOWD inspector is not suitable for installation of water mains, Contractor must replace unsuitable material in accordance with the Section 4.1.7.

Pipe shall bear uniformly throughout its length. This bearing may be achieved by shaping the bedding or by lightly bouncing the pipe to set it into the bedding. The Contractor may elect to place bedding materials to the spring line of the pipe, compacting the pipe by light tamping to provide side support. Contractor shall fill all spaces under the sides while not disturbing the pipe. Pipe shall not bear on bells, couplings, or joints.

### 4.1.9. Hauling, Loading and Distributing Pipe

During loading, transporting, and unloading every precaution shall be taken to prevent damage to the pipe or pipe lining. No pipe shall be dropped when unloaded from a vehicle or allowed to roll down slides without proper retaining devices. Each pipe shall rest on suitable pads, strips, skids, or blocks during transportation and installation and shall be securely wedged or tied in place. Padding shall be

used on car or truck stakes, skids, etc., to prevent damage to the pipe during transportation and handling. Any damaged pipe shall be identified as damaged, properly disposed of and be replaced.

Each section of pipe shall be delivered in the field as near as practicable to the place where installation will occur. Pipes shall be distributed near the installing crew, along side of the trench opposite the spoil bank. Contractor shall at all times secure the pipe to ensure it cannot roll along the ground or fall into the ditch. If the pipe must be moved longitudinally along the trench, this task shall be done in a manner that will not damage the pipe. Pipe shall not be rolled or dragged on the ground when moved or handled.

When placed on stockpiles, pipe shall be neatly piled and blocked with strips between tiers.

### 4.1.10. Pipe and Fitting Installation

All pipe, valves, fittings, and appurtenances shall be installed according to the manufacturer's recommendations and accepted water works practice. Piping and appurtenances shall be installed in the position, grades, and locations shown on the plans or herein specified. Water mains shall be installed to provide thirty-six (36) inches minimum and forty-two (42) inches maximum cover within public street rights-of-way.

Dirt and scale shall be removed from pipe before installation, and all joints swabbed clean before jointing. Whenever work ceases for one (1) hour or more, ends of all pipes shall be closed or plugged with watertight plugs or bulkheads. Pipe work shall not proceed when there is the potential for foreign materials to enter the pipe.

All fittings needed to ensure satisfactory alignment and arrangement of piping shall be furnished by the Contractor. The fittings shall be cleaned before installation, installed, and joined according to the manufacturer's recommendations.

On alignment of piping, deflection or pull at each joint shall not exceed seventy-five percent (75%) of the maximum amount recommended by the pipe manufacturer for the given type and size joint. In no case shall the deflection per joint exceed four (4) degrees, or one and one- half (1.5) feet of horizontal deflection per twenty (20) foot section of pipe. Pipe deflection will be allowed only at the joint. Bending of pipe is not authorized.

If necessary to achieve greater deflection, the Contractor shall provide cast elbows or other approved fittings. Subject to District approval, another means to achieve greater deflection involves cutting and beveling C900 pipe into short sections and providing approved C900 couplings at each joint.

### 4.1.11. Cutting Pipe

The Contractor shall perform all work of cutting pipe and special castings necessary to assemble and complete the work. Pipe shall be cut to fit accurately with smooth edges and faces, using methods recommended by the manufacturer. The Contractor shall be responsible for the correctness of cutting and shall accept responsibility for the loss of materials that are damaged or cut incorrectly.

Where field cuts are made in PVC pipe, cut ends shall be square to the pipe and all burrs (internal and external) shall be removed. Beveling of pipe ends shall be as specified by the manufacturer. The District Inspector must inspect beveled pipe cuts prior to installation. After the pipe is cut, guide marks for jointing the pipe must be made on the pipe in accordance with the manufacturer's specification.

Asbestos cement pipe shall be cut with chain-type pipe snappers only. Appropriate safeguards shall be utilized during the cutting.

### 4.1.12. Placing of Locating Wire

All runs of non-metallic pipe shall have Number ten (10) a.w.g. solid, PVC coated, soft-drawn copper wire placed on top of the pipe to facilitate later pipe location. Wire shall be laid loosely on top of the pipe to prevent excessive tension and shall be taped in place every five (5) feet. The locating wire shall be securely and thoroughly spliced between runs, over all fittings, and around all main line valves. Wire shall be stubbed up outside riser pipe and into all valve boxes as specified on standard drawings. The District shall inspect all wire splices before the Contractor covers the splices with 3-M tape or other approved material (refer to Std.-5).

### 4.1.13. Boring and Jacking

Where specified or permitted by the District, the water main shall be placed in a conductor pipe by boring and jacking under a roadway, oak tree, or other obstruction.

Any boring or jacking operation of 100 feet or greater in length and involving an opening greater than 30 inches in diameter is subject to the State of California Division of Industrial Safety's tunnel safety provisions.

The District shall approve the materials, equipment, and method of operation before the Contractor may proceed with the work.

Excavation for the boring operation shall be the minimum necessary to satisfactory complete the work. Bracing and shoring shall be adequate to protect workmen and any adjacent structure or roadbed.

#### 4.1.13.A. Installation of Conductor

Installation of a conductor pipe is required for jack and bore installations. The conductor pipe shall be jacked simultaneously with the boring operation. The bored hole shall not be more than one tenth (0.1) of a foot larger in diameter than the outside diameter of the conductor. Adjoining sections of the conductor shall be fully welded together. The conductor shall extend a minimum of five (5) feet past each side of the bore.

#### 4.1.13.B. Placing Pipe in Conductor

Pipe sections shall be jointed outside the conductor and then slid into place. Manufactured non-metallic, or non-corrosive casing spacers, adjustable runners, or cradles shall be used to support the pipe in the casing. The annular space shall be filled with clean sand or as required by the District. The end of casing shall be blocked with end pieces, APS type or equal, as approved by the District in accordance with the Standard drawing Std.-20.

#### 4.1.13.C. Backfilling Voids

Whenever the Applicant, Consulting Engineer, District Engineer or District inspector deems that the nature of the soil indicates the likelihood of ground loss that would result in a greater-than-allowed space between the conductors (or pipe's) outer surface and the surrounding soil, the Contractor shall take immediate preventative measures. The measure consists of installing a jacking head, extending to at least eighteen (18) inches from the leading edge of the conductor. The jacking head shall cover the upper two-thirds of the bored pipe and project not more than one-half (0.5) inch beyond the conductor's outer surface. Excavation shall not be made in advance of this jacking head.

Where voids are suspected, the District may direct the Contractor to drill the conductor, pressure-inject grout to refusal, and then repair the drilled hole. Grouting pressure shall not exceed fifty (50) pounds per square inch at the nozzle.

### 4.1.14. Setting Valves, Fire Hydrants, and Blow-Off Assemblies

#### 4.1.14.A. Valves

Valves shall be installed complete with valve box and riser (refer to Std-4) or as shown on the approved plans. Valves ten (10) inches and larger shall be supported as shown on the Std. 18 or as directed by the District. Care shall be exercised not to encase joints or bolts in concrete. Where mainline valves will be attached to tees, ells, or other ductile iron fittings, the valves shall be flanged on the outlet(s) that attach to these fittings.

#### 4.1.14.B. Fire Hydrant Assemblies

Fire hydrant assemblies shall be installed per Std-11 or as shown on the approved plans. Valves in fire hydrant assemblies shall be installed complete with valve box and riser, as specified. The gate valve for each fire hydrant shall be placed at and bolted to the flanged fitting at the mainline connection.

#### 4.1.14.C. Blow-off Assemblies and air/vacuum valves

Blow-off assemblies shall be in accordance and as shown on the Standard Drawing SD-Installation of air-vacuum valve assemblies shall be in accordance and as shown on the Standard Drawings Std-2

### 4.1.15. Connections to Existing Mains

The Fair Oaks Water District requires installation of in-line tee, in-line valve and side valve for all lateral connections to existing water mains.

Installation of tapping sleeves and tapping valve for "hot-tap" method of connection is allowed under the following conditions:

- prohibitive shut-downs, requiring extensive system shut-down
- installation of in-line valve is not required

All tapping sleeves and tapping valves shall be inspected and approved by the District inspector prior to beginning of work

Installation of "hot-tap" sleeve and valve is not allowed when:

- the lateral is the same size as tapping main
- on asbestos- cement water mains

### 4.1.16. Thrust Blocking

Thrust blocks of Class B (2,000 pounds per square foot) concrete containing a minimum of five (5) sack mix shall be cast in place at all bends, behind each tee, at each cross, and at the back of fire hydrants and flush-outs. The thrust block shall extend from the fitting to undisturbed soil, shall be kept clear of the joints, and shall cover a sufficient bearing area to assure adequate resistance to force that might be encountered. Refer to Std-1 for details.

### 4.1.17. Corrosion Protection

All ductile iron and other iron or steel bodied valves, flexible couplings, tapping saddles, and other fittings shall be wrapped with polyethylene sheeting consisting of minimum eight (8) mil thickness. No galvanized or other steel materials may be used on District mains and services. No direct contact between materials consisting of unlike metals shall be permitted.

When working around existing steel pipe, the Contractor shall properly insulate the steel from all copper, brass, or other unlike metals with District approved dielectric fittings or other approved means. Pipe coating removed by the Contractor must be repaired or replaced to the satisfaction of the Inspector.

In special instances, such as installing steel pipe that is subject to earth contact, the District may require the Applicant to consult a qualified corrosion engineer who will design a suitable cathodic protection system. If required, the Applicant shall install the system as approved by the District at no additional cost to the district.

## 4.2. Sewer Pipe and Storm Drain Crossings

Water pipe crossings with sewer mains/laterals must be done as close to perpendicular as practicable. Sewer pipe must be a minimum of twelve (12) inches below the water pipe at such crossings. If this condition cannot be met, then the sewer pipe or the water pipe shall be constructed of a minimum of one (1) full section of Class 53 coated and lined Ductile Iron Pipe or Class 200 PVC C-900 pipe twenty (20) feet. Pipe installed for this purpose shall have no joints within four (4) feet horizontally of the pipe crossing.

Where minimum joint clearance cannot be met, compression type couplings shall be used at each end and these shall be encased in a minimum of five (5) sack grout for a minimum of twelve (12) inches in all directions. The latest Sacramento County Standard shall prevail.

### 4.2.1. Horizontal Clearance from Sewer Main

A minimum of ten (10) feet horizontal wall-to–wall clearance shall be maintained between parallel sanitary sewer and water distribution mains. Where this separation is not practicable or possible, the water main shall be constructed of either:

- Class 53 coated and lined ductile iron pipe or
- Class 200 PVC C-900 pipe.

Standard detail Std-10 provides separation requirements as outlined in the Department of Public Health regulations.

### 4.2.2. Pipe Crossings Other than Sewer

Water mains must have a twelve (12) inch minimum vertical clearance where crossing other pipes. Sand shall be used as fill between water main and other pipe at such crossings. When requirements of the owner of other pipe exceed this standard, the owner's pipe requirements shall prevail.

## 4.3. Backfill

The Contractor shall provide imported sand, free from clay or organic material, and suitable for the purpose intended. Sand shall be sized so that ninety percent (90%) or more of the grains pass through a Number 4 sieve and not more than five percent (5%) of the grains pass through a Number 200 sieve. This bedding material shall extend from a minimum of six (6) inches below the pipe to twelve (12) inches above the pipe.

Initial backfill, which consists of the material placed on the bedding after pipe joints have been completed, inspected, and passed by the District, shall extend to a point twelve (12) inches above the top of the pipe. The material shall be carefully placed in lifts not exceeding six (6) inches in depth, brought up evenly on both sides, and compacted by a combination of mechanical tamping and shovel tamping and slicing. Initial backfilling shall be done in a manner that will not disturb or damage the pipe.

Wedging, or using fill to support the pipe and jetting of the bedding and ditch shall not be permitted.

### 4.3.1. Intermediate or Top Backfill

As mechanical means are used to obtain the required compaction of ninety five percent (95 %) or greater, the Contractor must exercise extreme caution to avoid damaging or disturbing the pipe. This warning is particularly important when compacting directly over the top of pipe. No equipment shall

be allowed that compacts by applying heavy impact loads. Sacramento County Specifications do not allow jetting above the bedding material within County rights-of-way.

### 4.3.2. Backfill in Existing Street/Pavement Areas

In existing streets and driveways, the backfill shall extend from the top of the initial backfill to the bottom of the roadway structure section. The material used shall be Class 2 aggregate base in conformance with the requirements of Sacramento County Construction Specifications and shall be compacted to a density of at least ninety five percent (95 %) or greater, as required by Sacramento County.

Backfill material shall be mechanically compacted in twelve (12) inch lifts or as required by Sacramento County Standard Specifications. The pavement sub grade (underlying twelve (12) inches) shall be aggregate base compacted in accordance with Sacramento County Standard specifications.

### 4.3.3. Backfill in New Street/Pavement Areas

Backfill shall be of an imported select material. Backfill shall extend from the top of the initial backfill to the bottom of the roadway structure section. The material used shall be Class 2 aggregate base and shall be compacted to a density of at least ninety five percent (95%) or greater by mechanical means.

All public water mains located within an existing or proposed new roadway, public or private shall conform to this standard (refer to Std -9).

### 4.3.4. Other Backfill Requirements

#### 4.3.4.A. Bracing and Shoring

Where bracing and shoring are used in the trench, the backfill shall be carried to a height sufficient to prevent the surrounding ground from cracking and caving into the trench before the bracing and shoring are removed. Backfill of the pit excavated for boring operations shall be made in the same manner as specified for trenches. Bracing or shoring permits and details may be required before pipe is laid.

#### 4.3.4.B. Backfill of Service Lines

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

## 4.4. Installation of Water Services

The service saddle shall be set at an angle of thirty (30) to sixty (60) degrees from the top of the main and corporation stop nut shall point to approximately 12 o'clock, unless otherwise directed by the District inspector. Where saddles serving lots on opposite sides of the street are located adjacent to each other on the main line, saddles shall be spread a minimum of eighteen (18) inches apart. Service taps shall be staggered to prevent any service tap from aligning with another. In addition, taps shall not be placed closer together than eighteen (18) inches, or placed closer to pipe joints or collars than eighteen (18) inches. Pairs of taps shall be placed a minimum of thirty-six (36) inches from other taps or pairs of taps.

Services shall normally be placed three (3) feet from the adjacent lot line. A minimum of five (5) feet clearance is required between service trenches and street light bases. These and other deviations from the standard service location shall require specific dimensioning on plans, subject to District approval. Lot lines adjacent to water services shall be marked at the time of the final inspection.

Service piping from the water main in the street or road to the property or right-of-way shall be installed at the time of construction of the main. Service lines to the individual lots shall be one (1) inch rolled Type K copper. Approved markers shall be placed to mark the location of each service line to facilitate location of service connections if the valve box is covered or removed. Before the District will accept the new system, locations of water services shall be permanently marked with a six (6) inch letter "W" embedded in the curb, directly in front of the meter.

Service connections shall not be installed on fire hydrant laterals or risers.

### 4.4.1. Installing Meter Setters and Meter Boxes

Service meters shall be placed at alternate lot corners in pairs, or as indicated on the Approved Plans and constructed in accordance with Std- 7 and Std-8. Meter setters for each lot shall be placed so that the meter box edge placed nearest the County right-of-way will be one (1) foot outside the right-of-way. The service shall be located on the lot or easement of intended use as shown on the Standard Drawing Std-6.

### 4.4.2. Threaded Joints

Threaded joints shall be made up with non-leaded pipe joint compound, carefully and smoothly placed on the male threads only. All screwed joints shall be made tight with tongs and wrenches; caulking of any kind will not be permitted. Use of thread cement or caulking to make joints tight is prohibited. All cut ends shall be reamed to full bore before assembly.

## 4.5. Hydrostatic testing

### 4.5.1. Timing of the hydrostatic test

After completion of installation, the Contractor shall test all piping, including water mains, service lines, fire hydrant laterals to the pressures specified in this chapter. The Contractor shall furnish all materials, equipment, and labor for testing.

To schedule the test, the Contractor shall contact the District at a minimum of forty-eight (48) hours (a two full workdays) before the time desired. The placement of permanent pavement is not allowed prior to successful completion of the hydrostatic test. Thrust blocks will have to be in place for at least 72 hours prior to conducting test.

Each section of the system to be tested shall be slowly filled with water and all air shall be expelled from the pipe. After system is filled with water, all valves shall be closed and the line shall remain in this condition for a period of not less than 24 hours.

### 4.5.2. Pressure requirements and Duration

After 24 hours period, the pipe shall be re-filled, if necessary and tested at 150 Pounds per Square Inch (PSI) or the service pressure plus 50 PSI, whichever is greater. Full test pressure shall be continuously maintained for a minimum of two (2) hours and the leakage determined. Before the pressure test, the Contractor shall pre-test the system for a minimum of one (1) hour.

### 4.5.3. Allowable Leakage

Leakage shall not exceed the amounts identified within Table 2.

**Table 2: ALLOWABLE LEAKAGE PER 1,000 FEET OF PIPELINE**
Measured in gallons per hour

| Pipe Diameter (inches) | Test Pressure, 150 lbs. / in $^2$ |
|---|---|
| 6 | 0.55 |
| 8 | 0.74 |
| 12 | 1.10 |
| 18 | 1.66 |
| 24 | 2.21 |
| 36 | 3.31 |

The Contractor shall provide the necessary pump and calibrated container to measure the water required to replace water leaked during the test. All leaks found shall be corrected immediately and the system again subjected to the same test at no cost to the District. Failure of material used in the mainline system discovered during the test will be removed and replaced with quality material, as specified The Contractor shall take all necessary precautions to prevent joints from moving while the pipelines and appurtenances are being tested. The Contractor shall, at its expense, repair damage to the pipes, fittings, or to any other structures, resulting from or caused by these tests.

## 4.6. Disinfection and Flushing of Water Lines

After completion of hydrostatic test, Contractor may proceed with disinfection and bacteriological testing. All aspects of disinfection and dechlorination shall be supervised and approved by the Fair Oaks Water District personnel. Disinfection and flushing shall conform to provisions of the latest edition of AWWA Standards C651.

Disinfection and flushing, bacteriological and final “Bacti” testing, shall be completed before any section of water main is accepted and authorized to be tied in to the existing water system. The temporary lines for filling new main must have an approved and tested RP backflow assembly device. Installation of temporary blow-offs on all end points of new systems is mandatory.

All Samples will be taken by the Fair Oaks Water District designated person at any point of the new system as deemed necessary by the District operator for chlorine residual, or any other contaminant.

Disinfection generally may be accomplished using one of the following approved methods:

### 4.6.1. Placing Calcium Hypochlorite Tablets

During construction, a number of calcium hypochlorite tablets will be placed in each section of pipe and one tablet will be placed in each fire hydrant branch, and other appurtenance, as specified. (refer to Table 1). Contractor shall attach the tablets to the pipe's internal surface by an adhesive such as Permatex No. two (2) or approved equal. Attach the tablets to the top, inside the spigot ends of the pipe only.

Calcium hypochlorite tablets shall be five (5) gram units, containing approximately sixty-five percent (65%) available chlorine by weight. The tablets should be stored in a cool, dry, and dark environment to minimize deterioration.

**Table 1: HYPOCHLORITE TABLETS REQUIRED FOR 50 mg/L ***

| | | Per Section of Pipe Length | | | |
|---|---|---|---|---|---|
| | | 13 feet | 18 feet | 20 feet | |
| PIPE DIAMETER IN INCHES | 6 | 2 | 3 | 3 | NUMBER OF 5 GRAM CALCIUM HYPO-CHLORITE TABLETS |
| | 8 | 3 | 4 | 4 | |
| | 12 | 6 | 8 | 8 | |
| | 16 | 8 | 12 | 14 | |
| | 24 | 24 | 28 | 28 | |
| | 30 | 30 | 42 | 42 | |
| | 36 | 54 | 64 | 72 | |

*** mg/L** = milligrams per liter

### 4.6.2. Filling with Chlorinated Water Solution

A chlorine-water mixture shall be uniformly introduced into the pipeline by means of a solution-feed chlorinating device. The chlorine solution feed shall be introduced at one end of the pipeline through a tap so that as the pipeline is filled with water, the dosage applied to the water entering the pipe is above fifty (50) milligrams per liter (mg/L) and not above one hundred (100) milligrams per liter (mg/L). The use of an approved RP backflow assembly shall be required to prevent the chlorine solution in the new line from flowing back into the line supplying the water.

### 4.6.3. Filling and Flushing of Piping

After twenty-four (24) hours minimum time, chlorinated water shall be flushed completely from pipes. Heavily chlorinated water should not remain in prolonged contact with pipe.

Water shall be thoroughly dechlorinated so that no measurable level of disinfectant remains by the time the discharged water reaches the storm drainage system. Dechlorinating is achieved by pumping vitamin "C" into a tank hooked up to the designated flushing hydrant. The tank provides additional detention time to allow the chlorinated water and dechlorinating agent to mix. Once mixed, the dechlorinated water discharges from the tank to the storm drain.

If a sanitary sewer is available, dechlorination may not be required. However, it will be necessary to contact the Sacramento County Sanitation District before discharging chlorinated water to the sewer. It is the contractor responsibility to obtain all necessary permits and comply with applicable environmental regulations.

Water must be in the pipeline for a minimum of forty-eight (48) hours before bacteriological testing is performed.

New mains will not be accepted and put in service until after an "absent" result from the bacteriological testing received by the District.

The Contractor is responsible for any additional cost of repeat disinfection, chlorination and sampling and de-chlorination.

### 4.6.4. Sanitation for Tie-ins

Sanitation of pipe and fittings used for tie- ins, or for other instances where the District determines that the standard chlorination method is not practical, shall be as follows:

Thoroughly swab all internal portions of pipe and fittings with a one percent (1%) chlorine solution (liquid chlorine bleach diluted with water is authorized).

### 4.6.5. Connection to Existing Facilities

Permission to connect to existing facilities must be approved by the District. The Contractor shall contact the District inspector in advance to schedule a planned tie-in connection. The District will schedule the tie-in connection a minimum forty-eight (48) hours after being notified. The Contractor shall be responsible for all materials, equipment and labor for the connection. Cut-in connections shall be permitted only after the Contractor completes and prepares them such that a shutdown will be as brief as possible. No one other than an authorized representative of Fair Oaks Water District shall operate any distribution system valve unless specifically directed by the District representative.

Connections to existing facilities shall not be allowed prior to satisfactory completion of sanitation and hydrostatic testing. Scheduled shutdowns of District mains will not be allowed on Mondays or times other than regular District work hours.

In the interest of maintaining adequate pressures within the distribution system, the District will not normally permit the shutdown of eighteen (18) inch or larger diameter transmission mains between April and October of any year. Work requiring transmission main shutdowns shall be planned and scheduled between November and March.

## 4.7. Cross Connection Regulations

Installation of an approved backflow prevention assemblies or other approved measures are required to protect potable water system from contamination as deemed necessary by the District to comply with State of California Health Law (Title 17), Sacramento County Environmental Health Department Codes, and Fair Oaks Water District Resolution 97 – 09 or latest resolution in effect.

## 4.8. Abandonment of Water Facilities

Existing water mains and services shall be abandoned in place unless directed to remove by the District or other authority having jurisdiction. The determining factors for removal shall depend on the circumstances surrounding the material type, depth and potential safety hazards involved. The open ends of abandoned pipe left in place shall be filled with concrete to prevent drainage through the pipe. Valve boxes shall be removed from systems that are abandoned. In addition, all abandoned fittings and valves shall be removed from points of connection with water mains remaining in service. To abandon a water main, a blind flange shall be attached to the connecting tee, with a bitumastic coating applied for protection and then wrapped the fitting(s) with a six (6) mil polyethylene sheeting. If the District, at its discretion, determines that the connecting tee is in poor condition, the Contractor shall remove and replace the tee with flexible couplings and an approved segment of pipe.

Where services to be abandoned are attached to a water main that will remain in service, the existing service saddle and attachments shall be removed and replaced with all-stainless steel full circle repair clamp (Ford FS Series or approved equal).

## 4.9. Project Restoration

The Contractor shall be responsible for protecting all existing survey monuments and other survey markers during construction. All such monuments and markers destroying by contractor during construction shall be restored or replaced at the contractor's expense.

### 4.9.1. Restoring Pavements

Whenever existing pavements, road surfaces, walks, or other surfaces are removed to construct trenches and install pipe, the backfill shall be thoroughly compacted and the pavement, road surface, walks, or other surfaces shall be restored to the condition existing before the excavation occurred. All work shall match the appearance of existing facilities as nearly as practicable.

Pavement replacement that occurs outside of Sacramento County right-of-ways shall be of the same type and thickness as the original pavement. Pavement replacement within Sacramento County streets shall be in accordance with the latest approved Sacramento County Standard Construction Specifications. Refer to Std-9 for details.

### 4.9.2. Restoring Landscaping

Restoring landscaping includes providing plant materials, preparing soil, fertilizing, fine grading, and planting and establishing plants. Planting operations shall be performed only when weather conditions are suitable for such work (e.g., free of excessive rain or wind).

The pipeline and service lines within landscaped areas shall be installed per the Plans and Specifications except that the top six (6) inches shall be imported topsoil of sandy loam without admixture of subsoil, and shall be free from sticks, rocks, or other foreign material. Topsoil shall not be delivered or applied in a muddy condition. Planting areas outside of the trench areas that have been damaged during construction shall be thoroughly cultivated, and the soil loosened to a depth of six (6) inches, removing all rocks, loose grass, and debris.

Shaping and preliminary finish grading shall be accomplished before planting. Fertilizer (16-6-8) or equivalent with micronutrients shall be spread evenly and raked lightly and evenly into the soil at the rate of fifteen (15) pounds per one thousand (1000) square feet. The area shall then be thoroughly wetted to eliminate future settling.

Replacement and installation of lawn sod shall be in accordance with accepted industry practices. In some instances, reseeding may be an acceptable alternative if approved by the property owner and the District.

## 4.10. Water Used in Construction

A permit is required to use water for construction purposes. The permit, to be purchased by the Applicant, will authorize the Contractor to use a fire hydrant at the approved location. Temporary connections must be immediately removed following completion of each task. Only an approved spanner wrench shall be used to operate a hydrant. The permit holder will be responsible for any damages to fire hydrants caused by improper use, and the District may revoke the permit at any time if construction water is used in an unauthorized manner.

The District will require the Contractor to use an approved RP backflow assembly, to be placed between the District's system and the temporary water connection. The District will require metering of water used for construction purposes. All water used in construction must come only from the water system owned and operated by the District.

## 4.11. Cleanup

During the progress of the work, the Contractor shall maintain the entire job site in a clean and orderly condition. Spillage resulting from hauling operations along or across existing streets or roads shall be removed immediately by the Contractor. The Contractor shall monitor operations and methods at all times to minimize dust problems within the work area or along adjacent properties. Water or dust abatement shall be applied to meet requirements of the latest Sacramento County standard specifications. Contractor is responsible for removing all Underground Service Alert (USA) markings and construction signs prior to the final inspection.

## 4.12. Inspections

The following provisions apply to the inspection of systems that will become part of the District's System. The Developer/Owner of the project is responsible for contacting Fair Oaks Water District and arranging inspection services in accordance with this section. No water facilities, including water mains, services, fire hydrants and etc. will be accepted by the District without inspection and acceptance notice.

### 4.12.1. Schedule

The Contractor shall provide District with work schedule prior to start of construction. Inspections shall be scheduled during regular District working hours and working days. Any unreasonable delay and deviations from the submitted schedule will result in additional inspection fees, to be paid by Developer.

### 4.12.2. Obligation

The Contractor shall notify the District for inspection before and after pipe has been covered to a compacted depth of twelve (12) inches over the pipe, before all thrust and support blocks are poured, and before all fittings and valves are covered. Subject to proper notification by the Contractor, the District authorized representative will inspect the water system with the least possible delay.

### 4.12.3. Final Pre-Inspection

Before a Letter of Pre-acceptance is issued by the District for the new water system, the District shall perform a final inspection to determine whether water pipes, valves, boxes, fire hydrants, blow-offs, fittings and all other appurtenances have been installed per approved plans and standard specifications.

When the project is ready for final inspection and walk through, Contractor shall notify the District. Within two (2) working days after receiving the Contractor's request for final inspection, the District shall inspect the work. During the final inspection, the District Inspector, and the Contractor shall make a thorough inspection of all water valves, service meter installations, blow-off valves, air valves, and other facilities the District Inspector deems appropriate.

Following the inspection, the District will issue a list of defects or deficiencies to be remedied. The Applicant or Contractor shall correct the defects or deficiencies within fifteen (15) working days following the final inspection. After all corrective work has been completed, the District shall perform a re-inspection to determine whether the defects have been repaired, altered, and completed in accordance with the approved plans and the District's notice of deficiencies. If deficiencies remain, the Applicant will be charged for additional re-inspection(s). New services will remain locked and

may not be used until all deficiencies, including fees, as-builts, etc. have been eliminated, and the new system is accepted by the District.

### 4.12.4. Notifications for Changes in Approved Plans

The Applicant's Contractor or Consulting Engineer shall promptly notify the District of any field changes or changes in the plans. The District must approve plan revisions in writing. Before work may proceed, the Contractor shall at all times have in his possession a set of the latest plans and specifications approved by the District. The set of final as-built drawings shall reflect all change orders and modifications made during construction.

## 4.13. Pre- Acceptance and Final Acceptance

Following final inspection, acceptance of as-built drawings and elimination of all system deficiencies by the Applicant or Contractor, the District will issue a written pre-acceptance notice of the water system.

The Final acceptance of the will take place one year from the date of the pre-acceptance notice upon completion of final system inspection. The Fair Oaks Water District will issue final acceptance notice if and only no deficiencies or defects are found throughout water system being accepted.

# 5.0 Abbreviations

**ANSI**
American National Standards Institute

**ASME**
American Society of Mechanical Engineers

**ASTM**
American Society for Testing Materials

**AWWA**
American Water Works Association

# 6.0 Definitions

**Applicant**
Person or persons, firm, partnership, corporation, or combination thereof, financially responsible for the design, construction, repair, and alteration of water supply facilities within the Fair Oaks Water District (improvements).

**Approved Plans**
Approved Plans are considered a contract between the District and the Applicant seeking to perform improvements within the District. The Approved Plans specify that the applicant shall adhere to all provisions of these Specifications, in addition to those items specifically shown on the plans. In the event of conflicts between Approved Plans and these Specifications, the Approved Plans shall prevail.

**Booster Pump**
A mechanical or electrical advantage pump utilized to increase pressure or flow to an existing system that is utilizing the Fair Oaks Water District system as the upstream provider.

**Calendar Days**
Calendar day shall be defined as every day shown on the calendar.

**Commercial Development**
Of or relating to commerce: Having profit as a chief aim, facilities that are intended for nonresidential use and whose operations will affect commerce, including factories, warehouses, office buildings, and other buildings in which employment may occur.

**Commercial Service**
Any water use that provides or distributes a product or service, such as hotels, restaurants, office buildings, commercial businesses or other places of commerce. All Commercial Services within Fair Oaks Water District service area will require installation of an approved Backflow Device in accordance with District's policy.

**Consulting Engineer**
Consulting Engineer is the Registered Professional Engineer or consulting firm hired by the Applicant to prepare and submit plans for proposed improvements.

**Contractor**
Contractor shall refer to the Applicant responsible for proposed improvements represented on the Approved Plans and their representative, including the Consulting Engineer, licensed underground utilities contractor, and subcontractor.

**County**
County of Sacramento

**Cross Connection**
A cross-connection is a physical arrangement between a potable water supply system and any other environment containing foreign substances that would be provided a path to enter the District water system. Other substances may be gases, liquids or solids (i.e., chemicals, waste produce, steam water from other sources (potable or non-potable) ) that may change the color or add odor to the water. By-pass arrangements, jumper connections, removable sections, swivel or changeover assemblies or any other temporary or permanent connections arrangement through which back flow may occur are considered to be cross-connections.

**Dedicated Service**
A water service that is specifically dedicated to a single classification service (e.g. irrigation, fire, commercial, industrial, institutional, multi-family, residential service, single family).

**Design Criteria**
The wells, pumps, and distribution systems shall be designed in accordance with the District standards and requirements to supply and maintain an adequate positive pressure in all parts of the system at all times, with an economical loss of head.

**Developer**
Developer is a term commonly used to describe the Applicant.

**Development**
Development shall mean the act or process of any construction on properties as well as subdivision improvement.

**District**
Fair Oaks Water District, the water agency authorizing the work specified on the Approved Plans.

**District Inspector**
A District employee or Authorized Person(s) employed by the District and authorized to inspect and enforce the work specified on the Approved Plans and implementing District Specifications.

**Private Fire Protection Service**
A connection to water system that is specifically designed and dedicated for the suppression of fire on the premises. Water use for any other purposes other than fire suppression is not authorized. Installation of an approved backflow prevention device is required on all dedicated fire services and water connections that provide dual service: domestic and fire system.

**General Manager**
The General Manager of the District or their representative.

**Hydrant Permitting**
Water use from an assigned hydrant with a permit issued by Fair Oaks Water District (refer to Schedule of Fees and Charges - Table 3) for construction activities or like services by an individual, organization, corporation or governmental entity or their representative.

**Hydrant Unauthorized Use**
Water use from a hydrant without a current active permit from Fair Oaks Water District will require immediate purchasing or billing of a permit.

**Dedicated Industrial Service**
Any water users that are primarily manufacturers or processors of materials as defined by the Standard Industrial Classifications (SIC) Code numbers 2000 through 3999. This typically identifies water used for

industrial purposes in such industries as steel, chemical, paper, and petroleum distribution. Installation of an approved backflow prevention device is required on all industrial services within Fair Oaks Water District.

**Dedicated Institutional Service**
Any water-using establishment dedicated to public service. This includes schools, courts, churches, hospitals, and government facilities. All facilities serving these functions are to be considered institutions regardless of ownership. Installation of an approved backflow prevention device is required on all institutional services within Fair Oaks Water District

**Dedicated Irrigation Service**
A dedicated service that supplies water only for application to landscape; is not cross connected to the potable water supply to the parcel and which is not used for either fire protection or domestic purposes in residential, commercial, industrial or institutional. Installation of an approved backflow prevention device is required on all irrigation services within Fair Oaks Water District

**Multi-Family**
An established facility that will accommodate five or more families.

**Dedicated Residential Service**
A service connection to the non-commercial and non-institutional building or any portion of a building containing up to four dwelling units.

**Reduced Pressure Detector Assembly (RPDA)**
Assembly that consists of an RP that has an external by pass assembly that consists of a RP and a meter to track and aid in the detection of illegal use of water. The only RPDA listed in the latest "List of an Approved Backflow Prevention Assemblies" published by the University of Southern California are accepted within Fair Oaks Water District.

**Service Upgrade**
Dedicated water service that is modified per customer request in accordance with the current Standard Specifications.

**Standard Specifications**
The latest specifications adopted or approved by the District governing the construction, repair or decommissioning of or design of improvements.

**Standard Drawings (SD)**
Drawings included in this document to show details of construction methods, adopted by the District.

**Stolen Service**
The term "stolen" identifies used for other than its intended use or District water used illegally by interference with meters. No person shall prevent water from passing through any meter connected directly or indirectly with the public water mains or prevent any meter from accurately registering the amount of water passing through such meter, or prevent or obstruct a meter from accurately registering the quantity of water supplied, or in any way interfere with the purpose or action of a meter. Also no person shall, without the consent in writing of the District divert any water from any pipes, lines or mains of the waterworks, or otherwise use or cause to be used. Any water unlawfully diverted by device, which prevents the free passage and registration of water or results in the taking of any water except through a meter shall constitute prima facie evidence of illegal use on the part of the person owning or having custody or control of the parcel.

**Vacant Parcel**
A parcel where no habitable dwelling or building exists.

**Water Service Connection**
The point at which the public water system piping of the District ends, and the water service connection of the piping of the customer begins as shown on the Standard Drawings.

**Water System**
Potable water supply system approved by or under the supervision of the Department of Public Health of the State of California.

**Work**
Actions specified, indicated, shown, or contemplated in the Contract to construct improvements so that the completed work shall comply with the true meaning and intent of the Approved Plans, Specifications, and all provisions of the Contract.

**Working Days**
Monday, Tuesday, Wednesday, Thursday, and Friday excluding Saturday, Sunday, and District recognized holidays, and where applicable days of inclement weather wherein construction work cannot safely proceed.

# 7.0 Schedule Fees and Charges

## 7.1. Schedule Fees and Charges

The District Board of Directors approves fee schedule and other development charges as a part of the annual Budget. Refer to the most recent District Budget for the up-to-date list of fees and charges.

## 8.0 Standard Drawings


| | |
|---|---|
| Thrust Block Details | Std-1 |
| 1" Automatic Air & Vacuum Release Valve | Std-2 |
| Flush Out End Of Pipe | Std-3 |
| Buried Gate Valve | Std-4 |
| Valve and Locating Wire Installation | Std-5 |
| Service Layout | Std-6 |
| 1" Service/Meter Installation | Std-7 |
| Double 1" Service/Meter Installation | Std-8 |
| Trench Cross Section for County ImprovedAreas | Std-9 |
| Water and Sewer Mains Separation Requirements | Std-10 |
| 6" Wet Barrel Fire Hydrant | Std-11 |
| Reduced Pressure Principle Detector Check Assembly | Std-12 |
| Dual Purpose Domestic And Fire Service Meter Assembly | Std-13 |
| 4" or 6" Compound Meter With By-Pass | Std-14 |
| 3", 4" or 6" Compound Meter Without By-Pass | Std-15 |
| 45° Welded Steel Utility Invert | Std-16 |
| 45° Mechanical Joint Utility Invert | Std-17 |
| Valve Anchor | Std-18 |
| Fire Hydrant Barricade | Std-19 |
| Casing Installation Details | Std-20 |